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Heartiest gratitude to the Secretary General of MOSTI, YBhg. Dato' Dr. Madinah Mohamad, for her enthusiastic guidance and unwavering support in developing this Compendium. Special thanks are extended to the Deputy Secretary Generals of MOSTI, YBhg. Prof. Datin Paduka Dr. Khatijah Mohd. Yusoff and YBhg. Dato' Dr. Sharifah Zarah Syed Ahmad for their thoughtful and constructive suggestions.

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The Evaluation Unit, Planning Division
Secretariat to the Publication Committee

**FOREWORD BY
THE HONOURABLE
DATUK SERI PANGLIMA DR. MAXIMUS JOHNNITY ONGKILI
Minister of Science, Technology and Innovation (MOSTI)**



I would like to take this opportunity to extend my sincere gratitude to the Publication Committee on the Compendium of MOSTI Funded Projects, for their tireless efforts, dedication and commitment in producing the publication entitled *Towards An Innovative Nation: A Compendium of MOSTI Funded Projects Under the 9th Malaysia Plan*.

The publication of this Compendium is one more step towards achieving MOSTI's vision to utilise, deploy and diffuse science, technology and innovation for knowledge generation, wealth creation and societal well-being. The Compendium provides a summary of a larger work by Malaysian researchers and scientists in various fields that have been successfully undertaken through the fund provided by MOSTI during the 9th Malaysia Plan. This compilation of the body of knowledge on STI will help to provide insights into the dynamics and trends in research areas, their results and outcomes as well as to chart future STI strategies that will support the government's economic transformation agenda.

I believe this compendium, which is also available online, will be instrumental in promoting and disseminating Malaysia's home-grown research, development and commercialisation works. It will certainly be a source of reference that could be readily and easily accessed by policy makers, researchers and practitioners.

DATUK SERI PANGLIMA DR. MAXIMUS JOHNNITY ONGKILI

FOREWORD BY
DATO' DR. MADINAH MOHAMAD
Secretary General
Ministry of Science, Technology and Innovation (MOSTI)



The publication of this Compendium is a significant document which reflects the efforts of MOSTI in promoting Research, Development and Commercialisation in Science, Technology and Innovation to propel economic growth in Malaysia. Congratulations to the Publication Committee for its successful work on compilation and publication of this compendium.

MOSTI and its agencies play a major role in promoting and providing science and technical services to various economic sectors. In this regard, MOSTI has been tasked with managing substantial financial allocations to fund strategic R&D for the nation. Since the introduction of the Intensification of Research in Priority Areas (IRPA), the amount of funding that has been disbursed to stimulate and propel the economy has steadily increased. In the 9th Malaysia Plan, MOSTI has been mandated to manage 18 different funding schemes and grants totalling RM2,746.12 million. This large amount of public funds calls for clear accountability from both the fund recipients and MOSTI. This publication showcases the efforts and outputs of the R,D&C funded by MOSTI and provides the measure of accountability.

It is hoped that this publication will provide a platform for the fund recipients to promote their products and open up opportunities for more future collaborations.

DATO' DR. MADINAH MOHAMAD

OVERVIEW OF MOSTI R,D&C FUNDING

The idea of publishing a compendium of MOSTI R,D&C funded projects was mooted by YB Minister in conjunction with the Malaysia Innovative Year 2010. This compendium is intended to promote R,D&C projects, some of which have shown remarkable success and contributed to the nation's knowledge generation, wealth creation as well as societal well-being.

The compendium is a compilation of MOSTI R,D&C projects funded under the 9th Malaysia Plan as well as the developments and outcomes that have emanated from these programmes. A total of 1,862 projects are included in this compendium.

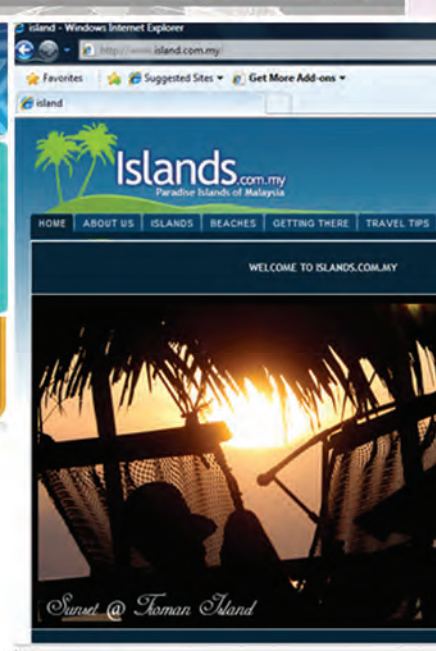
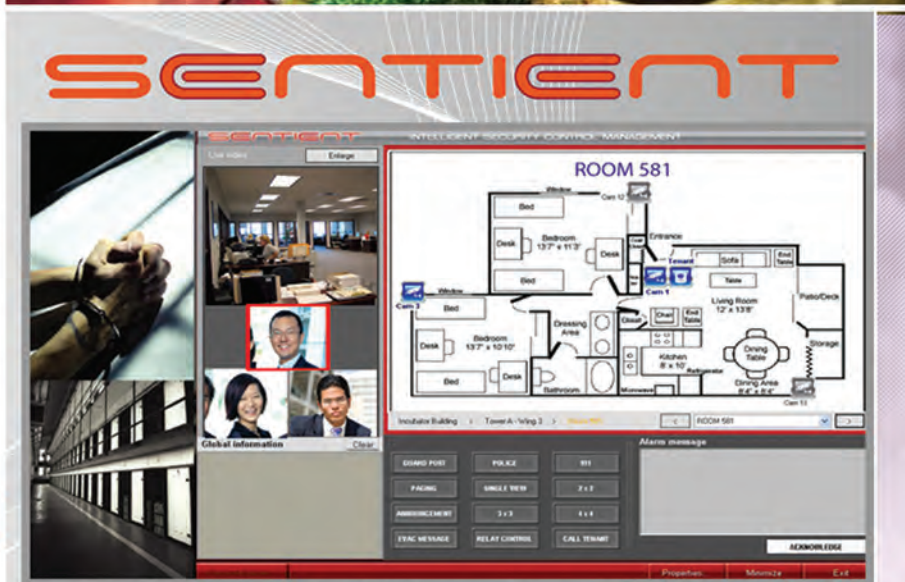
This documentation reflects the effectiveness and implications of R&D for future development, providing a useful source of reference for researchers, industry, and the members of the public. The projects showcased in this compendium encompass various categories such as Agriculture, Commodities, Education, Electrical & Electronics, Emerging Technologies & Knowledge Generation, Energy, Environment, Healthcare, ICT, Materials, Natural Resources and Services.

The compilation of this document, a pilot project by the Ministry, involved several data gathering initiatives which included the researchers themselves, research institutions as well as extracting data from MOSTI database.

Whilst every effort has been made to ensure the accuracy and reliability of the project data, MOSTI highly appreciates feedback from researchers, academicians and members of the public for future improvement.



ICT



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	M-traffic:Mobile Application for Road Users
Project Number	E0078
Project Leader and Team Members	Leader: Ezmir Mohd Razali
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The aim of the project is to provide an up-to-date, effective, convenient and reliable traffic information system to help solve traffic congestion and promote mobile application technology to the Malaysian public. The development of M-traffic Mobile application is based on unified modelling language (UML) and Java Technology (J2ME). This will involve the development of server application using J2EE (Java 2 Enterprise Edition) technology, Java Server pages (JSP), JBoss Application server and MySQL database. Performance testing of the developed application will be done with the support from telco companies by using GPRS/EDGE/3G service.
Publications/Products/ Outcomes	M-Traffic: Mobile Java application
Contact Institution/Entity Address Phone Number e-Mail	Ezmir Mohd Razali No. 8, Jalan Menara U8/5, Bukit Jelutong, 40510 Shah Alam, Selangor. Office: 03-7847 1885 H/p: 013-342 3779 ezmir@geoflex.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Development of a Workflow System Called Workflow TC
Project Number	E0080
Project Leader and Team Members	Leader: How Kok Sheng Members: Leong Kah Foo, Kevin Chong Hon Fung, Akmal Ariff Naim and Lai Mun Yau
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project aims to improve the efficiency of collaborative work within a team. It will be able to reduce costs and risks by automating person-to-person and system-to-system processes and to securely and dynamically modify the definition of a running process in order to take into account events that are unplanned.
Publications/Products/ Outcomes	Workflow TC
Contact Institution/Entity Address Phone Number e-Mail	Hesper Technology Sdn.Bhd. Lot 7.01, Level 7, 1 Tech Park, Tanjung Bandar Utama, Bandar Utama, 47800 Petaling Jaya, Selangor. Office: 03-7727 4417 H/p: 012-788 0251 info@hesper.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	SMS Bicara
Project Number	E0083
Project Leader and Team Members	Leader: Noraini Ali
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Most of the teaching of Al-Quran on the Internet concentrates on the pronunciation, which involves voice. To solve this, the proposed project aims to bridge that gap by developing a portal where the user's voice is recorded. The teacher can then listen to the recorded voice and give comment to the users. The feedback can be accessed via web, mobile and fixed line phone, or e-mail based on the configurations chosen by the user.
Publications/Products/ Outcomes	http://www.smsbicara.com change to http://www.gurumurshid.com (still in the process boot strap taking into account marketing factors Target within 3 months to solid the content and enter the market with the new strategy)
Awards/Certificates	MSC status
Additional Information	<p>Linkages: Part of the platform used to build hotel budget system – Sakiza Hotel (RM40,000), part of the Testing phase to consult Jaring Communication Sdn. Bhd. in their Internet Thoyyibah testing phase (RM10,000).</p> <p>Commercialisation: Manage to get other fund such as MDeC PreSeed Fund (RM150,000) to build the platform and ICONity fund to build the content (RM100,000).</p>
Contact Institution/Entity Address Phone Number e-Mail	Ikhwan Technology Enterprise 58 Jln Cerdik 4, Taman Universiti Sg.Tangkas, 43000 Kajang, Selangor. H/p: 013-341 1502 noraini@smskerja.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Enhanced Moving Asset Tracking with Telemetry Functions - STARFISH EMAT (TF)
Project Number	E0093
Project Leader and Team Members	Leader: Michael Lam Soo Chin Member: Sia Thong Min
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The aim of this project is to design and develop a device based on GPS (Global Positioning System) and GSM infrastructures that are suitable for tracking of commercial vehicles with enhanced telemetry function. It involves combination of fusion and integration of GPS and GSM system with telemetry function. The GPRS and internet infrastructure are used for data transportation with addition of telemetry function which can measure varying quantities like temperature and weight. The data are then transmitted back to the headquarters for processing. Devices on board of the vehicles can be controlled from a remote computer or even PDA including immobilising the vehicle.
Publications/Products/ Outcomes	Hop On Hop Off, Malaysia's premier tourist bus uses Starfish for its vehicle tracking function.
Awards/Certificates	SIRIM Certificate of Conformity on 24th April 2009 and will also have a Made-In-Malaysia Logo.
Contact Institution/Entity Address Phone Number e-Mail	Integrated Electronic Systems Sdn. Bhd. 32-3B, Jalan Pandan 3/2, Pandan Jaya, 55100 Kuala Lumpur. Office: 03-9287 7833 H/p: 012-284 8297 ies@tm.net.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	The Research and Development of an Enterprise Fax Server Leveraging on T.38 Technology (FaxCore v2)
Project Number	E0094
Project Leader and Team Members	Leader: Fong Wei Yi Members: Sam Ng Wee Sim, Seet Kim Hon and Tan Ainne
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The objective of this project is to produce a next generation fax server that will cater from small to large enterprises that need all-in-one solution to manage their faxes and documents. The new FaxCore v2, will not only have the latest fax server solution, but also a system that will consolidate all their faxes, automatically archive faxes in FaxCore vs2 document store, track each inbound faxes, FoIP enabled, all in a package that provides simple zero touch deployment process.
Publications/Products/ Outcomes	Faxcore V2 has been successfully developed.
Awards/Certificates	Internet Telephony 2006/07/08/09/10 NGN Leadership Award 2009/10 Communication Solutions 2008/09 Unified Communications 2009
Additional Information	Linkages: Dialogic, FaxBACK Commercialisation: US, Europe, Taiwan, Thailand, Malaysia, Singapore, Philippines, Hong Kong and Dubai. Spin-off: RM 60k under FaxCore (Asia) Sdn. Bhd. Gross Sales: RM2.5 – RM3 million per annum
Contact Institution/Entity Address	Edox Solutions Sdn. Bhd. No. 26-1, Lorong Batu Nilam 3C, Bandar Bukit Tinggi, 41200 Klang, Selangor.
Phone Number	Office: 03-3324 3226 H/p: 012-234 9994
e-Mail	dennis@faxcore.com.my / steven@faxcore.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Enhancement of Market-Think® Enterprise Market Planning System (EMP)
Project Number	E0102
Project Leader and Team Members	Leader: Yasmin Merican
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Market-Think® EMP is a business solution that accelerates a company's brand building competencies. The system accelerates the convergence of a company's business strategy, processes, competencies and technology with its strategic market positioning and brand intent through a knowledge-driven method and application.
Publications/Products/ Outcomes	The output of this project is a commercialised market planning tool that will help to enhance an organisation's brand building capabilities.
Contact Institution/Entity Address Phone Number e-Mail	Trax Associates Sdn. Bhd. 39G Medan Setia 1, Plaza Damansara, Bukit Damansara, 50490 Kuala Lumpur. Office: 03-2094 8266 H/p: 012-268 1988 yasmin@trax.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	One Stop Crisis Center System (OSCC)
Project Number	E0106
Project Leader and Team Members	Leader: Nor Azman Samad Members: Erymuzuan Mustapa, Norazrol Hisham Mohd Noor, Hakimin Ahmad Yusof @Hanafi, Mohd Sahrizal Salleh and Nazura Md. Nor
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	OSCC is a program for national surveillance for sexual assault case and domestic violence. It also helps hospitals and health centres to efficiently run their day to day operation. This helps improve efficiency and productivity of the examination as well as correctness and accuracy in reporting.
Publications/Products/ Outcomes	OSCC is used to manage Domestic Violence and Sexual Assault case at local hospitals and health establishment. Users benefit from increase in accuracy and efficiency. It helps in terms of case management from the registration all the way to disposition. It assists the Violence and Injuries Prevention Unit to get more accurate and up-to-date statistical data. The system is now implemented at three hospitals: Hospital Putrajaya, Klang and Taiping.
Additional Information	Linkages: Hospital Putrajaya
Contact Institution/Entity Address Phone Number e-Mail	BeSpoke Technology Sdn. Bhd. Unit 226, Block A, Damansara Intan, e-Business Park, No. 1, Jalan SS20/27, 47400 Petaling Jaya, Selangor. Office: 03-7729 4424 H/p: 019-388 7350 azman@bespoke.com.my nurz@bespoke.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF (ICT)

Project Title	Research and Development of Multimedia and Audio Video for '5S Foundation for Workplace Management Training Series
Project Number	E0108
Project Leader and Team Members	Leader: Edly Ferdin Ramly Members: Rokiah Abu Hassan, Rosleena Hashim, Norfauzan and Ang JC
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	To develop the interactive training module (DVD) and case study of 5S implementation audio video (DVD).
Publications/Products/ Outcomes	<p>The product may help improve Malaysian productivity through effective implementation of 5S. The product enables acceleration of knowledge transfer of the subject matter and wider knowledge transfer to all levels from executives to operators.</p> <p>The product is now available on a Website www.efrmanagement.com</p>
Additional Information	Linkages: e-commerce/ Paypal Commercialisation: www.efrmanagement.com
Contact Institution/Entity Address Phone Number e-Mail	EFR Management Consultant 398, Jalan Kempas 4 Bandar Putra 81000 Kulai Johor H/p: 012-774 8331 enquiries@efrmanagement.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Program Celik ICT “Ilmu di Hujung Jari” (CD e-Rujukan)
Project Number	E0111
Project Leader and Team Members	Leader: Nor Azlina Abdul Aziz Members: Shamsul Anuar Ibrahim, Munira Muhamad and Nor Azni Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	CD e-rujukan aims to guide users the practical aspect of learning computer and also to ensure that users who have attended any of the ICT programs understand ICT in a bigger scope, not only limiting to hardware and software application. The users can refer to e-note as a learning material and answer the tests to ensure that the users have a better understanding. This e-rujukan CD were made available at the school computer lab.
Publications/Products/ Outcomes	The project successfully change the participant's mindset whereby they are now more confident and inclined towards ICT. In addition, majority of the participants are now in favour of using their own personal computer.
Additional Information	Linkages: Eastwood Multimedias Sdn. Bhd.
Contact Institution/Entity Address Phone Number e-Mail	Webmaster Dot Com B-20, 2nd. Floor, Lorong Tun Ismail 8, 25000 Kuantan, Pahang. Office: 09-517 3001 H/p: 017-970 1998 cienonet@yahoo.com.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Drug Dispensing and Data Management for Community Pharmacy (DDDMS)
Project Number	E0113
Project Leader and Team Members	Leader: Liew Yu Ping Members: Wong Sie Sing, Goh Hock Chui and Voon Tze Min
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project aims to design and develop a drug dispensing e-system that can be handled both the professionals as well as the business aspects of a community pharmacy. It will bring significant improvement to pharmacists' drug dispensing practice, saves time, and enhance compliance with the Pharmacy Laws through auto-documentation. Patient will benefit from this efficient and quality healthcare services.
Publications/Products/ Outcomes	Bring significant improvement to the pharmacists' Drug Dispensing Professional Service through a DDMS computerised system. It develops an effective and integrated Patient Medication Documentation System in compliance with the Malaysian Pharmacy Laws.
Additional Information	Linkages: Iris Corporation Sdn. Bhd. Technology Licensing: Yes
Contact Institution/Entity Address Phone Number e-Mail	First Telepharma Sdn. Bhd. 8, First Floor, Jalan Courthouse, 93000 Kuching, Sarawak. Office: 082-242 331 H/p: 012-880 0468 firsttelepharma@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Gateway Option Provision Systems (GOPS)
Project Number	E0118
Project Leader and Team Members	Leader: Tan Kee Waey Member: Kwok Siew Hwa
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	GOPS is an aggregation of integration channel management systems via a B2B and B2C e-commerce portal. It is a refinement of existing upstream principal payment system for downstream agent or dealer commission distribution. e-Billing is direct access online system for corporate or business subscriber.
Publications/Products/ Outcomes	The system provides e-billing accessibility anytime, anywhere online with two levels of payment tracking and distributions.
Awards/Certificates	Smidex 2008
Additional Information	Licensing: Permodalan Nasional Berhad (PNB) Commercialisation: Yes
Contact Institution/Entity Address Phone Number e-Mail	Gateway Option Sdn. Bhd. No.90, Jalan Perajurit, Ipoh Garden East, 31400 Ipoh, Perak. Office: 05-545 5993/ 6993 H/p: 017-870 2502 gosbtm@streamyx.com stevenkw@gmail.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Intelligent Physical Security Management System (SENTIENT)
Project Number	E0125
Project Leader and Team Members	Leader: Leong Pooi Yan Members: Wendy Leong, Wong King Mun, Lim Seng Yee, Muhammad Tarmizi and Norazrin Nordin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	SENTIENT is a single matrix touchscreen user interface to control, monitor and coordinate multiple security systems. SENTIENT relieves the daily bombardment of information from multiple systems and reduces it to a single easy-to-use interface. The chosen technologies used to develop the SENTIENT engine comprise of Visual Studio, Visual Basic, .NET and XML. SENTIENT uses a non-PC dynamic matrix touchscreen system as a single point of integration to multiple physical security systems like access control, perimeter detection, intercom and surveillance.
Publications/Products/ Outcomes	The product offers a new benchmark in the security industry as the interfaces to each individual security component is through high level interface, not input or output relays like other similar systems.
Additional Information	Linkages: Verion Research Sdn. Bhd.
Contact Institution/Entity Address Phone Number e-Mail	Nexustel Sdn. Bhd. D116, Kelana Square, No. 17, Jalan SS7/26, 47301 Petaling Jaya, Selangor. Office: 03-7880 2116 H/p: 012-393 9328 Wendy.leong@nexustel.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Pencetak Braille Talib: Kawalan Mekatronik
Project Number	E0132
Project Leader and Team Members	Leader: Muhamad Lazim Talib
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project aims to use the embedded system technology and parallel system to develop a product that will translate written work into Braille. The entire system requirement was developed for the disabled community.
Publications/Products/ Outcomes	The result of this project will develop a model and an algorithm which will link the computer and the machine to print in Braille and facilitate communication for the blind community.
Contact Institution/Entity Address Phone Number e-Mail	Muhamad Lazim Talib K1C 316, Kolej Tun Hussein Onn, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor. Office: 03-8921 4315 H/p: 012-373 0251 beejark@yahoo.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Ezypay - Micropayment System
Project Number	E0133
Project Leader and Team Members	Leader: Ahmad Amran Kapi Members: Rohaizam Sha'ari, Mohd Fadzli Fauzi and Pauzi Kamaludin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Ezypay provides communities with an ability to receive and send money online. This service acts as a one stop centre of Internet banking or payment gateway in Malaysia. Ezypay can reduce the burden for users and provides smooth and faster transaction.
Publications/Products/ Outcomes	The online users use Ezypay as centralised and standardised payment solution. The long term benefits are for the merchants and buyers who can easily choose goods from merchants, while merchants can sell their goods to a large number of buyers and thus receive the payment immediately using Ezypay online money transfer. Ezypay aims to be the Malaysian Online Payment Service above worldwide standards.
Additional Information	Linkages: Paypal
Contact Institution/Entity Address	Intan System Resources (M) Sdn. Bhd. Suite 1.13, Tingkat 1, Inkubator K-Ekonomi, 75450 Ayer Keroh, Melaka.
Phone Number	Office: 06-232 2464 H/p: 013-610 2545
e-Mail	amran@aist.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Pembangunan Portal Komuniti dan Kad Pintar
Project Number	E0137
Project Leader and Team Members	Leader: Mazlan Sabli Members: Zulkarnain Hashim, Nor' Azman Omar and Eddy Irwan Mahamad
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The PPP community portal aims to highlight party's political appearance to the public. Through the portal, party members can find a lot of information regarding the party, from the history, president's biodata, list of MP's, news, as well as current and latest activities. It also includes e-Complaint module that can help public voice their opinion or channel their complaint.
Publications/Products/ Outcomes	Through the portal, PPP members can get updates about the latest news, activities, propaganda and any details about the party. The system is also equipped with SMStools, which is used to alert division's committee members of any meetings or important events.
Contact Institution/Entity Address Phone Number e-Mail	Abfuma Corporation Sdn. Bhd. 16.03 & 04, Plaza 138, Maya Hotel Annex Block, Jalan Ampang, 50450 Kuala Lumpur. Office: 03-2161 2570 H/p: 016-213 4558 mazlansabli@yahoo.co.uk



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Penambahbaikan Teknologi atau Enjin Bagi Mengautomasikan Penyediaan Soalan
Project Number	E0139
Project Leader and Team Members	Leader: Syamsul Anuar Abdul Hamid Members: Norsharizan Muhamad, Siti Fazallina Hashim, Noorhazreen Azaman, Siti Juliana Faudzi, Azlinnaine Azme and Kamariah Kamal
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This project is to create an engine to allow user without technical knowledge (programming skill) to add, edit, delete and make changes to the survey or assessment questions. After completion of this project, users will be able to customise their own set of survey question online.
Publications/Products/ Outcomes	The engine allows non-technical user to create their own questionnaires without having knowledge in HTML and programming language. The questionnaire can be sent through email and another engine will automatically analyse the results.
Additional Information	Linkages: Starfusion Sdn. Bhd.
Contact Institution/Entity Address Phone Number e-Mail	Anjung Visi Solution Sdn. Bhd. 16-1, Jalan Seksyen 2/15, Taman Kajang Utama, 43000 Kajang, Selangor. Office: 03-8733 6944 H/p: 019-284 4944 syamsul@webmyoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Covalentia-Rapid Application Development Tool
Project Number	E0150
Project Leader and Team Members	Leader: Noor Muzammil Norhalim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project aims to further develop Covalentia to become an open source cross-platform Rapid Application Development for .NET that supports not only web-based application development, but also Windows and console application as well as Windows and web services. The end product will help beginners or junior programmers from local companies and government agencies to quickly produce .NET applications faster and more efficiently to lower development costs and risks.
Publications/Products/ Outcomes	Covalentia will be the first to offer open source cross-platform code generator that supports multi-database and multi-project-type in the market. In addition, Covalentia also comes with e-Learning & Certification Program as well as online interactive support and help which will be of tremendous value to the ICT community not only in Malaysia, but also worldwide.
Contact Institution/Entity Address	Covalent Technology Sdn. Bhd. Block H, UPM_MTDC, Technology Incubation Centre One, University Putra Malaysia, 43400 Serdang, Selangor.
Phone Number	Office: 03-8946 2855/2801 H/p: 013-392 4740
e-Mail	nazri@ibtech.com.my redzuan@ibtech.com.my norazmawati@ibtech.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Development of New Generation of IM (Instant Messenger) Wireless PABX
Project Number	E0149
Project Leader and Team Members	Leader: Mohammad Redzuan Sulaiman Members: Thomas Ahn, Raswizar Abdul Razak, Mursyid Mohamed and Mior Zairuddin Mior Abdul Rani
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This project aims to develop a secured and affordable new convergent communication system for SMEs and community, accessible through both fixed and wireless medium. The system shall be top of Next Generation Network. The key technologies integrated for this development are: WiFi Broadband Technology, IP PABX, XMPP Jabber Instant Messenger, Chilli Hotspot Software and Next Generation Network Protocol: SIP.
Publications/Products/ Outcomes	The system will provide saving for international and local calls and also provide a secured corporate and community communication channel. The system can be incorporated with surveillance camera for community watch.
Contact Institution/Entity Address Phone Number e-Mail	Tel-Lab International Sdn. Bhd. 815, Block E, Phileo Damansara 1, No.9, Jalan 16/11, 46350 Petaling Jaya, Selangor. Office: 03-7491 9247 H/p: 013-342 3845 cozta@covalent-tech.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	World 1st Font Encoding Independent Tamil Dictionary Application Integrated into Microsoft Office Applications for the Malaysians and International Market
Project Number	E0154
Project Leader and Team Members	Leader: Ravindran Kanagasundram
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This project aims to create Tamil database applications that would cater the needs of the worldwide Tamil market. Since 1986, Micro Mart continues to create new technology aimed at improving the productivity of Tamil software. These include several world firsts for example, the world's first "Tamil Phonetic Keyboard" and "Font Coding Independent Tamil Database Engine". Micro Mart hopes to leverage on these ground breaking technologies to create software products as a link that provides the tools necessary to increase the productivity and advance the use of Tamil worldwide.
Publications/Products/ Outcomes	Font coding independent Tamil dictionary and editable Tamil dictionary component linked into Microsoft applications.
Contact Institution/Entity Address Phone Number e-Mail	Micro Mart 84-1, Lorong Maarof, Bangsar Park, 59000 Kuala Lumpur. Office: - ravi@thunaivan.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Enhancing Features Website Telephony from V1.0 to V2.0
Project Number	E0183
Project Leader and Team Members	Leader: Chan Kia Liang
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Global Toll-Free Services is a web communications application. It comes in the form of a web link, in which when activated, will ring any office telephone or mobile phone. This web link is normally named as “call us”. The web visitors do not have to pre-install any softphone and they can initiate a call from the website, from their office telephone or from their mobile phone at no cost. The system enables web visitors to contact the company one way or another.
Publications/Products/ Outcomes	The entity has collaborated with the Federation of Hainan Associations Malaysia to provide an Interactive Portal for the 70 Hainan Associates and Guilds. There are 70 Web Phones linking to their respective officers. All their members are provided with a CNR number. Within any WIFI environment, they should be able to make free calls among themselves. Currently the main revenue is from Federation of Hainan Associations Malaysia.
Contact Institution/Entity Address Phone Number e-Mail	Click N Ring Sdn. Bhd. 46 Jalan SG 4/8, Bandar Sungai Long, 43000 Kajang, Selangor. Office: 03-9019 1812 kia_liang@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Development of Digital Watermarking System for Web Services Application
Project Number	E0209
Project Leader and Team Members	Leader: Rubiyah Yusof
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project aims to develop a robust digital watermarking system to avoid attacks which may be intentional or unintentional. “Robust” in this case means the capability of the watermark to resist manipulations of the media, such as loss in compression (where decompressed data may be different from the original), cropping and resizing. The main focus of the application of the digital water marking system is the authentication of image content which can detect any alterations and modifications in an image.
Publications/Products/ Outcomes	Besides ensuring the integrity of document the product also provide saving in terms of archiving, where physical storage is no longer required.
Contact Institution/Entity Address	Augmented Innovation Sdn. Bhd. c/o C.A.I.R.O, Universiti Teknologi Malaysia, Jalan Semarak, 54100 Kuala Lumpur.
Phone Number e-Mail	Office: 03-2691 3710 rubiyah@utmkl.utm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	ISHALAL - Enjin Carian Halal Komuniti
Project Number	E0210
Project Leader and Team Members	Leader: Khairul Sharill Kamarul Ridzwan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The isHalal project aims to provide a more practical web based search engine that focuses on the contents and issues pertaining to halal. It is more practical in the sense that the search results are being monitored and screened based on the verified websites prior to indexation of search results.
Publications/Products/ Outcomes	Development of a halal based search engine
Contact Institution/Entity Address Phone Number e-Mail	Khairul Sharill Kamarul Ridzwan 52, Jalan Cempaka 14, Taman Cempaka, 68000 Ampang, Selangor. H/p: 012-255 3804 akmalxxx@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	MyRF Tag Total Asset Management System (MyRF TAMS) Intergration
Project Number	E0218
Project Leader and Team Members	Leader: Shafiq Azam Tarique Azam Members: JC Tiong, Fakhru Razi and Ng Wai Yin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Human resources, assets, inventories and documents are four key components of an organisation. However, healthcare organisations are still facing problems in managing these four components. Cases like inefficient use of human resources, misplaced assets, stolen inventories or missing documents are common in a daily hospital operation. The objective of this project is to develop MyRF TAMS where users have total control of their assets, personnel's, inventories and documents at just a click of their mouse. The early acceptance of RFID in healthcare realises the need for a good "integration fabric" that can seamlessly allow data to flow from the devices (tags) through the readers to the RFID middleware systems, and be utilised by the existing Hospital Information System (HIS) to trigger meaningful transactions. The vision is to combine the best of RFID technology into a smooth, tightly knit system, offering the end-user more information in less time.
Publications/Products/ Outcomes	The development of Hospital Information System: Asset Module; Patient module; Personnel module; Inventory module and Document module
Contact Institution/Entity Address	MYRF Tag Sdn. Bhd. 1005, Block B, Level 10, Phileo Damansara 1, NO.9 Jln. 16/11, off Jln. Damansara, 46350 Petaling Jaya, Selangor.
Phone Number e-Mail	Office: 03-7958 8577 sales@myrf-tag.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Data Exchange From ASCII to Text Format
Project Number	E0224
Project Leader and Team Members	Leader: Baharin Hasan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The objective of this project is to convert any ASCII file format into proper output or save the output into any text file format in UNIX environment. The product can also be combined with other product or program to work in ASCII file format such as report generation, data calculation and data warehouse.
Publications/Products/ Outcomes	The product enables the users to use it in various environments such as Unix, Linux or Cygwin for Windows environment.
Contact Institution/Entity Address Phone Number e-Mail	Baharin Hasan No. 1, Jalan Putra Perdana, Taman Putra Perdana, 47100 Puchong, Selangor. H/p: 013-303 4931 Baharin.hasan@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	XMOX – Mobile Phone Data Protection and Backup System
Project Number	E0228
Project Leader and Team Members	Leader: Tai Boon Seng Members: Kuhrnthiran Jayasielan, Saravanan Nagalingam, Timothy Tai Lik Siang, Norlida Hafizah Mohd Zali, Norahimah Hj. Hamzah and Chan Siew Mai
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The aim of the project is to develop a phone data management system where mobile users can manage their phone data very easily. Users can also easily lock their phones in the case of lost phones besides easily backing up their phone data, including phone books, messages, pictures and videos. With the XMOXTM services, mobile users can manage their phone data anywhere and anytime. XMOXTM represents the intersection of the three growing markets: mobile data management industry, phone security industry and social network system (SNS).
Publications/Products/ Outcomes	The service is launched under the branding of Joukuu.com and is now available for registration.
Additional Information	Linkages: Celcom Technology Licensing: Haynik Mobile Ventures Sdn Bhd Commercialisation: Haynik Enterprise Mobile Protect & Backup
Contact Institution/Entity Address	Envisage Software Sdn. Bhd. NTDC, MSC Technology Commercialization Centre, Jalan Multimedia, 63000 Cyberjaya, Selangor.
Phone Number e-Mail	Office: 03-8313 8033 bentbs@hotmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Mewujudkan Satu Perkhidmatan Aqiqah dan Qurban Secara Online bagi Keperluan Umat Islam di Malaysia dan Seluruh Dunia (www.aqiqahqurban.com)
Project Number	E0232
Project Leader and Team Members	Leader: Abdul Aziz Jamaludin Members: Salamon Mansut, Musaddin Kamaruddin, Ridzuan and Ab. Razak Mahadi
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The aim of this project is to develop a website using the internet as means to market slaughtered livestock (sacrificed for <i>aqiqah</i> and <i>qurban</i>) and also to provide understanding to Malaysian Muslims about the need and importance of <i>aqiqah</i> and <i>qurban</i> . Through this website, users can also place orders and pay online as well as choosing the type and the price range of the livestock. Users can also opt to either personally collect the livestock or have it delivered to selected orphanage.
Publications/Products/ Outcomes	This project will increase confidence and trust among Muslims that religious affairs can be made easy via ICT. It can also demonstrate to users that ICT is wide opened for business management and marketing amongst others. Users can also benefit from the user-friendly services offered from choosing livestock, payment, processing up to delivery or the livestock for <i>aqiqah</i> and <i>qurban</i> .
Additional Information	Linkages: Kijang Kota Trading-Marketing, DVM Technology Bhd-ICT, Subur Sejahtera Sdn. Bhd.-Training Gross Sales: RM800,000.00
Contact Institution/Entity Address Phone Number e-Mail	Menara Rapi Sdn. Bhd. No. 1, Warisan Dengkil Perdana, P.O.B.B. No. 3, 43800 Dengkil, Selangor. H/p: 019-576 7872 aziz@dvm.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	FIS-Forensic Information System
Project Number	E0237
Project Leader and Team Members	Leader: Hanita Omar
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The proposed Forensic Information System (FIS) automates the work process in Hospital's Forensic, Pathology, and Mortuary Department. It facilitates the day to day operation of those departments as well as cross-departmental communication. The FIS can be a standalone system or compliment to the existing Hospital Information System (HIS). Forensic medicine aims to facilitate the documentation of medical records and other forensic findings of those who are alive and deceased for the use of police and judiciary systems. It is an integral and very important aspect of hospital information system because of the criminal and legal implications. As such the forensic information needs to be handled with high security while protecting the patient's privacy.
Publications/Products/ Outcomes	The major benefit gained from the implementation of FIS is the standardisation of work procedures in every hospital forensic departments. Currently, each hospital has it's own forms and format to manage death cases. With the standardisation and efficient of data collection, the statistics of nationwide death cases can be obtained in a more accurate manner. The application will also be able to improve the administrative aspect; hence it will increase the productivity and accuracy of the administration side.
Contact Institution/Entity Address	Reka Makmur Sdn. Bhd. No. 32B, Jln 6/21D, Medan Idaman Business Centre, Jalan Gombak, 53100 Kuala Lumpur.
Phone Number e-Mail	Office: 03-7729 4424 email@rekamakmur.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	iRunding
Project Number	E0240
Project Leader and Team Members	Leader: Mohd Zaidi Mohd Zain@Zakaria Members: Mohd Zuhan Mohd Zain, Badiuzaman Sarmun and Hidayat Abdul Ghani
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Online consultation system or iRunding is a system that offers online consultation mechanism for users to enable them to interact with the certified panels virtually. The consultation processes could take place in a few ways such as questions and answers in the form of texts, audios and videos. That way, users will have more alternatives to consult depending on their needs. For the question and answer method, audio video streaming technology is deployed. This technology enables both audios and videos to be recorded directly online using webcam and microphone installed on the computers.
Publications/Products/ Outcomes	The iRunding.com was already launched to the general public.
Contact Institution/Entity Address Phone Number e-Mail	I Consultancy Sdn. Bhd. Suite 8-9-2, Menara Mutiara Bangsar, Jalan Liku, Off Jalan Riong, 59100 Kuala Lumpur. Office: 03- 2284 1107/ 08 H/p: 019-989 8203 Datukzaidi@gmail.com admin@irunding.com imanina_83@yahoo.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Network Vulnerability Assessment Tools (NVAT)
Project Number	E0243
Project Leader and Team Members	Leader: Hairuzaki M. Yunus Members: Jeeferly Pahat, Adli Abdul Wahid, Hisyam Harun and Norizam Hanafiah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Nowadays there are many software and application (such as Firewall, Intrusion Detection System (IDS), Intrusion Prevention System (IPS)) available in the market to protect our computer information from threats either internally or externally. The threats could be in the form of computer hacking, viruses, trojan horses, worms, spywares and botnets. Most of the time, IT administrators are only aware of the loopholes in the IT infrastructure once it has been attacked. This product is developed to detect such network threats and alerting the IT administrator.
Publications/Products/ Outcomes	nSCAN Software and nSCAN applications
Additional Information	Spin-off: With our current security technology that we have achieved, we are now able to integrate the security system aspect into our customized developed software Gross Sales: RM70,000.00
Contact Institution/Entity Address Phone Number e-Mail	NFORT MSC Sdn. Bhd. Lot1-4B, Incubator 3, Technology Park Malaysia, Bukit Jalil, 57000 Kuala Lumpur. Office: 03-8996 7177 zaki@nfort.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Mobile Zakat Collection (Sistem Pungutan Zakat) Using Blackberry Mobile Smart Phone. The FIRST in the World Using Mobile Smartphone
Project Number	E0247
Project Leader and Team Members	Leader: Mohd Zamri Hj Mohd Shaffie
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The Mobile Zakat is a collection system to ease the operation of the zakat collection activities with mobility and security features
Publications/Products/ Outcomes	A mobile application on Blackberry devices to provide an encrypted communication from the mobile device to the back-end database for member registration, Zakat collection and receipt printing as well as reporting features to the management for monitoring and reporting purposes.
Contact Institution/Entity Address Phone Number e-Mail	Intelux ICT (M)Sdn. Bhd. No 17, Jalan Jelatang 35, Taman Megah Ria, 81750 Plentong, Johor. Office: 07-388 5454 zamri@intelux.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	The Development and Pre-Commercialisation of the Wound Care Management Solution - Wound Care Solution (WCaSol) Software Solution for the Healthcare Market
Project Number	E0248
Project Leader and Team Members	Leader: Harith Rathi Badarudin Members: Hirman Mohd Arifin, Siti Noorliza Mohd Ali, Muhammad Akramshah, Mohd Arfa Yusma, Alan John Gregory, Mohamad Faizal and Mohamad Nasir Zahari
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project aims to switch the reporting, recording and documentation for treatment and management of wounds from paper-based to paperless. The system will complement existing installations of the Total Hospital Information Systems. It will link the module to service departments such as Pharmacy, Radiology and Laboratory via a HIS system. The system will introduce and maintain knowledge transfer by sharing information and expertise in the field of wound care management. Its utilisation will lead to the standardisation of treatment methods and save clinical time besides reducing cost.
Publications/Products/ Outcomes	<ol style="list-style-type: none"> 1. The product WCaSol addresses the pressing needs in Wound Care Management. Nursing staff that are carrying out care activities including wound treatment will spend less time on documentation and more time on giving out care. 2. WCaSol is a tool for data mining for all types of wounds, thus research participants including medical students or doctors carrying out such research will also benefit. 3. WCaSol enables professionals in the medical field to share data and information as well as knowledge in the field of wound care treatment as everything will be digitally documented. As such, in the long run, patients will receive better treatment.
Contact Institution/Entity Address	Advent Healthcare Management Services Sdn. Bhd No.3D, 1-1, Jln Wangsa Delima 10, D'Wangsa Maju, 53300 Kuala Lumpur.
Phone Number	Office: 03-4143 6120/ 6121 H/p: 019-348 1760/ 019-232 6246
e-Mail	Harith@ahis.info/ aman28_1@hotmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	E-Jenazah-Perkhidmatan Pengurusan Jenazah yang Sistematis dan Bersepadu Berlandaskan Syariah
Project Number	E0253
Project Leader and Team Members	Leader: Abdul Razak Mohd Sultan Members: Ghafar Awang and Ghulam Rusol Md Ismail
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This project aims to introduce a syariah-based scheme for handling of the Muslim deceased besides fulfilling the requirements of 'Fardhu Kifayah' that is not only reliable, but also informative. Besides, it also helps to enrich Islamic knowledge especially in the field related to ICT by developing an interactive portal to Muslims. Hopefully, the project can also be a source of income that could spur the economy of Muslims apart from only fulfilling religious obligations.
Publications/Products/ Outcomes	The outcome of this project is an integrated and systematic Islamic portal for handling the deceased that is based on syariah.
IP Status	Trademark filed (09012860)
Additional Information	Spin-off: Upon completion of e-Jenazah R&D we have launched a spin off project which comprises of 2 segments: i) Conventional Handling of Jenazah ii) Membership of e-Jenazah with attractive packages. Under the conventional system we handled around 300 jenazahs in the northern region. We are in the stage of promoting e-Jenazah to the public at large. One of the strategies is to continue doing it in a conventional way, and at the same time create the aware to the public of the new system. Gross Sales: RM400,000.00
Contact Institution/Entity Address Phone Number e-Mail	Aspirasi Anjung Enterprise 11-12-3, Lrg Bayan Indah 2, Bay Avenue, Queensbay, Sg Nibong, 11900 Pulau Pinang. Office: 1-300-88-4554 www.urusjenazah.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Sistem Penyelenggaraan Domestic (OHS)
Project Number	E0254
Project Leader and Team Members	Leader: Aznan Mohamed
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This project aims to introduce a domestic maintenance service that is not only reliable and sustainable, but also practical by incorporating the domain expertise in domestic services and it is user friendly application.
Contact Institution/Entity Address	Tekun Sejahtera Enterprise 1-02-44 & 45, i-Avenue, Medan Kg. Relau 1, 11900 Bayan Lepas, Pulau Pinang.
Phone Number	Office: 04-641 0294 H/p: 012-425 7996
e-Mail	aznanfarish@gmail.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Pembangunan Aplikasi Web untuk Tujuan Sistem Pengambilan Pekerja Secara Online (SPPSO) Bagi Kegunaan Sektor Korporat dan juga Agensi-agensi Kerajaan
Project Number	E0259
Project Leader and Team Members	Leader: Zulkarnain Hashim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	To create another business entity that promises high return on investment (ROI) in the field of online employment recruitment. This project also enhances the use of ICT in the area of domestic service.
Publications/Products/ Outcomes	The project has developed a commercial-ready prototype of advanced job recruitment web application system. The system is capable of handling jobseekers and employers database, resume uploads, job advertisements, job matching, and interviews and managing of job applications status.
Contact Institution/Entity Address Phone Number e-Mail	Stellar Integration Solutions Sdn. Bhd. Suite 15-3, Jalan 109F, Plaza Danau 2, Taman Danau Desa, 58100 Kuala Lumpur. Office: 03-7980 6439 H/p: 012-679 1977 inquiries@stellaris.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Papy TV-Video On Demand (VoD) & Web TV Solution
Project Number	E0260
Project Leader and Team Members	Leader: Taha Sheikh Mohammad
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The main objective of this project is to develop a system whereby a digital television service is delivered using Internet Protocol over a network infrastructure, which may include delivery by a broadband connection using the technology of IPTV as the base technology. It is to be used as an enhanced interactive information delivery channel for the masses in the field of education, infotainment, governance and others. PapyTV provides comprehensive narrowcasting and VoD services.
Publications/Products/ Outcomes	The project outcome is PapyTV web TV solution client. It will provide clients with an out of the box solution in deploying corporate or personal Youtube-like-video website specifically customised to cater to the individual organisational needs like marketing, advertising and branding.
Contact Institution/Entity Address Phone Number e-Mail	Papyrus Media Sdn. Bhd. Unit 19-7, Block C 1, Dataran Prima, Jalan PJU 1/41, 47301 Petaling Jaya, Selangor. Office: 03-7718 8888 shazman@papyrus-media.com sales@papyrus-media.com www.papyrus-media.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	MediaEngine-Internet Enable Resources and Workflow Management for Multimedia Content Production
Project Number	E0261
Project Leader and Team Members	Leader: Mohd Rashdan Ramlee Members: Marhaidan Muhiddin, Anas Zakaria, Nurul Fathiah Bashir and Suriya Subardi
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This project aims to create a platform that will connect and consolidate the animation, e-learning and visual effect talents throughout the country into a single large-scale consolidated pool so that Malaysia can more effectively compete with India, China, South Korea and Singapore in the content production sector. It is also to make the creative content industry a significant growth contributor for the nation and a source of sustainable high-quality and high level income for the people. The platform will connect local talents to clients both locally and internationally while enabling the client to provide content, feedback and monitoring at every stage of production.
Publications/Products/ Outcomes	The MediaEngine Software Platform allows users to sell their creative content services online and permit their clients to continuously monitor the progress and quality of their work. It also allows creative companies to ramp up their production without having to spend significantly on capital expenditures.
Awards/Certificates	Innocert
Additional Information	International Linkages: Everest International (New York) Industrial Linkages: NEF Technology Licensing: Netcarbon Spin-off: Aniflow Generalised Workflow System Gross Sales: RM1.1 million (2010)a
Contact Institution/Entity Address	Media Foundry Sdn. Bhd. 29A, Jalan Hentian 3, Off Jalan Reko, 43000 Kajang, Selangor.
Phone Number	Office: 03-8925 3882 H/p: 012-373 3053
e-Mail	rushramlee@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	e-CSR
Project Number	E0263
Project Leader and Team Members	Leader: Suraindran Kandasamy
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project creates a web based rating tool to enable Malaysian companies to self-access their Corporate Social Responsibility (CSR). To date, CSR is at an incipient stage in Malaysia. Realising that CSR is more than charity, e-CSR was designed to enhance the commercial viability of the corporations participating in their project. The online questionnaires especially addresses the matter of integrity, transparency, business ethics, investor relation practicers, environment and charity. The questionnaire and the criteria components conform to international standard and will rank e-CSR with DJSI and Johannesburg SRI.
Publications/Products/ Outcomes	The project will create awareness on the importance and benefits of CSR.
Contact Institution/Entity Address Phone Number e-Mail	Nusantara Digital Corporation Suite A-29-1, Level 29, Menara City One, No 3 Jalan Munshi Abdullah, 50100 Kuala Lumpur. Office: 03-2693 7234 H/p: 012-624 4555 surain@ndc.com.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Design, Testing and Commissioning of Satellite Vessel Tracking System SAT 201i Inmarsat D +protocol
Project Number	E0268
Project Leader and Team Members	Leader: Azizul Mahmud
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project aims to develop a satellite GPS System with Satamatics SAT 201 as the Vessel Tracking Unit (VTU) using Inmarsat D+ protocol and a Vessel Management System (VMS) for tracking and management of vessels at sea.
Publications/Products/ Outcomes	The end product is the VTU incorporated software that has been developed and scripted in accordance to the technical specification requirements by Department of Fisheries Malaysia (DOFM), a management system that has the ability to categorically group the vessels according to individual owner or company. At the same time the VMS can pin point the position of any vessels at any time of the day in real time basis. In the event of a distress a panic button on the VTU power supply box allows the vessel owner to send alert message to VMS. The VMS can then alert the respective authorities to take necessary actions or seek assistance.
Additional Information	<p>Technology Licensing: Only scripting of software done locally while SAT D+ antenna are outsourced to manufacturer and provider of Inmarsat D+ Commercialisation: in 2008</p> <p>Gross Sales: RM2.5 million (2007-2010)</p>
Contact Institution/Entity Address vPhone Number e-Mail	ETA Network System Sdn. Bhd. 7E, Level 5, Block 2, Worldwide Business Centre, Jalan Tinju 13/50, Section 13, 40765 Shah Alam, Selangor. Office: 03-5511 0900 H/p: 012-201 0531 azizul@etanetsys.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	iTRACE-Iventory Itinerary Tagging Using Radio Frequency Automatic Trace System
Project Number	E0272
Project Leader and Team Members	Leader: Kamarul Baharin Yacob
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The objective of iTRACE involves developing of an automated inventory tagging system that can be utilised by any warehouses, hospitals, and stores. Some organisations typically maintain inventories and logistics by counting the physical products manually. Also, replenishment of low in-hand merchandise is controlled by the number of products sold or taken. These factors resulted in inaccurate data of inventory as well as increased the amount of overtime paid to the employees for maintaining an accurate data related to store inventory.
Publications/Products/ Outcomes	iTRACE server is the source code of the entire system that has been integrated, tested and ready for implementation. System documentation includes technical documents related to architecture, design and deployment of the iTRACE. Training documentation consists of training soft media as well as hard copy manuals. User guides are meant to help user to setup, operate and maintain the iTRACE software including hard copy manuals and other media.
IP Status	Trademark : Class 16 (09013317)
Additional Information	<p>Commercialisation: Current project that are working on- Asset Tracking System at Jabatan Rekod dan Pencen - Ministry of Defence</p> <p>Spin-off: A pilot project proposed for TUDM for iTRACE product and will be implemented in large scale upon success of this pilot project.</p> <p>Gross Sales: RM95,000.00</p>
Contact Institution/Entity Address	Forth Step Sdn. Bhd. B-1-32 Block B, Merchant Square@Tropicana, No.1, Jalan Tropicana Selantan 1, PJU 3, 47410 Petaling Jaya, Selangor.
Phone Number	Office: 03-6201 5591 H/p: 016-228 5551
e-Mail	kbaharin@forthstep.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Push Email Technology Code Name Mail Alive!
Project Number	E0283
Project Leader and Team Members	Leader: Mohd Ghazali Mohd Yusof
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This product is to keep email on mobile devices up-to-date with an email server. New emails received by the server will be immediately made available on the mobile device. When a new email arrives at the server, a notification is sent to the registered mobile phone.
Publications/Products/ Outcomes	The output is a Mail Alive Product, where the innovation of this product is to push email to mobile phone, scheduling meeting, maintaining privacy of data and built in anti-spam.
Additional Information	Gross Sales: RM25,000.00
Contact Institution/Entity Address Phone Number e-Mail	OpenApps Sdn. Bhd. No.2-3, Jalan 22B/70A, Desa Sri Hartamas, 50480 Kuala Lumpur. Office: 03-6201 2122 H/p: 019-271 3181 mgy@openapps.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	ICMS - Integrated Cooperative Management System
Project Number	E0287
Project Leader and Team Members	Leader: Suhardi Suparman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This project aims to develop a standard application that will automate the processes in the cooperative industry in order to achieve better resource management, planning, productivity and information dissemination. ICMS will also be made available to all cooperatives, a highly efficient and reliable cooperative management system, through lower cost of ownership thus expanding the benefit to the mass community of cooperatives' members.
Publications/Products/ Outcomes	The outcome of this project is a comprehensive management of membership information database apart from providing a financial management system for cooperatives that strictly adhere to Suruhanjaya Koperasi Malaysia requirements. Cross-department communication and information sharing is also made possible in addition to having a fully customisable process workflow.
Contact Institution/Entity Address Phone Number e-Mail	Crazetech IT Solution Sdn. Bhd. 15, Jalan SS3/43, Kelana Jaya, 47301 Petaling Jaya, Selangor. Office: 03-7875 0000 H/p: 012-393 9315 info@crazetech.net





COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Development of High Order Microwave Filter Based on Novel Miniaturised Dual-Mode Resonator
Project Number	E0298
Project Leader and Team Members	Leader: Peng Wen Wong
Field of Research	Engineering Sciences
Project Summary/ Objectives	The objective of the project is to demonstrate experimental prototype for high order microwave filter based on a novel miniaturised dual-mode resonator. In contrast with conventional single mode resonator, the proposed filter topology has inherently lower passband insertion loss and much more compact in size (at least 50% circuit size reduction) where low cost is highly demanded. Such device would find wide application in electronic warfare transceivers, mobile wireless communications and satellite communications systems.
Publications/Products/ Outcomes	A 4th order microwave filter based on novel miniaturised dual mode resonator has been developed and demonstrated in this project. The total area of the proposed filter is only 36.25cm ² whereas conventional filter based on a single mode technology has an area of 114cm ² . The product shows a significant circuit reduction of 68%. Less material are required making it suitable for high volume manufacturing. The outcome of the project includes hardware demonstration and US patent filing
Additional Information	Industrial Linkages: Agilent Technologies (In discussion)
Contact Institution/Entity Address Phone Number e-Mail	Lien Fa Electrical Sdn. Bhd. 149, Jalan Simpang, 34000 Taiping, Perak. Office: 05-808 4232 H/p: 012-508 7785 pengwen_wong@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Insurance Performance Insight (IPI)
Project Number	E0310
Project Leader and Team Members	Leader: Zulkefli Hashim Members: Zainuzzaman A. Samad, Ahmad Al-Hadi Khalid, Shamsul Azizi Mohd Yusof and Mohamad Shahrul Annuar Abd. Razak
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The objective of the project is to develop a prototype for data-visualisation and KPI-dashboard solution that entails a set of strategic and operational KPIs for insurance companies to create, monitor, analyse and drill-down relevant data during different business cycle as well as product life cycle stages.
Contact Institution/Entity Address Phone Number e-Mail	Ode Solution Associates Sdn. Bhd. 11A, Jalan 21/1, Tmn Sea, 46300 Petaling Jaya, Selangor. Office: 03-7875 8002 H/p: 012-349 2954 corporate@osasb.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF(ICT)

Project Title	Cloud Computing Assisted Smart Time Tabling and Resources Utilisation Management System (STReaMS)
Project Number	E0379
Project Leader and Team Members	Leader: Mohd Hanif Md Saad
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	To develop an integrated, optimised system which enables the tight integration of timetabling (automatic & manual for classes, tutorials & laboratories) & resources utilisation management (classroom, labs, meeting rooms and lectures)
Publications/Products/ Outcomes	Enables centralised management and data storage for the system from a remotely managed portal and data centre.
Awards/Certificates	Anugerah Inovasi ICT UKM 2010
IP Status	Trademark filed : Class 9 (0005541), Class 16 (09005540) and Class 42 (09005539) Copyright through Statutory Declaration
Additional Information	Technology Licensing: Teknoseri Sdn Bhd (In Discussion, as a “Distributor”). Commercialisation: Sek. Agama KAFA Integrasi Abu Hanifa Selayang, Sekolah Rendah Agama Integrasi (SRAI) Taman Keramat, Sek. Kebangsaan Seksyen 27 Shah Alam, Sek. Agama Rakyat KAFA Integrasi Sek 27 Shah Alam, SRAI Sungai Buluh, Institut Kemahiran Belia Negara Temerloh, Fakulti Kejuruteraan dan Alam Bina, UKM. Gross Sales: RM29,500.00
Contact Institution/Entity Address Phone Number e-Mail	Mohd Hanif Md Saad Jabatan Kejuruteraan Mekanik dan Bahan, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor. Office: 03-8925 9659 H/p: 019- 666 9395 hanif@vlsi.eng.ukm.my/ hanifsaad@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – DAGS

Project Title	Pemulihan dalam Komuniti Network (PDKNet)
Project Number	DR01
Project Leader and Team Members	Leader: Zamzuri Ismail
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	PDKNet is a community-based program. This program is a joint venture between ICSB and Jabatan Kebajikan Masyarakat (JKM), Kementerian Pembangunan Wanita, Keluarga dan Masyarakat (KPWK). The main objective of PDKNet is to bridge the digital gap for communities across the PDK in Melaka. ICSB with JKM is now planning to implement PDKNet throughout Malaysia.
Publications/Products/ Outcomes	1. Portal www.pdknet.com.my 2. Learning and teaching multimedia courseware
Contact Institution/Entity Address	Integrated Commerce Sdn Bhd (ICSB) 79-3, Jalan TKS 1, Taman Kajang Sentral, 43000 Kajang, Selangor.
Phone Number e-Mail	Office: 03-8737 8022 zam_zuri@icommercesb.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – DAGS

Project Title	K-School
Project Number	DNP002
Project Leader and Team Members	Leader: Azhar Ash'ari
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>K-School aims to transform Sekolah Menengah Agama's (SMAs) to become knowledge centre leveraging on ICT. The systems from this project has been piloted in :</p> <ol style="list-style-type: none"> 1. Sekolah Menengah Agama Al-Hasanah, Keratong 2, Bandar Tun Razak, West Rompin. 2. Sekolah Menengah Agama Al-Attas, Pekan. 3. Sekolah Menengah Agama Bukit Ibam. <p>The result of these pilot projects are being introduced in various other select schools under TAP MOSTI program.</p>
Publications/Products/ Outcomes	Access Control & Time Attendance system, Resource Management System, Library Management system.
Contact Institution/Entity Address Phone Number e-Mail	MIMOS BERHAD MIMOS Berhad, Technology Park Malaysia, 57000 Kuala Lumpur. Office: 03-8995 5000 / 03-8995 5150 info@mimos.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – DAGS

Project Title	K-Masjid
Project Number	DNP001
Project Leader and Team Members	Leader: Azhar Ash'ari
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>K-Masjid consists of 2 systems, K-Masjid Portal and K-Khutbah. K-Masjid portal is a web portal which allows participating mosques to start an online community. K-Khutbah is a digital signage system which was developed for the project. In addition to displaying mosque related information and announcements, the system is also able to display Khutbahs when it is being conducted. The systems in this pilot project has been implemented in :</p> <ol style="list-style-type: none"> 1. Masjid Negeri Pulau Pinang 2. Masjid USM 3. Masjid Al-Jamiul Badawi, Kepala Batas 4. Masjid Negeri Pahang 5. Masjid Al Taqwa, Pekan 6. Masjid Muadzam Shah, Rompin <p>As the result of these pilot projects, the system are being introduced in various other selected mosque under TAP MOSTI program.</p>
Publications/Products/ Outcomes	Kmasjid.com.my – Web Portal K-Khutbah – Digital Signage System
Contact Institution/Entity Address Phone Number e-Mail	<p>MIMOS BERHAD MIMOS Berhad, Technology Park Malaysia, 57000 Kuala Lumpur. Office: 03-8995 5000 ,03-8995 5150 info@mimos.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – DAGS

Project Title	MySign Community
Project Number	DR002
Project Leader and Team Members	Leader: Mohamad Sazali Shaari
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	MySign Community is an initiative to enhance ICT awareness across the country for the deaf and those linked to the deaf; Setting up a centralised information resource centre and use of mobile technology are specifically to enhance communication capability amongst members of the community. The object is to create a resource centre of virtual sign language, a Virtual Sign Language Centre and a call centre to receive SMS request for service that will use a SMS interface. This project is beneficial to the deaf community by enabling them to communicate with others through the use of latest technology. The system will be rolled out and replicated to other Pusat Komunikasi Orang Pekak (PUKOKM) nationwide.
Publications/Products/ Outcomes	A mobile integrated system and portal (http://www.mfd.org.my)
Contact Institution/Entity Address Phone Number e-Mail	Malaysian Federation of the Deaf (MFD) Malaysian Federation of the Deaf, No 6-13A, Menara KLH, Bandar Puchong Jaya, 47100 Puchong, Selangor. Office: 03-8070 9308 epekak@pd.jaring.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – DAGS

Project Title	T-Centre
Project Number	DR004
Project Leader and Team Members	Leader: Krishnan A/L Lethumanan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	TCenter is a teleworking project for the urban poor. It is aimed in assisting women (especially single mothers), unemployed youths and pensioners to use ICT skills and knowledge to earn income through teleworking. The portal provides a location for teleworkers to announce their services and for employers to offer specific work to be conducted online. This web portal is designed to be user-friendly and functional to encourage all sectors of the population to participate in teleworking.
Publications/Products/ Outcomes	Portal (http://www.tcenter.com.my)
Contact Institution/Entity Address	Yayasan Kemajuan Sosial Malaysia No.38, Tingkat 3, Jalan Todak 2, Bandar Sunway, 13700 Seberang Jaya, Pulau Pinang.
Phone Number e-Mail	Office: 04-398 5502 info@tcenter.com.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – DAGS

Project Title	E-Bimbing : Young Prisoner's E-Learning Platform for E-LifeSkills, Capacity Building and Occupational Information
Project Number	DR09
Project Leader and Team Members	Leader: Mahalingam Cheliah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This is a social project to empower young prisoners in selected prison in Malaysia. The project aims to equip young prisoners with multimedia and desktop publishing skills. This project offers young offenders with access to well equip computer centres, a comprehensive e-learning platform (portal) and the training to be used for economic and social advancements. The overall objective of the project is to enable young prisoners to gain specific ICT skills and to use these skills either to find a job or to start a small business. At the same time, other components in this project such as counselling, motivation and workshop are likely to boost the self-esteem of the juvenile to re-integrate to society.
Publications/Products/ Outcomes	A web portal http://www.ebimbing.net/
Awards/Certificates	1. Merit Projek Sosial NGO (Pendidikan ICT) Untuk Banduan Muda by Jabatan Penjara Malaysia 2. 'Samsung Digital Hope' award in Asia Pacific.
Contact Institution/Entity Address Phone Number e-Mail	Pertubuhan Prihatin Sosial Malaysia Pertubuhan Prihatin Sosial Malaysia, 83A, Laluan Klebang Restu 3, Medan Klebang Restu, 31200 Ipoh, Perak. Office: 05-291 6535 ntech2@tm.net.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – STRATEGIC FUNDING FOR ICT

Project Title	Technical Training Grant for the Altera Hardcopy II Family Devices and Malaysian University Development Program
Project Number	CI1
Project Leader and Team Members	Leader: Jordan Plofsky
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>Matching grant (1:1) not exceeding RM 3 million was provided for technical training for the Altera Hardcopy II Family devices and Malaysian University Development Program, from 15 February 2007-14 February 2010.</p> <p>The project has successfully created and hired 397 new high value jobs for local knowledge workers by the end of 2009. Along with that, 1,020 local full time employees plus 87 local university interns (undergraduates or postgraduates) were also trained during the period.</p>
Publications/Products/ Outcomes	<p>Outcomes:</p> <ol style="list-style-type: none"> 1. Creation and hiring of 397 new high value jobs for local knowledge workers by the end of 2009; 2. Training of 1,020 local full time employees by the end of 2009; 3. Training of 87 local university interns (undergraduates or postgraduates) by the end of 2009.
Contact Institution/Entity Address Phone Number e-Mail	Altera Corporation (M) Sdn. Bhd. Plot 6, Bayan Lepas Technoplex, Medan Bayan Lepas, 11900 Pulau Pinang. Office: 04- 636 6100 jplofsky@altera.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – STRATEGIC FUNDING FOR ICT

Project Title	BT Multimedia Digital Home Programme Training
Project Number	CI2
Project Leader and Team Members	Leader: Hiew Pang Leang
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>The project utilises a training grant of RM 5.9 million for Digital Home Programme Training until the end of 2009. BT Netherlands Holdings BV provided RM 12.8 million worth of fund to the Company at the end of 2009. The Company undertook 24 innovative R&D and training projects for the Digital Home and 21CN programmes, and created jobs and trained 20 local knowledge workers. The Company also collaborated with 22 small and medium enterprises (SMEs) to effect knowledge transfer and ensured indirect training on Digital Home research programme for the benefit of at least 71 local knowledge workers.</p>
Publications/Products/ Outcomes	<p>Outcomes</p> <ol style="list-style-type: none"> 1. BT Netherlands Holdings BV provided RM 12.8 million worth of fund to the Company in 2009; 2. The Company undertook 24 innovative R&D and training projects for the Digital Home and 21CN programmes. 3. The Company created and trained 20 local knowledge workers. 4. The Company collaborated with 22 small and medium enterprises (SMEs) to effect knowledge transfer. 5. The Company ensured indirect training on Digital Home research programme for the benefit of a minimum of 71 local knowledge workers.

Awards/Certificates	<ol style="list-style-type: none"> 1. International Invention Innovation & Technology Exhibition 2009 (ITEX'09): Bronze Award - ZETA 2. International Invention Innovation & Technology Exhibition 2009 (ITEX'09): Bronze Award - VideoCircle
Additional Information	<p>Industrial Linkages: 22 companies</p> <p>Technology Licensing: 22 companies</p>
<p>Contact</p> <p>Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>BT Multimedia Malaysia Sdn. Bhd. 1B-17, Block 1B, Plaza Sentral, Jalan Stesen Sentral 5, KL Sentral, 50470 Kuala Lumpur. Office: 03-2091 9468 pangleang.hiew@bt.com</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – STRATEGIC FUNDING FOR ICT

Project Title	MiniCircuits Radio Frequency Training Centre
Project Number	CI5
Project Leader and Team Members	Leader: Katherine P.N. Chuah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>Matching grant (1:1) up to the maximum of RM5 million for capital expenditure was provided to establish Radio Frequency Training Centre by the end of 2009, commencing from July 2007, for the following MSC Malaysia activities:</p> <ol style="list-style-type: none"> 1. Approved activities, namely development of new generation radio frequency products focusing on the following technologies: <ol style="list-style-type: none"> i) Radio Frequency Integrated Circuits; ii) Low Temperature Co Fired Ceramic; and iii) Multi-layered integrated circuits. 2. New activities, namely development of Mini-Circuits Radio Frequency Training Centre. <p>By the end of 2009 the Company spent RM6.5 million in capital expenditures for training facilities in the Radio Frequency Training Centre and trained 533 trainees and created jobs for 91 local knowledge workers in the area of Radio Frequency technology.</p>
Publications/Products/ Outcomes	<p>Outcomes</p> <ol style="list-style-type: none"> 1. The Company spent RM6.5 million in capital expenditures for training facilities in the Radio Frequency Training Centre; 2. The Company trained 533 trainees and created jobs for 91 local knowledge workers in the area of Radio Frequency technology in 2009.
Contact Institution/Entity Address Phone Number e-Mail	Mini Circuit (MSC) Sdn. Bhd. Plot 10, Bayan Lepas Technoplex, Phase IV, Bayan Lepas Industrial Zone, 11900 Bayan Lepas. Office: 04-646 2828 Katherine@minicircuits.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – STRATEGIC FUNDING FOR ICT

Project Title	Tripod Animation Development for “War of the Worlds : Goliath”
Project Number	CI6
Project Leader and Team Members	Leader: Leon Tan Bok Gee
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Matching grant (1:1) not exceeding RM2 million was given for the recruitment and training grant new local knowledge worker, marketing grant and production of DVD anthology for the animation project “War of the Worlds : Goliath” , commencing from December 2007 to March 2010. The company created and trained 61 new local knowledge workers. The pilot episode of “Zoorocco” was developed in Malaysia where credit was given to the Government of Malaysia and MSC Malaysia in the acknowledgment section of production for all intellectual property rights generated.
Publications/Products/ Outcomes	Outcomes <ol style="list-style-type: none"> 1. Creation and training of 115 new local knowledge workers in 2008-2010; 2. Production of Pilot episode of children's animated TV series “Zoorocco” in Malaysia; 3. Acknowledgement in the film credits of “War of the Worlds: Goliath” has been given to the Government of Malaysia and MSC Malaysia for all intellectual property rights generated.
Awards/Certificates	<ol style="list-style-type: none"> 1. Asian Youth Animation & Comics Contest (AYACC) 2010, Guiyang, China - Best Technical Innovation and Application for “War of the Worlds: Goliath” 2. TBS Digicon 6 Awards 2009, Tokyo/Kuala Lumpur – “War of the Worlds: Goliath”
IP Status	100% owned by Tripod Entertainment Sdn Bhd.



<p>Additional Information</p>	<p>International Linkages:</p> <ol style="list-style-type: none"> 1. Kevin Eastman, co-creator of the “Teenage Mutant Ninja Turtles”, as Executive Producer; 2. David Abramowitz, executive producer of “Highlander” TV series, as Producer/Writer; 3. Sun Min Image Pictures Co., Ltd. as animation resource partner. <p>Industrial Linkages:</p> <ol style="list-style-type: none"> 1. Studio Climb Sdn Bhd as pre-production studio; 2. BaseCamp Films Sdn Bhd as post-production studio; 3. Imaginex Studios Sdn Bhd as audio post studio. <p>Commercialisation:</p> <ol style="list-style-type: none"> 1. Distribution of “War of the Worlds: Goliath” in key territories. 2. Publishing of “War of the Worlds: Goliath” comics in international publications.
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Tripod Entertainment Sdn. Bhd. Ground Floor, South Wing, Syed Kechik Foundation Building, Jalan Kapas, 59100 Bangsar, Kuala Lumpur. Office: 03-2092 5020 leon@tripod-ent.com</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Digital Plantation System
Project Number	1/2009
Project Leader and Team Members	Leader: Joe Lahra
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>Digital Plantation System is a “Close Loop” Management Tool to drive up performance by removing and “squeezing out” the non-conformances in oil palm plantation management and mills operation. This system is used to improve:</p> <ol style="list-style-type: none"> 1. Yield through reduction in fresh fruit bunch (FFB) wastage by improving the logistics management and transport scheduling on time to the mills. 2. Productivity in FFB harvesting through improved planning, scheduling and supervisory control. 3. Machinery maintenance through failure mode, effects analysis and response time to repair. 4. Procurement cost through in store supply management controls and fertilizer usage management. 5. Mills throughput by capacity utilisation control and flow of incoming FFB. 6. Mills loading methods through scheduling control into sterilisation vessels. 7. Management and monitoring of workers' skills flexibility for optimise performance.
Publications/Products/ Outcomes	<p>Products: PMMP – Plantation Micro Macro Program</p>
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed (PI 20093088) <i>Patent on a computer implementable apparatus and method for monitoring plantation performance</i>, 24 Jul 2010. 2. Trademark name of the web-based application. 3. Copyright of the materials developed.
Contact Institution/Entity Address Phone Number e-Mail	ABS Multimedia Sdn. Bhd. 1-1B, Level 1, Support Service Building, Technology Park Malaysia Bukit Jalil, 57000 Kuala Lumpur. Office: 03-8996 3225 lahra@abs-mal.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Samba
Project Number	18/2009
Project Leader and Team Members	Leader: Ng Sang Beng
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Project objectives were to develop an ATE that can achieve 127 maximum parallel test sites, 95% parallel test efficiency, and maximum 152,000 units per hour; to develop 3 technology modules, namely Deterministic Analog Operation (DAO), Dedicated Communication Block (DCB) and Closed-Loop Analog Source and Measurement Block (CLASMB) and to develop overall Samba system which comprises multiple cards, mechanical chassis and software used to test discrete devices. While the R&D activities were carried out to produce Deterministic Analog Operation (DAO); Dedicated Communication Block (DCB) and Close-Loop Analog Source-Measure Technology (CLASM).
Publications/Products/ Outcomes	Products: Samba
IP Status	1. Patent disclosed 2. Trademark 3. Copyright system developed
Additional Information	International Linkages: SEMI Industrial Linkages: Semiconductor Association Commercialisation: Commercialised Gross Sales: RM143,145.68
Contact Institution/Entity Address Phone Number e-Mail	Aemulus Corporation Berhad Krystal Point, B-2-5, 303, Jalan Sultan Azlan Shah, 11900 Penang. Office: 04-644 6399 sbng@aemulus.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Development of 7 Specialist Modules - Periodontics, Orthodontics, Oral Surgery, Restorative Surgery, Oral Pathology / Oral Medicine, Paediatrics and Forensics (Forensic Odontology)
Project Number	1/2008
Project Leader and Team Members	Leader: Dennis Tai Kiat Wee
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This project consists of 2 parts in which Part 1 – R&D Element involved the mapping of the current dental specialist manual processes and creating models that can be computerized using the latest technology available like digital imaging of a cephalogram, morphed image or facial photographs, and digital technology that enables the instantaneous side-by-side display of antemortem and postmortem radiographic images. While in Part 2 – Software Development Element, Amaryllis developed an additional 7 specialist modules namely Periodontics, Orthodontics, Oral Surgery, Restorative Surgery, Oral Pathology / Oral Medicine and Pediatrics Forensics (forensic odontology).
Publications/Products/ Outcomes	Amaryllis Dental Clinic Management Software product
IP Status	7 copyrights
Additional Information	Commercialisation: Commercialised Gross Sales: RM900,000.00
Contact Institution/Entity Address	1001tech Amaryllis Sdn Bhd Lot 7.16, Level 7, 1 Tech Park, 7 Tanjung Bandar Utama, Bandar Utama, 47800 Petaling Jaya, Selangor.
Phone Number e-Mail	Office: 03-7722 1001 Dennis.tai@1001tech.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	On-line IT Asset Management System
Project Number	15/2008
Project Leader and Team Members	Leader: Aziz Ismail
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The on-line IT asset management system is a service product which allows small and large companies to manage IT assets. It allows the company to develop advanced solution such as online IT asset management, laptop tracking, remote file deletion and employee Internet tracking.
Publications/Products/ Outcomes	Production of : <ul style="list-style-type: none"> • AssetCentral • AssetXplorer • Assetrax
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed (PI20094610); <i>System to register IT assets automatically using Internet connection</i>, 2 Dec 2009 2. Malaysia Patent Filed (PI20094608); <i>System to track software license using Internet connection</i>, 2 Dec 2009 3. Malaysia Patent Filed (PI20091381); <i>System to track stolen laptop computers using Internet connection</i>, 6 Apr 2009 4. Malaysia Patent Filed (2010001295); <i>System to monitor activities in a computer and sending data to central server via internet connection</i>, 24 March 2010 5. Malaysia Patent Filed (PI20094690); <i>System to automatically delete files on remote computers via internet connection</i>, 2 November 2009 6. Trademark for AssetXplorer and AssetCentral 7. Copyright for e-IT Asset, AssetCentral and AssetXplorer
Additional Information	Gross Sales: Expected RM2.5mil in 2010.
Contact Institution/Entity Address	Authentic Venture Sdn Bhd Block 2, UPM-MTDC , Universiti Putra Malaysia, 43400 Serdang, Selangor.
Phone Number e-Mail	Office: 03-8941 8650 ir.aziz@ventures.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Alpha Prime
Project Number	2/2008
Project Leader and Team Members	Leader: Peter Riel
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Alpha Prime is a Digital Intermediary (DI) workflow binding together specific professional softwares used to create, edit and store digital visual effects and animation work, advertising and Motion Picture Digital Visual Effects conceptualisation, creation, editing and storage.
Publications/Products/ Outcomes	Production of Alpha Prime
IP Status	1. Copyright of Alpha Prime source code (Malaysia) 2. Trademark of Alpha Prime name/logo (Malaysia)
Additional Information	Commercialisation: Targeting Malaysian, South East Asian and European market. Gross Sales: RM5.7mil
Contact Institution/Entity Address Phone Number e-Mail	Base camp VFX Sdn Bhd 12th Floor Menara Chan, Jalan Ampang, 50450 Kuala Lumpur. H/p: 019-222 3266 peter@basecampvfx.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Development of Rapid Development Tool (BriteWorks) and Mobile Applications Development Platform (BriteMobility)
Project Number	2/2007
Project Leader and Team Members	Leader: Fazel Naghshineh
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	BriteWorks allows building of entire applications without writing a single line of code. Enterprise, departmental or personal applications are designed through a series of 'drag and drop' and 'fill-in-the-blanks' actions. The results are immediately available on the web, client-server and mobile devices. BriteMobility is an application developed using BriteWorks and only deployable on the desktop client/server and a browser (web based). With BriteMobility, users will be able to deploy their applications on PDAs and other mobile devices without having to write additional code.
Publications/Products/ Outcomes	Products <ul style="list-style-type: none"> • BriteWorks • BriteMobility
Awards/Certificates	<ul style="list-style-type: none"> • MSC APICTA AWARD 2005 • Performance-Centred Design USA 2005, 2006 and 2007 • 3-star MITI-SME Corp Rating
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed; <i>Customisable Application System</i>, 10 March 2007 2. Pakistan Patent Filed; <i>Customisable Application System</i>, 19 Dec 2007
Additional Information	Commercialisation: UK, Italy, Poland, Bangladesh, Singapore, Jamaica Gross Sales: 2007-2009 – sales of RM1.579mil
Contact Institution/Entity Address Phone Number e-Mail	Britesoft Solutions (M) Sdn. Bhd. Suite G-2, Ground Floor, Incubator 1, Technology Park Malaysia Bukit Jalil, 57000 Kuala Lumpur. Office: 03-8996 8100 H/p: 012-208 0916 fazel@britesoftcorp.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Development of 3rd Generation Intelligent Technology Embedded System (A800)
Project Number	3/2009
Project Leader and Team Members	Leader: Stephen Teang Soo Thong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	BSMART Telematics Services (b'TS) provides secured and seamless integrated telematics services within Fleet Operations, Security Operations, Carrier Operations and Support Operations. b'TS services enable high security for Cargo in transit, real time in-transit visibility, secure routine monitoring, fraud prevention and improve accountability. The b'TS platform is protected by multiple patent, design and trademark applications. Although wholly designed in Malaysia, b'TS world-leading technology has been deployed in many countries including Indonesia, South Africa, China, Thailand and the UAE. The system's intelligence, from the hardware perspective with its unique front end Intelligence and from the software perspective with its web-enabled KPI and reporting capabilities, allows companies in the logistics sector to realise key efficiencies and improvements immediately.
Publications/Products/ Outcomes	Products : BSMART Access Terminal
Awards/Certificates	<ol style="list-style-type: none"> 1. Winner of Merit Award for Best Young Asian Supply Chain Solution Provider Award for SCMLogistics Excellence Awards 2005 2. 2005 MSC Malaysia APICTA - Best Communication Application 3. IPTA R&D expo 2005 competition Gold Medal Award 4. Gold Medal for British Invention of International Award 2005 5. 20th Golden Europe of Quality Award 2006 6. Winner of Malaysia Good Design Mark Award 2006 7. Business Of The Year Award 2007 – Emerging Company 8. 2008 MSC Malaysia APICTA - Best e-Logistics Award 9. Winner of Deloitte Technology Fast 500 Asia Pacific 2008 Program



	<p>10. Winner of Deloitte Technology Fast 500 Asia Pacific 2009 Program</p> <p>11. Top 2 Nominees of Ernst & Young Technology Entrepreneur 2009 Program</p>
IP Status	<p>13 Malaysia Patents Filed on:</p> <ol style="list-style-type: none"> 1. Concurrent GSM and GPS Positioning System and a Method of Thereof 2. An Embedded Geo Fencing Monitoring system 3. A Telematics Device 4. Embedded Hardware for Digital Input and Output Interface 5. A Method of Immobilising a Vehicle 6. An Electronic Seal 7. Hands free Kit for Multifunction Use with a Plurality of Telematics Functions 8. Method of Managing Communication In Telematics Devices 9. A Method to Read The Positioning of Goods Inside Container and the Like for Transportation Purposes 10. An Assisted GPS Positioning and a Method Thereof 11. An Embedded Hardware Enhancement Device 12. Means of Monitoring Status of a Vehicle 13. A Telematics Device Improvements
Additional Information	<p>Industrial Linkages: Intelligent Transport System-Telematics, Advanced Public Transport System, Commercial Vehicle Operation Services</p> <p>Gross Sales: RM2.5 million</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>BSmart Technology Sdn Bhd 5th Floor, Bangunan Cheong Wing Chan, 41-51 Jalan Maharajalela, 50150 Kuala Lumpur. Office: 03-2260 1689 stteang@bsmart-solutions.com</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Development of a Modular Networked Triple Play Set Top Box
Project Number	3/2007
Project Leader and Team Members	Leader: Choong Lee Shyue
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Modular Triple Play DVB-T Set Top Box acts as a digital media content gateway that eliminates the use of the PC as the central delivery medium. Its flexible modular architecture allows the platform to be upgraded or customised to suit the needs of end customers. As a result, flexibility and upgradeability are important features to ensure that the STB design is future proof. The system needs to be able to grow to accommodate other product technologies like HSDPA and WiMAX.
Publications/Products/ Outcomes	Products- CT-820 DVB-T Network Set Top Box Platform
Awards/Certificates	<ol style="list-style-type: none"> Dec 4th 2008, CEEDTec was made a MIMOS Technology Recipient. <p><i>CEEDTec is a co-developer and co-owner of the WiWi Gen 1.5 (WiMAX-WiFi) Router product platform. The WiWi Gen1.5 is the first WiMAX WiFi Router in the world servicing the 2.3GHz WiMAX frequency range. The product has successfully completed inter-operability testing on P1's WiMAX network.</i></p>
IP Status	<ol style="list-style-type: none"> Trademark Registration Nbr: 08-11507 (Malaysia) 13 June 2008 Industrial Design Registration Nbr 08-01623-0101 (Malaysia) 16 Dec 2008 Malaysia Patent Filed (PI20090323) Docking System for Mobile Broadband Device Nbr: 23 Jan 2009
Additional Information	Gross Sales: RM115,000.00
Contact Institution/Entity Address	CEEDTec Sdn Bhd 303-4-5 Krystal Point Business Centre, 11900 Bayan Lepas, Penang.
Phone Number e-Mail	Office: 04-643 4573 fook-main_heng@ceedtec.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	InsightView
Project Number	5/2007
Project Leader and Team Members	Leader: Alex Lim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	InsightView provides advanced retail analytics and deliver the highest business value to retailers. It is capable of assisting retailers in their daily decision making by incorporating innovative functionalities such as Data Mining and Business Performance Optimisation, Pattern Recognition and Visual Intelligence. Data Mining & Business Performance Optimisation allow application of different data mining algorithms and models for different type of analysis within the retail value chain. Different algorithms will be combined for a single analysis issue, if required. Pattern Recognition allow retailer to automatically analyse the type and shape of the data so that appropriate algorithms can be applied to produce the most accurate result automatically. This feature addresses the problem faced by Business Intelligence users in selecting the most appropriate algorithm for a specific analysis. Visual Intelligence displays the complex relationships of information and rules in a clear and easy to understand manner.
Publications/Products/ Outcomes	Products- InsightView Enterprise Edition
Awards/Certificates	Technology Business Review International Award Red Herring Asia Top 100 Finalist MSC APICTA 2009 Finalist 1-Innocert Certification
IP Status	Malaysia Patent Filed; <i>Intelligent sales and demand forecasting systems and methods</i> , 19 June 2008
Additional Information	Commercialisation: Commercialised Gross Sales: RM 219,200
Contact Institution/Entity Address	Clarify Consulting Sdn Bhd C-41-2, Block C, Jaya One, No 72a, Jalan Universiti, 46200 Petaling Jaya, Selangor.
Phone Number e-Mail	Office: 03-7955 1188 alexl@innovation.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Multidimensional Predictive and Forecasting System Using OLAP Technologies
Project Number	14/2007
Project Leader and Team Members	Leader: Jimmy Ting Heng Toon
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Performa provides multidimensional predictive and forecasting capabilities to businesses, and improve business profitability, operational planning and product marketing in areas of forecasting and understanding customer buying behaviour; forecasting and optimising operational cost; forecasting seasonal conditions, promotions, new products; predicting revenue and profitability from different distribution channels; forecasting and optimising manufacturing outputs; predicting threat from competitors; forecasting effectiveness of marketing campaign; understanding historical trend and impact on future earnings; and improving customer ratings by focus branding.
Publications/Products/ Outcomes	Peforma – Datamining. Multidimensional Predictive and Forecasting System using OLAP Technologies
Awards/Certificates	Awarded as 'Best Of Breed' application for Business Intelligence and BSC (Balanced Scorecard) by Microsoft, Intel and HP in the 'Keystone Program' for Asia Pacific.
IP Status	<ol style="list-style-type: none"> 1. USA and International Patent Pending: <i>Method and System for navigation and visualisation of data in relational and multidimensional databases</i> 2. Copyright (Malaysia) Performa Datamining. Multidimensional Predictive and Forecasting System using OLAP Technologies
Additional Information	Gross Sales: RM1.7mil
Contact Institution/Entity Address	Datamicron Systems Sdn Bhd Suite 15-11, Wisma UOA II, 21 Jalan Pinang, 50450 Kuala Lumpur.
Phone Number e-Mail	Office: 03-2166 8870 jimmy.ting@datamicron.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	EA RFID Real Time Location Systems (eRTLS)
Project Number	16/2008
Project Leader and Team Members	Leader: SH Tan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	eReal-time Location System (eRTLS) is the next generation of applications for Active RFID. The system uses Active RFID tags which can calculate its own location in a building. Location is calculated by knowing its distance from a minimum of 3 beacons. R&D includes hardware development of Active Tags and Beacons, wireless communication via mesh networking, algorithms for calculating distance and locations and middleware to enable third party developers.
Publications/Products/ Outcomes	Products: QUATIS eRTLS - Real Time Location System
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed; <i>Method for self calibration of a RTLS</i>, 5 Nov 2009 2. International Patent Filed; <i>Method for self calibration of a RTLS</i>, 5 Nov 2009 3. Trademark for 'Lattice Wireless'
Additional Information	Commercialisation: Pre-commercialisation product Gross Sales: Expected RM500k by end 2010.
Contact Institution/Entity Address Phone Number e-Mail	EA MSC SDN BHD L4-E-11, Enterprise 4, Technology Park Malaysia, 57100 Bukit Jalil, Kuala Lumpur. Office: 03 8994 9722 shtan@eamsc.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	IntegraXor SCADA
Project Number	8/2007
Project Leader and Team Members	Leader: Wong Kin Hoon
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	IntegraXor is a SCADA software that provides real-time graphic visualisation and control of automated production systems across the manufacturing enterprise. Manufacturers can use IntegraXor applications to access and aggregate real-time production process information to drive factory visibility and intelligence. Key customers or end-users are Petronas Carigali Sdn. Bhd. and Jabatan Perkhidmatan Pembetulan, Kementerian Tenaga, Air dan Komunikasi Malaysia.
Publications/Products/ Outcomes	Products: IntegraXor SCADA
Awards/Certificates	2006 MSC-APICTA Award for Industrial Applications Category
IP Status	<ol style="list-style-type: none"> 1. US Patent filed; <i>Method and Syntax for Vector Graphic Animation</i>, 1 Feb 2009 2. US Patent filed; <i>Rapid Software Report Development Tool with Auto Database Handling and Menu Tool-bar plug-in for Application's Report Access</i>, 18 March 2009 3. Trademark for IntegraXor (Malaysia)
Additional Information	Commercialisation: Commercialised Gross Sales: 2007 – 2009 – Sales of RM1.765mil
Contact Institution/Entity Address Phone Number e-Mail	Ecava Sdn Bhd 3-4D, Incubator 3, Technology Park Malaysia Bukit Jalil, 57000 Kuala Lumpur. Office: 03-8996 2800 khwong@ecava.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	E-Cenit Intelligent Information Asset Manager (RFID)
Project Number	7/2008
Project Leader and Team Members	Leader: Muhammad Izzuan Kayat
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>In-Tag can send notification to users and other systems or devices (security alarm system or CCTV) to trigger certain actions automatically, based on the notification e.g. automatically trigger alarm if In-Tag detects that a confidential document or data is moving out from the designated area.</p> <p>Depending on the sensitivity and value of the information/asset, users can define one or more complex business rules to govern the movement and location of the information/asset. Users can also monitor the movement of the information/asset in real time or near real time in a layout similar to the organisation's workspace using the Internet browser or mobile devices. The monitoring environment is configurable by the user without any programming or customisation effort.</p>
Publications/Products/ Outcomes	Products: Intelligent Information Asset Manager Solution
Awards/Certificates	Delloitte Technology Fast 500 (2007)
IP Status	1. Copyright for In-Tag source code (Malaysia) 2. Trademark for In-Tag and D-Tag (Malaysia)
Additional Information	Gross Sales: RM13.51mil
Contact Institution/Entity Address Phone Number e-Mail	E-Cenit Systems Sdn Bhd SME Technopreneur Centre, 2270 Jalan Usahawan 2, 63000 Cyberjaya. Office: 03-7728 8711 Winston@e-cenit.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	ARKIB: Mobile device backup service & delivery platform
Project Number	6/2007
Project Leader and Team Members	Leader: Azlan Shah Shahabudin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>The Rseven service (formerly known as ARKIB Mobile Backup Service and Delivery Platform) allows mobile device users to archive their personal data on a server located on the Internet. In addition, the system also allows the viewing, sharing and blogging of those personal data on a specialised community-driven website.</p> <p>The personal data include call history, audio recording of phone conversations (geo-tagged), text and multimedia messages SMS and MMS (geo-tagged), e-mail, audio and video clips, still digital images (pictures), phonebook contacts and calendar items/events.</p>
Publications/Products/ Outcomes	Products: Rseven.com
Awards/Certificates	Voted as a Top 10 application launched at DEMOfall 2009 (by VentureBeat.com)
IP Status	Malaysia Patent Filed
Additional Information	<p>International Linkages: Plug n Play, Silicon Valley</p> <p>Commercialisation: Commercialised product with 50,000+ free users signed-up.</p>
Contact Institution/Entity Address	Essentialbiz Sdn Bhd A-1-8 Setiawangsa Business Suites Setiawangsa, 54200 Kuala Lumpur.
Phone Number e-Mail	Office: 03-4141 1330 azlanshah@essentialbiz.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	USHOP - Collaborative Shopping and Product Comparison Portal
Project Number	1/2007
Project Leader and Team Members	Leader: Shiew Man Hon
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The USHOPPA.COM portal is an image-based shopping search engine. It allows a fully functioning image and intelligent name searching for online shoppers on Amazon.com and also can be integrated as search widgets to blogs and online media portals.
Publications/Products/ Outcomes	Products: USHOPPA.com - Image Based Shopping Search Engine
Awards/Certificates	<ol style="list-style-type: none"> 1. MSC-APICTA 2002 : Prime Minister's "Best Of The Best" Award 2. MSC-APICTA 2002 : Best Of Software Applications
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed; <i>Fast colour search</i>, 13 August 2008 2. Malaysia Patent Filed; <i>Compound Image Search</i>, 13 Aug 2008 3. Malaysia Patent Filed; <i>Intelligent Name Search</i>, 13 August 2008
Additional Information	Industrial Linkages: Print and Digital Content Publishers Gross Sales: RM 150,000 since completion (18 months)
Contact Institution/Entity Address Phone Number e-Mail	EWARNA.COM SDN. BHD. L03.06 Wisma BU8, 11 Lebuhraya Bandar Utama, 47800 Petaling Jaya. Office: 03-7727 7999 manhon.shiew@ewarna.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Proactive 21CN Behaviour Analyzer and Monitoring System
Project Number	12/2007
Project Leader and Team Members	Leader: Tan Hon Khi
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The system can detect problematic network traffic signature that can be extended for the isolation, analysis and resolution stages. The detection of problematic network traffic will become very crucial for service providers as this will affect their quality of service in the next generation network (NGN), which is also termed as 21CN. The overall system will allow for the early (or real-time) detection, isolation, analysis and resolution (if possible) of the network.
Publications/Products/ Outcomes	Products: <ul style="list-style-type: none"> • Nettadar • Nettoracle • Nettimon
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed; <i>Network-based Intrusion Detection System using ARIMA</i>, 2 Dec 2009 2. Three trademarks filed in Malaysia
Additional Information	Commercialisation: Targeting customers requiring mission critical network services e.g. financial, insurance, telco and content industry Gross Sales: As of June 2010 - RM122k
Contact Institution/Entity Address	FreeNet Business Solutions Sdn. Bhd. Unit 13-4 Block F1, Jalan PJU 1/42 Dataran Prima, 47301 Petaling Jaya, Selangor.
Phone Number e-Mail	Office: 03-7804 1517 sharyn@fnbs.net



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	F-secure Internet Security
Project Number	10/2007
Project Leader and Team Members	Leader: Ingvar Froiland
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>F-secure Internet Security detects, removes and protects systems from new or unknown malicious codes. The system includes three software as in the following:</p> <ol style="list-style-type: none"> 1. Vulnerability Watch - detects system vulnerabilities and fix it before malware causes damage. 2. Network Reputation Service - detects malicious sites or malicious behaviour on the Internet and prevent access 3. Windows Mobile Network Shield - detects and protects Windows Mobile users against malware and hacker attacks.
Publications/Products/ Outcomes	F-Secure Internet Security
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed; <i>Telephony fraud prevention</i>, 21 Jul 2008 2. Malaysia Patent Filed; <i>Website content regulation</i>, 21 Jul 2008 3. Malaysia Patent Filed; <i>Defending against malicious function calls</i>, 17 Feb 2008 4. Malaysia Patent Filed; <i>Detecting shell code insertion</i>, 17 Feb 2008 5. Malaysia Patent Filed; <i>Method for obtaining website appearance signature and its application</i>, 16 Jan 2009 6. Malaysia Patent Filed; <i>Protecting sensitive information from malicious website</i>, 10 Sept 2009
Additional Information	<p>Industrial Linkages: MIMOS and Cyber Security Malaysia</p> <p>Gross Sales: RM7.7mil as of 2009.</p>
Contact Institution/Entity Address Phone Number e-Mail	F-Secure Corporation (M) Sdn. Bhd. Block 3A, Horizon, Bangsar South, No. 8, Jalan Kerinchi, 59200 Kuala Lumpur. Office: 03-2264 0200 Ingvar.froiland@f-secure.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Plasma Translucent VM
Project Number	5/2009
Project Leader and Team Members	Leader: Khor Meow Siang
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>Plasma PVD cum CVD is a new technology which will be created by GF R&D to produce translucent VM. The key features of this technology are as follows:</p> <ul style="list-style-type: none"> • Plasma Technology • PVD Technique combination with CVD Technique for the creation of new material with new material property and new RI (Reflective Index) value which cannot be achieved with just one material. • DC (Direct Current) Helium Plasma for the creation of Hydrophobic Layer <p>Created a new technology using Plasma PVD cum CVD to produce translucent VM (vacuum metallization).</p>
Publications/Products/ Outcomes	Products: Plasma Translucent VM
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed; <i>Method for self calibration of a RTLS</i>, 14 Dec 2009 2. Malaysia Patent Filed; <i>Coating layer for non-metallic transparent substrate</i>, 14 Dec 2009 3. Malaysia Patent Filed; <i>Apparatus for creating hard layer coating during translucent vapour metallisation</i>, 14 Dec 2009
Additional Information	Gross Sales: RM1.5million
Contact Institution/Entity Address Phone Number e-Mail	GF Technology Plot 108, Hilir Sungai Keluang 5, Bayan Lepas Office: 04-641 2950 Meowsiang_khor@gf-technology.com



TOWARDS AN INNOVATIVE NATION :
A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	G.PRO Lean Mover Material Handling System
Project Number	6/2008
Project Leader and Team Members	Leader: Quek Kar Loon
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	GPRO Shopfloor Data Tracking System (G.PRO SDT) is designed to improve production line productivities and worker's efficiencies by eliminating processing wastes and improve work methods. It consists of an automatic data capturing device to eliminate manual data entry (to eliminate job ticket) and processing of data to generate relevant reports for line supervisors and top managements. G.PRO Industrial Engineering Execution System, IEES, is designed to help the factory to come out with standard operation time (SAM) and to record all relevant steps for standardisation and work method improvements. G.PRO Production Planning and Control, PPC, is designed to assist merchandisers and planners to perform capacity planning and production scheduling effectively and efficiently .
Publications/Products/ Outcomes	Products: G.PRO Shopfloor Data Tracking (SDT)
Awards/Certificates	Merit (Industrial Applications), APICTA MSC Award 2008
IP Status	Industrial Design <ol style="list-style-type: none"> 1. Industrial Design of Lean Mover Track / Ministry of Domestic Trade and Consumer Affairs 2. Industrial Design of Lean Mover / Ministry of Domestic Trade and Consumer Affairs Copyright <ol style="list-style-type: none"> 1. "Lean Mover Firmware" computer software pursuant to the Copyright Act 1987 2. "Lean Production Management" computer software pursuant to the Copyright Act 1987
Additional Information	Gross Sales: RM100,000.00
Contact Institution/Entity Address	GPRO Technologies Berhad (GPRO) SME Technopreneur Centre, A-1-06, 2270 Jalan Usahawan 2, 63000 Cyberjaya, Selangor.
Phone Number e-Mail	Office: 03-8319 1545 klquek@gprotechnologies.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Call Centre Technology
Project Number	8/2008
Project Leader and Team Members	Leader: Bernard Yeong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>To enhance existing product to support Predictive Dialer and Hosted Solution to address the Software-As-A-Service market.</p> <p>Predictive Dialer and Hosted Call Centre</p> <ol style="list-style-type: none"> 1. Customer Service and Sales Enquiry 2. Telemarketing 3. Help Desk 4. Collections 5. Customer Surveys
Publications/Products/ Outcomes	<p>Products:</p> <p>EzyTouch PD and EzyTouch Hosted</p>
IP Status	<ol style="list-style-type: none"> 1. Copyright for EzyTouch PD (Malaysia) 2. Copyright for EyTouch Hosted (Malaysia)
Additional Information	Gross Sales: RM3.73mil
Contact Institution/Entity Address Phone Number e-Mail	<p>1001tech IPvox Sdn Bhd (537018-X) (formerly known as IPVox Sdn. Bhd.)</p> <p>FSBM Building, Suite LG 1A, Level Lower Ground, SBM Plaza, 3539 Jalan Teknokrat 7, 63000 Cyberjaya, Selangor</p> <p>Office: 03-7722 1001 bernard@ip-vox.com</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Design & Development of Integrated PCI Express 2.0 IP (Intellectual Property) and Software Driver
Project Number	11/2008
Project Leader and Team Members	Leader: Lai Kok Keong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>Operating System environment that is supporting the PCIe 1.1 / 2.0 Controller.</p> <ol style="list-style-type: none"> 1. Validate the PCIe Controller and Software Driver in FPGA board and external PCIe PHY chip. 2. Validate the PCIe 2.0 Controller (Endpoint) for the PCIe 2.0 Compliance Tests. Design & Development of Integrated PCI Express 2.0 IP (Intellectual Property) and Software Driver
Publications/Products/ Outcomes	Products: Certified PCIe Controller IP by PCI-SIG (PCI Special Interest Group)
Awards/Certificates	<ol style="list-style-type: none"> 1. Passed PCI-SIG Compliance Workshop for PCIe 2.0 Certification 2. Listed on PCI-SIG Integrator's List for PCIe 2.0 Certified IP http://www.pcisig.com/developers/compliance_program/integrators_list/pcie_2.0
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed; <i>An expandable PCI express data link layer flow control initialisation state machine to support multiple virtual channel capabilities with a single instantiation</i>, 29 Jan 2010 2. Malaysia Patent Filed; <i>An optimised PCI express ACK NAK protocol flow with parallel data link layer packet processing and expedited replay event triggering mechanism</i>, 29 Jan 2010 3. Malaysia Patent Filed; <i>A method to transmit SKIP ordered set for clock tolerance compensation on a PCI express link to maximise bandwidth utilisation by introducing SKIP ordered set handling in data link layer</i>, 29 Jan 2010
Contact Institution/Entity Address	Key Asic Berhad 6th Floor, Unit 3, 8, First Avenue, Bandar Utama, 47800 Petaling Jaya, Selangor.
Phone Number e-Mail	Office: 03-7729 3300 kklai@keyasic.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Development of Anti-fraud Management System for Telecommunication Industry
Project Number	13/2007
Project Leader and Team Members	Leader: Ritesh Ranjan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	KBase is to develop an anti-Fraud Management System called FraudArrest which will be highly scaleable, and will deploy hybrid and self-adapting fraud detection and prevention to combat fraud in the telecommunication industry. It will incorporate dual detection technology: rule-based and artificial intelligence neural network. FraudArrest will help telecommunication companies to implement a single consistent convergent solution for their wireless, fixed-line, and hybrid networks.
Publications/Products/ Outcomes	Products: Anti-Fraud Management System for Telecommunication Industry
IP Status	Copyright for: <ol style="list-style-type: none"> 1. FraudArrest version 1.0 2. AI & Statistical Predictive Model Design version 2.0 3. Feature Identification, Rule Induction and Neural Net Model version 1.0 4. Design Paper on Parallel Processing of CDRs to detect fraud 5. Design Specification
Contact Institution/Entity Address	Knowledge Base Sdn. Bhd. 23-2, Block D1, Jalan PJU 1/14, Dataran Prima, 47301 Petaling Jaya, Selangor.
Phone Number e-Mail	Office: 03-7880 0755 ritesh@kbase.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	“Research and Development on Technologies Required for Development of MQAssure™ Endpoint Security Platform”
Project Number	10/2008
Project Leader and Team Members	Leader: Shince Thomas
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>MQAssure™ Endpoint Security Platform is a solution aimed at providing policy control on endpoint in a transparent manner. The major components developed in this platform are:</p> <ol style="list-style-type: none"> 1. Machine Fingerprinting Technology The use of IP address or MAC address to identify an end point in most security solutions increase threats from IP spoofing and MAC spoofing. To address this threats, this technology allows identification of machine based on unique machine characteristics similar to human fingerprinting. Machine Authentication System provides a unique technology to identify a system from their inherent hardware and software characteristics such as processor ID, Hard disk serial number, BIOS information. 2. Endpoint Security Protocol This subsystem provides the confidentiality for the communication between the end points by implementing symmetric cryptography mechanisms. Endpoint security protocol is designed using a Transparent Security Layer in the underlying network protocol stack of the endpoints. This makes the endpoint security protocol available to all the applications in the endpoint without having to undergo any changes in the code or configuration. Endpoint security protocol is aided in the cryptographic processing by a subsystem called Cryptographic Framework which provides a programming interface for the deployment of new standard or custom algorithms. 3. Model Based Distributed Access Control This subsystem provides the filtering features for the data traversing through the protocol stack of the end systems. The incoming and outgoing packets are filtered based on port number, IP address, Protocol & Time Duration. In addition to static rule matching, this technology allows the administrator to define acceptable network I/O characteristics as a model. Administrator can also define possible threat models. Based on these models the access control agent takes assigned actions to protect the system from threats previously not defined.



Publications/Products/ Outcomes	Products: MQAssure™ Endpoint Security Platform
Awards/Certificates	<ol style="list-style-type: none"> 1. MSC APITCA 2009, Merit-Award winner under “Best of the Security” Category 2. Certification of by CSM based on Common Criteria first level; in the process of completing CC EAL 4 certification for our MQAssure™ Integrated Platform
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed; <i>Endpoint unique identifications and authentic system and method thereof with application</i>, 11 Aug 2009 2. Malaysia Patent Filed; <i>Secure endpoint communication systems and method with application</i>, 11 Aug 2009 3. Malaysia Patent Filed; <i>Model based distributed endpoint access control system and metdos with application</i>, 11 Aug 2009
Contact Institution/Entity Address Phone Number e-Mail	MagnaQuest Solutions Sdn. Bhd. B. R. Mogan Reddy, CEO MagnaQuest Solutions Sdn. Bhd. Units A-2-07 & A-2-09, SME Technopreneur Centre Cyberjaya 2270, Jalan Usahawan 2, 63000 Cyberjaya, Selangor. Office: 03-8318 2964, 03-8319 2544 H/p: 016-918 0340 mohan.bommireddy@magnaquest.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	IASA - Intelligent Assistance & Service Agent
Project Number	9/2007
Project Leader and Team Members	Leader: Lim Say Lin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>IASA is an intelligent customer service agent that provides a virtual agent to 'interact' with the customer in human understandable language and provides solution required by the customer. The virtual agent can perform service which is specific to the customer such as retrieve the account balance or update the corresponding address. Customers will be authenticated before they can 'instruct' the agent to perform specific operations that involve customers' private information. The virtual agent possesses the knowledge of a senior customer service agent and is available 24x7 throughout the year. IASA has the following five innovative functionalities:</p> <ol style="list-style-type: none"> 1. Virtual Agent 2. Natural Language Translator 3. Personalised Authentication 4. Case Recognition & Optimisation 5. Agent Knowledge Hub
Publications/Products/ Outcomes	Products: MICCA-IASA
IP Status	1 patent, 1 copyright, 1 trademark
Additional Information	<p>Commercialisation: Commercialised. Sold together with MICCA-Autocare & MICCA-eflow & www.estate123.com</p> <p>Gross Sales: 2009 – RM247,990/=</p>
Contact Institution/Entity Address	Matrix Invent MSC Sdn. Bhd. Unit No 12-1, Neo Cyber Lingkaran Cyber Point Barat, 63000 Cyberjaya, Selangor.
Phone Number e-Mail	Office: 03-7722 2035 saylin@matrixinvent.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Design and Development of Ultra Low Cost UHF RFID Reader Module for Mass Deployment
Project Number	11/2009
Project Leader and Team Members	Leader: Liew Choon Lian
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project focused on the development of an extremely cost effective and minute RFID reader solution on UHF band to expedite mass deployment to cater for various RFID applications. The R&D were into the development of an extremely cost effective and minute RFID reader solution on UHF band.
Publications/Products/ Outcomes	Products: RAPITA™ MD1000R RFID Module
Awards/Certificates	<ol style="list-style-type: none"> 1. MSC-APICTA 2007 : Prime minister's "Best of Best" Award 2. MSC-APICTA 2007: Security , Certified Authentication System (CAS) 3. MSC -APICTA 2007: Communication Application 4. MSC -APICTA 2007: Research & development
IP Status	Malaysia Patent Filed; <i>Radio Frequency Identification Reader for Ultra High Frequency Band</i>
Additional Information	Gross Sales: RM177,335 (RFID readers only)
Contact Institution/Entity Address	MDT Innovations Sdn. Bhd. 3F Iris Smart Complex, Technology Park Malaysia Bukit Jalil, 57000 Kuala Lumpur.
Phone Number e-Mail	Office: 03-8996 8800 rfidteam@mmdt.cc

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	ObsLink
Project Number	12/2008
Project Leader and Team Members	Leader: Prem Anand Raghavan and Norli Mohd Masri
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	ObsLink™ is seamlessly used throughout the ante-natal period of expectant mothers. The system has intelligence to make clinical recommendations to doctors using a rule-based logic method.
Publications/Products/ Outcomes	<p>Products: ObsLink</p> <p>Publications:</p> <ol style="list-style-type: none"> 1. White Paper on IT in Obstetrics, 2010. <i>Obstetrical & Gynaecological Society of Malaysia (OGSM) Conferences</i> – April and June 2010, Kuala Lumpur 2. The STAR Newspaper – Publication in INTECH of the new OIS (June 2010)
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed; <i>An Interface Engine in Obstetric Information System (OIS)</i>, 9 Mac 2010 2. International Patent Filed; <i>A rule base engine in Obstetric Information System (OIS)</i>, 9 Mac 2010 3. Trademark of OIS – ObsLink™ (Malaysia)
Additional Information	Gross Sales: Expected RM6.650mil in 2010.
Contact Institution/Entity Address	Mediclink Systems (M) Sdn. Bhd. IB04, MSC Malaysia Technology Commercialisation Centre, 63000 Cyberjaya.
Phone Number	Office: 03-8313 8180 H/p: 013-621 5265/ 013-361 6224
e-Mail	prem@mediclinksys.com / norraimi@mediclinksys.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Online Games Billing System
Project Number	8/2009
Project Leader and Team Members	Leader: Cheng Boon Kheng
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>SJLv2 is an online game billing system, constructed based on six distinct modules:</p> <ol style="list-style-type: none"> 1. Authentication - By using SJLv2, developers will be able to plug their game content into our platform, and publishers will be able to access the content by using the framework. 2. Content Request - There are various game contents parked under Online Game Service area. When the publishers need to obtain information about a particular game, they will need to pull the information from the Online Game Service. 3. Game Service Request - This module exposes the actual online game (the actual game server) to the players. 4. Profilers - This module processes all the user's data and profiles sent from the publishers. As SJLv2 is designed to handle multiple publishers, this module acts as the main processing centre to manipulate, store, map and commit billing transaction. 5. Billing - The billing module is a high end database engine that keeps every piece of information on the hard drive. The billing module is responsible for storing user profile, credits, transactions, subscription, etc. 6. Game Servers - Game Servers module is a farm of physical servers which host various kinds of online games. These servers are the final game service that players get connected to.
Publications/Products/ Outcomes	Products: SJLv2
IP Status	<ul style="list-style-type: none"> • Patent filed (Malaysia) Online Billing System 6 Aug 2010 • Trademark for "SJLv2" • Copyright filing for "SJLv2".

Additional Information	Gross Sales: Expected RM500k by end 2010.
Contact Institution/Entity Address Phone Number e-Mail	Mobile Arts Sdn. Bhd. Unit C-1-03, Block C, SME Technopreneur Centre 2, 2260 Jln Usahawan, 63000 Cyberjaya Office: 03-8318 0022 Chengbk@mobilearts.asia





COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	MobileHealth2U
Project Number	17/2008
Project Leader and Team Members	Leader: Teoh Seng Jing
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	MobileHealth2U is the first Integrated Mobile Health Portal that synergises the power of emerging mobile communications and web technologies. This unique portal allows users to learn, store and assess health information that makes it possible for individuals, families, and communities to collate, exchange and track a broad spectrum of health related information. MobileHealth2U aims to enable the use of mobile networks and devices in supporting e-care. MobileHealth2U focuses on serving the growing demand for timely and easy to access health information through online mobile health services. MobileHealth2U transforms mobile devices into a one-stop resource for health information and referral needs.
Publications/Products/ Outcomes	Products MobileHealth2U.com
IP Status	Malaysia Patent Filed; <ol style="list-style-type: none"> 1. Concurrent GSM and GPS Positioning System and A Method of Thereof 2. An Embedded Geo Fencing Monitoring system 3. A Telematics Device 4. Embedded Hardware For Digital Input And Output Interface 5. A Method of Immobilizing
Additional Information	Gross Sales: RM1,250.00
Contact Institution/Entity Address	Mobile Health Sdn. Bhd. F5-10-G, Jalan Multimedia 7/AG CityPark, i-City, 40000 Shah Alam, Selangor.
Phone Number e-Mail	Office: 03-5521 8660 sengjing.teoh@mobilehealth2u.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	CORE-TCOKE (Theatre Common Operational Knowledge Engine)
Project Number	7/2007
Project Leader and Team Members	Leader: Jeannifer Tan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>CORE-TCOKE is a knowledge-based engine used for dissemination of information used for operational planning, enhancing situation awareness and understanding in any theatre or area of interest. The product enables users to analyse a wide range of information, which consists of real world objects, in order to gain a spatial, temporal, systems or functional appreciation of the operations in an area.</p> <p>The tool adopts a host of state-of-the-art technologies – LI (Location Intelligence), BI (Business Intelligence), SOA (Services Oriented Architecture) and complex database design. The LI is to provide spatial information of data through an interactive and dynamic map interface. The BI is to gather information from multiple different sources and provide interactive analytic data and reporting, and SOA is used for scheduling, delivering and administering information through industry standard web services.</p>
Publications/Products/ Outcomes	Products: CORE-TCOKE
IP Status	<ol style="list-style-type: none"> 1. Patent file (Malaysia); Data Manager and Analysis Services 2. Trademark: CORE-TCOKE trademark 3. Copyright: CORE-TCOKE copyright
Contact Institution/Entity Address	NKK Technologies Sdn. Bhd. 29B, Jalan SS4C/5, Taman Rasa Sayang, 47301 Petaling Jaya, Selangor.
Phone Number e-Mail	Office: 03-7805 3594 jeannifer.tan@nkktech.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Mobile Technology Using 3D and Multiplayer
Project Number	13/2008
Project Leader and Team Members	Leader: Alvin Edwin Roland De Cruz
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	iGEN is a game engine that is targeted to address the issue and challenges in the mobile Massively Multiplayer Online Gaming (MMOG) development. iGEN allows game developer to focus on the game logic while the platform, rendering and infrastructure functionality is provided by the iGEN. Based on the rules and logic defined by the game developer, iGEN will analyse the player's current state and navigation/interaction with the virtual world in real time. From the analysis, iGEN will generate a game story/path and part of the virtual world that represents the next chapter/stage/mission of the game. iGEN will push the new part of the game story and virtual world to the player's device and depending on the setting, to replace the existing part of the game/virtual world.
Publications/Products/ Outcomes	Products: iGenMobileWorld Gaming Engine
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent filed; <i>Massively Multiplayer Online (MMO) Gaming Platform</i>, 27 Jan 2010 2. Trademark for iGen logo 3. Copyright for iGen source code
Contact Institution/Entity Address	Parade Nine Techno Sdn. Bhd. Suite 18-01, Level 8, Menara MSC Cyberport, No. 5, Jalan Bukit Meldrum, 80300 Johor Bahru, Johor.
Phone Number e-Mail	Office: 65-963701-24 alvin@parade9.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	3DRSS Online Game Engine
Project Number	11/2007
Project Leader and Team Members	Leader: Tan Teck Tong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>The RSS online game engine will be developed as a cross-platform high performance real time 3D engine. It will be a powerful high level API for creating 3D Racquet Sport Simulation Games.</p> <p>Tools will also be produced to provide the interface to the Game Engine so that parameters can be input into developing a Racquet Sports Simulation Game thereby making it easier for the game developers.</p>
Publications/Products/ Outcomes	Product: 3DRSS Online Game Engine
IP Status	1 patent, 2 trademark
Contact Institution/Entity Address	River Walk Multimedia Sdn. Bhd. Unit C-1-3, SME Technopreneur Centre 2, 2260 Jalan Usahawan 1, 63000 Cyberjaya, Selangor.
Phone Number e-Mail	Office: 03-8318 0022 canice@riverwalk.asia



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Research and Development of Real Time Mobile Content Simulation and Delivery System
Project Number	4/2008
Project Leader and Team Members	Leader: Thiagaraja Thirumalai
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>The SHRADBYTE.COM is an integrated suite of software products and solutions for mobile content development, simulation and delivery system from SHRAD COMPUTING SDN BHD that allows mobile content developer to develop, deploy, deliver, and manage mobile voice and data services quickly and cost effectively.</p> <p>The scope of the project consists of development of three major components of SHRADBYTE framework namely Mobile Content Creator, Mobile Content Simulator together with an integrated robust Gateway.</p>
Publications/Products/ Outcomes	Products: ShradByte™
Awards/Certificates	Nominated as Finalist for APICTA Award - 2009
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent filed; <i>Intelligent Perceptual Video coding technique for mobile news broadcasting</i>, 5 May 2009 2. 2 copyright filed (Malaysia) 3. Trademark on ShradByte (Malaysia)
Additional Information	Gross Sales: As of June 2010 - RM423k
Contact Institution/Entity Address	Shrad Computing Sdn. Bhd. (Reg No 760733-D) Unit C-3-06, Block C, 3rd Floor, SME Technopreneur Centre 2 Cyberjaya, 2260 Jalan Usahawan 1, 63000 Cyberjaya, Selangor.
Phone Number e-Mail	Office: 03-8320 1160 support@shradbyte.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Intelligent Sensor for Money Laundering
Project Number	18/2008
Project Leader and Team Members	Leader: Peter Ong Tuck Soon
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Anti Money Laundering System provides anti-money laundering solution with intelligent and straight-through processing capability, known as Coral™ Intelligent Sensor for Money Laundering (iSEM). iSEM is an end-to-end Intelligent straight-through money laundering analysis, detection and processing solution targeted to address the needs of the Financial Services organisation in the area of Anti Money Laundering and Counter Financing for Terrorism (AML/CTF).
Publications/Products/ Outcomes	Products: CORAL iSEM (www.coral-isem.com)
Awards/Certificates	SME/SME Business Award of the Year 2010 Product of the Year for Information Technology
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent filed; <i>Method for administering money laundering</i>, 17 Mac 2010 2. Trademark of CORAL iSEM & Device 3. Copyright of CORAL iSEM
Contact Institution/Entity Address	TESS Innovation Sdn. Bhd. B-2-15, 8 Avenue Business Centre, Jalan Sg. Jernih 8/1, 46050 Petaling Jaya, Selangor.
Phone Number e-Mail	Office: 03-7954 1111 peterong@tessinternational.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Automotive Components Manufacturing Process Optimisation
Project Number	5/2008
Project Leader and Team Members	Leader: Cairul Nadzim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>Metabone™ MRMS is a software tool with the following functions:</p> <ol style="list-style-type: none"> 1. Process raw engineering data inputs using 2D CAD Neutral (DXF), production drawing format. 2. Pattern match 2D geometric shapes and dimensions of production drawing designs with existing 2D geometric shape tools library. 3. Map the above engineering data with production line availability and workstation capability based on both scheduled and actual run conditions. 4. Sequence production job runs into an optimised path in real time.
Publications/Products/ Outcomes	<p>Products:</p> <p>METABONE Manufacturing Requirements Management System (MRMS)</p>
Awards/Certificates	<ol style="list-style-type: none"> 1. INPEX® 2005 Special Award <ol style="list-style-type: none"> a. Best Invention of the Pacific Rim 2. INPEX® 2005 Jury Awards Category <ol style="list-style-type: none"> a. Silver Medal in Engineering b. Silver Medal in Design (Technical) c. Bronze Medal in Automotive d. Bronze Medal in Computer Software 3. INPEX® 2005 Jury Awards Category <ol style="list-style-type: none"> a. Silver Medal in Engineering b. Silver Medal in Design (Technical) c. Bronze Medal in Automotive d. Bronze Medal in Computer Software

IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent filed (PI 20082606); <i>Automatic Extraction of Tables and Labels from 2D CAD Engineering Drawing</i>, 14 Jul 2008 2. Malaysia Patent filed (PI 20082605); <i>Geometric Pattern Matching & Dimension Mapping from 2D CAD Engineering Drawing Tables</i>, 14 Jul 2008 3. Trademark filing for "Metabone MRMS" (Malaysia)
Additional Information	Gross Sales: RM2mil
Contact Institution/Entity Address Phone Number e-Mail	Zilun Systems Sdn. Bhd. AB 22 Accelerator Block, MSC Central Incubator-Accelerator, 63000 Cyberjaya, Selangor. Office: 03-8313 8000 cairul@zilun.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – MGS (DICT)

Project Title	Projek Harapan – Perisian Penulisan Perkataan Bahasa Cina
Project Number	110602
Project Leader and Team Members	Leader: Liew Ean Hoon
Field of Research	ICT – Content Development - eLearning
Project Summary/ Objectives	<i>Projek harapan</i> produces a software for writing Chinese words that facilitate teaching and learning of Chinese Language in schools and other medium. The product not only demonstrates the steps strokes / snippets written Chinese in order, but the meaning of words in two languages. It also highlighted the number of strokes, the cause of stroke, a combination of words, and spelling among others
Publications/Products/ Outcomes	Multimedia DVD for learning Chinese characters writing
Contact Institution/Entity Address	Smart Computer Systems 151, Pekan Karangan, 09700 Karangan Kulim, Kedah.
Phone Number	Office: 04-405 6020 H/p: 012-405 6020
e-Mail	smart_malaysia@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Digitalization of Al-Jazari (Light from a Distant Glory)
Project Number	110603
Project Leader and Team Members	Leader: Meor Azlan Che Saffry
Field of Research	ICT – Creative Multimedia – eLearning
Project Summary/ Objectives	This multimedia presentation is based on Al-Jazari's book. He is an Islamic scholar who wrote about the principles and techniques of manufacturing and explained the complex codification of tacit knowledge. The machines, gadgets and devices described in this book portrayed Al-Jazari as a man with prowess in remarkable invention and innovation even by modern day engineering standards. Some parts of this presentation have been aired in TV to educate the young generation.
Publications/Products/ Outcomes	3D multimedia animated presentation about a renowned Islamic scholar named Al-Jazari and his inventions.
Contact Institution/Entity Address	Mindstation Sdn. Bhd. No 13C, Tingkat 3, Jalan Ampuan Zabedah, Seksyen 9, 40100 Shah Alam, Selangor.
Phone Number	Office: 03-5880 2802 H/p: 012-206 0326
e-Mail	cboothugs@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	CJ the DJ
Project Number	110604
Project Leader and Team Members	Leader: Low Huoi Seong
Field of Research	ICT – Creative Multimedia – Animated TV Series
Project Summary/ Objectives	<p>“CJ the DJ” is a 26 episodes of 22 minutes 2D animation series. It is about a teen and her dream. CJ, a 13-year old girl has only one dream - to share her music with the world. To achieve that, she aims to be the best DJ ever. Along the journey, she faces few hard times. Being ‘rebels with causes’, CJ and her friends help each other and through strong friendship, they also help their parents and teachers as they head into teenage hood.</p> <p>To bring her music to the world, CJ has to start from the bottom by participating in DJ gigs whenever she can – anything from the neighbourhood karaoke restaurants to the local retirement village which later they manage to change the place into a hot crowd.</p>
Publications/Products/ Outcomes	<p>Animation series: CJ the DJ Number of episodes: 26 Episode duration: 22 minutes Age group: pre teen Animation style: 2D</p>
Contact Institution/Entity Address Phone Number e-Mail	<p>Vision Animation Sdn. Bhd. 2nd Floor, No.5, Lorong 19/1 A, Section 19, 46300 Petaling Jaya, 57100 Kuala Lumpur. Office: 03-7957 3526 H/p: 012-208 3802 h.s.low@visionnewmedia.net</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Olden Accommodation, Modern Adaptation
Project Number	110605
Project Leader and Team Members	Leader: Zainariah Johari
Field of Research	ICT – Creative Multimedia
Project Summary/ Objectives	The project is a two 24 minutes seeding documentary about Malaysia heritage. Part 1 & 2 of the Heritage Malaysiana series of technical documentaries on the scientific, technological and innovative lessons from various heritage items of Malaysia. The purpose of the Heritage Malaysiana series is to review and re-learn the various treasures of Malaysia's traditions in a different light - not only from just a cultural-artistic view but more from techno-scientific scrutiny and innovative re-use for the future. This program explores the technological features and advantages of the traditional Malay house scientifically, and how it is interpreted in this modern era of innovation.
Publications/Products/ Outcomes	Documentary: Olden Accommodation, Modern Adaptation Number of episodes: 2 Episode duration: 24 minutes
Contact Institution/Entity Address Phone Number e-Mail	Asia Pacific Videolab Sdn. Bhd. 6, Jalan 13/6, 46200 Petaling Jaya, Selangor. Office: 03-7954 8108 H/p: 013-369 1120 zai@apv.com.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Blue Karipap
Project Number	110606
Project Leader and Team Members	Leader: Chan Moon Kien
Field of Research	ICT – Creative Multimedia – Animated TV Series
Project Summary/ Objectives	Blue Karipap is a 2D 1.5 minutes animation developed for 15 episodes. It is now into an online model animated series. Further information is available at www.bluekaripap.com
Publications/Products/ Outcomes	Mini animation series: Blue Karipap Number of episodes: 15 Episode duration: 1.5 minutes Animation style: 2D
Contact Institution/Entity Address Phone Number e-Mail	Moon Fx Sdn. Bhd. No. 16, Jalan Inai off Jalan Imbi, 50450 Kuala Lumpur. Office: 03-2141 2219 H/p: 012-674 2996 moon@mfx.st

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Ancient Malacca Phase II
Project Number	110607
Project Leader and Team Members	Leader: Mahalil Aisha Jamaluddin
Field of Research	ICT – Creative Multimedia
Project Summary/ Objectives	The projects involved on research, digitisation and development of stereoscopic 3D content of Ancient Malacca during the height of its glory.
Publications/Products/ Outcomes	Multimedia Content: Ancient Malacca Phase II
Contact Institution/Entity Address	Decimal Point Sdn. Bhd. Lot TG1-11, UPM-MTDC Incubation Centre One, 43400 Serdang, Selangor.
Phone Number	Office: 03-8706 2415 H/p: 013-628 2673
e-Mail	lil@decimalpoint.com/mahalil@asia.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	The Sheng Reela Project
Project Number	110608
Project Leader and Team Members	Leader: Mohamed Nazmi Tajul Aros
Field of Research	ICT – Creative Multimedia – Animated TV Series
Project Summary/ Objectives	This project is an action comedy animation television series that uses various characters and locations in the past, present and future dimensions. The main characters are Prince Sheng and his magic animal companion, Reela. The theme of this animation series is the comic adventures of Sheng and Reela, in search of the Sheng's lost kingdom.
Publications/Products/ Outcomes	Animation series: The Sheng Reela Number of episode: 13 Episode duration: 23 minutes Animation style: 2D
Contact Institution/Entity Address	Strategic Park Sdn. Bhd. Blok C 04/2 – C06/2, Pusat Perdagangan Taman Dagang, Jln Dagang Besar, Taman Dagang, 68000 Ampang, Selangor.
Phone Number	Office: 03-4270 2313 H/p: 019-343 2665
e-Mail	nazmiaros@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Portable Virtual Museum
Project Number	110610
Project Leader and Team Members	Leader: Nik Marzuki Nik Muhammad
Field of Research	ICT – Creative Multimedia
Project Summary/ Objectives	This project started on July 2007. This is a collaboration project between National Museum of Malaysia and Kelantan State Museum to produce 3D visualiation of museum artifact.
Publications/Products/ Outcomes	3D Visualization web content for 20 artefacts
Additional Information	Social project for heritage
Contact Institution/Entity Address	VirtualXtreme Sdn. Bhd. 508A, Kompleks Diamond, Bangi Business Park, Jalan Medan Bangi, 43650 Bangi, Selangor.
Phone Number e-Mail	Office: 03-8922 2514 nik@visualxtreme.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Digital Street Map Over Mobile
Project Number	110611
Project Leader and Team Members	Leader: Mohd Taufik Abdullah
Field of Research	ICT – Creative Multimedia – Content Development
Project Summary/ Objectives	This project developed a new medium by utilising the mobile network to deliver street maps.
Publications/Products/ Outcomes	Digital street map over mobile
Contact Institution/Entity Address	Billadam Associates Sdn. Bhd. IB 10 MSC Central Incubator, 63000 Cyberjaya, Selangor.
Phone Number	Office: 03-8313 8196
e-Mail	taufik@billadam.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	ABC Monster
Project Number	110612
Project Leader and Team Members	Leader: Edmund Chan Seng Kee
Field of Research	ICT – Creative Multimedia – Animated TV Series
Project Summary/ Objectives	The “ABC Monsters” is an animation series targeted to pre-school children (age 4-7 years old). The programme has strong educational values where it teaches simple English language by using unique characters, creates interactivity between characters and viewers and attracts young viewers to participate in solving puzzles, riddles and clues.
Publications/Products/ Outcomes	The project output is produced in 2D Digital Animation, rendered in High Definition (HD) resolution. The outputs are: (i) 26 episodes (11 minutes) of animation series (ii) 26 episodes (11 minutes) of animated learning materials (iii) 26 music videos
Awards/Certificates	Malaysia IP Challenge Series in 2006 (organized by MDeC)
IP Status	Developed and Filed for Trademark
Additional Information	International Linkages: Licensed Broadcast Rights to Cartoon Network Asia, Canal + (Eastern Europe), Korea. Commercialisation: Commercialised product Spin-off: Toys and Merchandising Development Gross Sales: Estimated at RM0.5 million
Contact Institution/Entity Address	Animasia Studio Sdn. Bhd. No. 2 & 4, Jalan Sri Jati 2, Taman Sri Jati, 58200 Kuala Lumpur.
Phone Number	Office: 03-7784 6987 H/p: 012-306 0803
e-Mail	edmund@animasia-studio.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Ejen C
Project Number	110613
Project Leader and Team Members	Leader: Md. Fuad Abd. Samad
Field of Research	ICT – Creative Multimedia – Animated TV Series
Project Summary/ Objectives	The project is a 2D creative television animations series with 13 x 23 minute episodes. It is geared to the local and global market. The story revolves around a funny and stylish private investigator trying to solve his cases with the help of his boss.
Publications/Products/ Outcomes	Animation series: Ejen C Number of episodes: 13 Episode duration: 23 minutes Animation style: 2D
Contact Institution/Entity Address	Saymohm Sdn. Bhd. No. 21B, Jalan BK 5A/2, Bandar Kinrara, 47100 Puchong, Selangor.
Phone Number	Office: 03-8076 9496 H/p: 013-398 5009
e-Mail	f08d@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Geng: The Adventure Begins (Geng: Pengembaraan Bermula)
Project Number	040702
Project Leader and Team Members	Leader: Burhanuddin Md. Radzi
Field of Research	ICT – Creative Multimedia – Animated Film
Project Summary/ Objectives	The film “Geng: Pengembaraan Bermula” is the first 3D animated feature film produced by a Malaysian and efforts are being recognised by the Malaysian Book of Records. The total local box office collection of this movie is approximately RM6.31 million. Produced by Les' Copaque Production Sdn Bhd, the film is 100% the work of local talents. Approximately 40 young and enthusiastic Malaysian talents were involved in this project. The spillover income from this project is valued at RM 40 million, through spin-offs such as television series, merchandising, licensing, premiums ,TV commercials and restaurants.
Publications/Products/ Outcomes	<p>Animation Feature Film: Geng: Pengembaraan Bermula</p> <p>Number of film: 1</p> <p>Episode durations: 90 minutes</p> <p>Animation style: 3D</p> <p>Spinoff TV Series:</p> <ol style="list-style-type: none"> 1. 2007 - Upin & Ipin (5mins x 6 episodes) 2. 2008 - Upin & Ipin Setahun Kemudian (5mins x 12 ep) 3. 2009 - Upin & Ipin Season 3 (7mins x 42 eps) 4. 2010 – Upin & Ipin Season 4 (7mins x 42 eps)
Awards/Certificates	<ol style="list-style-type: none"> 1. Best Brand in Animation- Upin & Ipin, Brandlaurette, 2011 2. Malaysia Book of Record, Animation, 2011 3. Brand Leadership Award, World Brand Forum, 2010 4. Jabatan Perpaduan Negara, Duta Perpaduan, 2010 5. Viewers Choice Award, Kidfest Film Fest 2009, Jakarta 2. Anugerah Khas Juri, Filem Festival M'sia, 2009 3. Anugerah Box Office, Filem Festival M'sia, 2009 4. Best Editing, MSC kre8tif Conference, 2009 5. Best Music Score, MSC Kre8tif Conf, 2009 6. Best on Screen Chemistry, Shout Award, 2009 7. International Achievement Award, Finas, 2008 8. Best Start-Up Company, Asia Pacific ICT Award, 2007



IP Status	To date we have 39 registered trademarks in the year 2007 to 2008 and 52 pending applications with characters developed from the film.
Additional Information	<p>International Linkages: The movie has been released in cinemas in Brunei, Indonesia and India. It is the first Malaysian movie ever released in Indian cinemas where the film industry is very competitive. It has also been sold to Disney Channel Asia for 17 territories, Disney Channel India for the Indian Sub-Continent and DVD rights for Russian speaking countries. Upin & Ipin, characters that have been developed for the movie have been successfully commercialised into successful TV series and becoming icons for the children in South East Asia.</p> <p>Industrial Linkages: The movie icons have been successfully commercialised where the company has successfully developed the merchandising, comics, restaurants, carnivals and licensing.</p> <p>Commercialisation: Successfully commercialised the characters into icons and developed businesses along Disney's business model.</p> <p>Spin-off: The spin-offs includes merchandising, licensing, restaurants, games and, the latest, that we are trying to develop is a theme park.</p> <p>Gross Sales: Estimated at RM25 million</p>
Contact Institution/Entity Address Phone Number e-Mail	Les' Copaque Sdn. Bhd. No. 1, Jalan Bowling Padang, G13-G, Seksyen 13, 40100 Shah Alam, Selangor. Office: 03-5511 8089 H/p: 019-320 5716 burhan@lescopaque.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Sayang Terumbu
Project Number	110614
Project Leader and Team Members	Leader: Idris Hashim
Field of Research	ICT – Creative Multimedia
Project Summary/ Objectives	“Sayang Terumbu Karang” is a story that revolves around a group of sea creatures living in a coral reef; they fight for their territories out of jealousy and prejudice. The artworks are 100% inspired by the Malaysian Batik. There are 10 children songs specially written in this story. The animated feature is of 45 minutes in duration.
Publications/Products/ Outcomes	Animation trailer: Sayang Terumbu Animation style: 2D
Contact Institution/Entity Address Phone Number e-Mail	Sage Animation Sdn. Bhd. Lot S26, Tingkat 2, SP Plaza, 08000 Sungai Petani, Kedah. Office: 04-425 6051 H/p: 019-477 7645 itbasesp@tm.net.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Eldorado – Heru (demo/pilot)
Project Number	110620
Project Leader and Team Members	Leader: Amir Irwan
Field of Research	ICT – Creative Multimedia
Project Summary/ Objectives	Heru: The Last Guardian is a 3D fantasy action platform game that takes place in ancient times of Egypt, Greece, Babylon, The Amazons and the fabled Atlantis. The world was peaceful for hundreds of years due to the balancing of the 4 elements of power, viz. Earth, Fire, Water and Wind. These elements were guarded and maintained by a mythical being called the Guardian. The game begins by the disappearance of the Guardian, which resulted in chaos sweeping across the land as the four elements became imbalance, strange magical forces and diseases as well as other creatures have appeared, terrorising the lands.
Publications/Products/ Outcomes	Playable game demonstration for the purpose of showcase for game publishers Name: Heru, The Last Guardian
Contact Institution/Entity Address	Quark Energy System Sdn. Bhd. Suite 1B-1-1, Level 1, Block 1B, Plaza Sentral, Jalan Stesen Sentral 5, KL Sentral, 50470 Kuala Lumpur.
Phone Number	Office: 03-7710 6977 H/p: 019-314 3892
e-Mail	amir@e-onestudio.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Paradise Island & Beaches of Malaysia-Internet, Mobile Version
Project Number	060702
Project Leader and Team Members	Leader: Zaide Zainal Abidin
Field of Research	ICT – Content Media
Project Summary/ Objectives	Myoutdoor.com Sdn. Bhd. has developed the most comprehensive guide for the islands and beaches of Malaysia, covering a number of 22 islands and 3 beaches. The content consists of a text guide to the destinations, a fact sheet, a list of 196 hotels and chalets, 200 GPS points of interest, 9,287 images and 140 videos. The niche content helps millions of Internet and mobile customers worldwide to plan their holidays in the tropical islands and beaches of Malaysia. As the world is moving into a digital era, information dissemination using the Internet and mobile devices has enabled potential tourists to explore holiday destinations at their fingertips. This website has helped to boost the Malaysia tourism industry.
Publications/Products/ Outcomes	Malaysia's best kept secret, the Paradise Islands of Malaysia Portal www.islands.com.my
Awards/Certificates	Finalist MSC APICTA 2008
Additional Information	<p>Commercialisation: Commercialised product</p> <p>Spin-off: www.lens.com.my www.wallpaperforshare.com</p> <p>Gross Sales: Estimated at RM1 million/year</p>
Contact Institution/Entity Address	MyOutDoor.com Sdn. Bhd. 15-01 Jln Padi Emas 3/1, Bandar Baru Uda, 81200 Johor Bahru.
Phone Number	Office: 07-235 1216 H/p: 019-770 1919
e-Mail	zaide@myoutdoor.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Creating a World Class Internet Food Channel
Project Number	060708
Project Leader and Team Members	Leader: Mohd Adly Rizal Mohd Din
Field of Research	ICT – Content Media
Project Summary/ Objectives	This project is devised to position the company as a global player in the media industry specialising on food related programmes and contents. This position provides Malaysia with a strategic economic tool to increase GDP via a global media platform and the export of the Malaysian Agenda through food. FriedChillies achieved this by developing an Internet TV station (FriedChillies.TV) specialising on Asian Food Content, which is highly attractive to both local and global Internet markets to viewers aged between 18 and 40 years. The project is successful in 2 areas - national and global. Locally, we have made information on Malaysian food culture (including local dining at restaurants) more accessible. Globally, FriedChillies has accelerated brand awareness on Malaysia via the same method. This can be tracked via the countless exposure and Malaysia brand received via FriedChillies involvement in international publications such as Wall Street Journal, Times UK and New York Times that accolades Malaysian Food Culture.
Publications/Products/ Outcomes	Products : 7 internet food channels delivered over an internet TV platform Number of episodes: 68 Duration: 618 minutes
Awards/Certificates	1. Winner of New York Food Film Festival 2008 2. Best Food Website by Le Cordon Bleu Media Awards in Australia.
Additional Information	Commercialisation: Commercialised product Gross Sales: Estimated at RM0.5 million
Contact Institution/Entity Address Phone Number e-Mail	Friedchillies Media Sdn. Bhd. 11A-3, Jalan PJU 8/5I, Bandar Damansara Perdana, 47810 Selangor. Office: 03-7710 6809 H/p: 012-286 2676 adly@friedchillies.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Sugar Pal
Project Number	040701
Project Leader and Team Members	Leader: Evelyn Lee Members: Arnold, Luay, Frank, Renaldi, Ismail, Hadi, Jamil, Wan, Acik and Khairul.
Field of Research	ICT – Creative Media – Animated TV Series
Project Summary/ Objectives	Backbone Entertainment Sdn. Bhd. has produced an all-new and original animation TV series called 'Sugar Pal'. This 2D flash animation series is created 100% by Malaysians. The 13 episodes x 23 minutes adventure/education series are targeted to children of 5-7 years old. It is aimed to teach youths about daily challenging childhood lives and the true meaning of friendship.
Publications/Products/ Outcomes	Animation Series: Sugar Pal Number of Episode: 13 Episode Durations: 23 minutes Animation Style: 2D
Additional Information	International Linkages: Worldwide Rights Distribution and Alati Marketing USA Commercialisation: Yes Spin-off: Apple IPOD and Online games Gross Sales: RM500,000
Contact Institution/Entity Address	Backbone Entertainment Sdn. Bhd. 11-3-8, Jalan 3/109F, Danau Business Centre, Taman Danau Desa, 58100 Kuala Lumpur.
Phone Number	Office: 03-7984 6190 H/p: 019-212 3103
e-Mail	elvideo@streamyx.com evelynlee@elvsb.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Ibn Battuta
Project Number	040705
Project Leader and Team Members	Leader: Mohamad Salmi Mohd Sohod
Field of Research	ICT
Project Summary/ Objectives	The project produces a trailer of Ibn Battuta. The story begins in 14th century at Tangiers, with a restless but nonetheless idealistic young man named Ibn Battuta. Born into a family of Islamic legal scholars and highly respected Qadis (Judges), life was good for the young Battuta. Tangiers, being a port city, was host to many travellers and merchants who often shared their adventures in foreign lands, of strange and exotic cultures extending beyond the walls of Tangiers.
Publications/Products/ Outcomes	Animation Series: Ibn Battuta (Trailer only)
Contact Institution/Entity Address	In-Fusion Solutions Sdn. Bhd. Blok D, Level 22, Menara Park, Megan Avenue II, No. 12, Jalan Yap Kwan Seng, 50450 Kuala Lumpur.
Phone Number	Office: 03-2711 8338 H/p: 013-333 0190
e-Mail	msalmis@in-fusion.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Cooking Tube: Video Web Portal for Cooking Malaysian's Favourite Dishes
Project Number	3200744003
Project Leader and Team Members	Leader: Ezmir Mohd Razali
Field of Research	ICT – Creative Content Media
Project Summary/ Objectives	TryMasak is a new media about cooking, a video channel for those who love food and cooking. With the tagline 'Where anyone can masak', visitors can watch more than 1,000 cooking videos of various cuisines (Malay, Chinese, Indian and Western) from TryMasak online portal http://www.trymasak.my . Videos on cooking produced by TryMasak are short and straightforward for faster playback on the Internet. Other features in the portal are tips and guides, food glossary section, recommender section and 'My TryMasak' community section, where registered members can share recipes, tips and guides, and knowledge in food glossaries (with or without video). In addition, the audience can participate in the blog and forum, via the Internet and mobile phone (http://m.trymasak.my)
Publications/Products/ Outcomes	Cooking Tube : Video web portal for cooking Malaysian favourite dishes After rebranded: TryMasak: Malaysia's First New Media Cooking Video Channel
Additional Information	Commercialisation: Commercialised product Gross Sales: Estimated at RM0.8 million
Contact Institution/Entity Address	Geoflex Sdn. Bhd. C-1-2A, SME Technopreneur Centre 2 Cyberjaya, 2260 Jln Usahawan 1, 63000 Cyberjaya, Selangor.
Phone Number	Office: 03-8320 5900 H/p: 013-342 3779
e-Mail	ezmir@geoflex.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Rip Smart
Project Number	3200711004
Project Leader and Team Members	Leader: Steve Bristow
Field of Research	ICT – Creative Multimedia – Animated TV Series
Project Summary/ Objectives	Rip Smart' is an animated TV series for children aged 6 - 10. This project is a collaboration between Malaysians and Americans. The script, casting, recording and preliminary character designs were done in the US. The rest of the production, including storyboard, production design, modelling, animation, sound and post production were made in Malaysia. The objectives of making a pilot episode are to have a 'prototype' of the concept - to gauge how it would work as a TV show and to use it as a marketing tool. Once completed, we aim to learn from the experience and identify ways to improve the idea - technically, aesthetically and commercially. The pilot has been screened at the Hawaii International Film Festival, Kidscreen New York, and won a Digicon6 Regional Award in Tokyo. The producers have signed with Porch light Entertainment, Los Angeles, to be the distributor/co-production partner, and have a pre-sale agreement with FamilyNet cable channel in the USA. Pre-production is now underway to make the full series (26 episodes) in Malaysia.
Publications/Products/ Outcomes	Animation Series : Rip Smart Number of Episode : 1 (pilot) Episode Durations: 24 minutes Animation Style: 3D
Awards/Certificates	Digicon6 Regional Award 2009, Tokyo
Contact Institution/Entity Address	Creative Licence Sdn. Bhd. 7, Lrg Abang Haji Openg 3, Taman Tun Dr. Ismail, 60000 Kuala Lumpur.
Phone Number	Office: 03-7710 7715 H/p: 012-238 1500
e-Mail	steve@creativellicence.net

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Mystic Order Agriculture
Project Number	7200712004
Project Leader and Team Members	Leader: Mohd Ridhwan Mohd Bakir
Field of Research	ICT – Content – Game Development
Project Summary/ Objectives	Mystic Order Agriculture (MOA) is a strategy game developed for iPhone platform and distributed in the Internet through iStore. The Online Database features enables player's performance and achievements to be updated automatically. MOA does not have advanced visual effects, stunning audio capability, impressive 3D engine, spectacular CGI cut-scenes, or engaging online multiplayer capabilities. To make MOA more entertaining, it is developed to focus on unique game-play mechanism and engaging background story and plot, in addition to character development and attachment.
Publications/Products/ Outcomes	Mystic Order Agriculture (MOA) for iPhone Game
Contact Institution/Entity Address Phone Number e-Mail	Studio Caterpillar Sdn. Bhd. 27, Jalan PUJ 2/37, Taman Puncak Jalil, 43300 Seri Kembangan, Selangor. H/p: 013-342 7704 moridh@studiocaterpillar.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Siri Animasi Danial
Project Number	802006
Project Leader and Team Members	Leader: Burhanudin Mohd Yusof
Field of Research	ICT – Content – Animanted TV Series
Project Summary/ Objectives	<p>“Danial” portrays the Malaysian kampung life experiences, its rural background, activities, and culture from the perspective of a protagonist child, while inculcating positive values. The target age group (6-12 years old) also represents the most viable market for animation series in Malaysia and throughout the world. The producer has sold the Malaysian broadcasting rights of the episodes to RTM via one of its programme suppliers at a price of RM28,000 per episode. “Danial” has since became one of the top 10 RTM2 programmes.</p>
Publications/Products/ Outcomes	<p>Animation Series: Danial Number of Episode: 26 Episode Durations: 23 minutes Animation Style: 2D</p>
Additional Information	<p>Commercialisation: Commercialised product Gross Sales: Estimated at RM1.8 million</p>
Contact Institution/Entity Address Phone Number e-Mail	<p>Animatrik / Toonasia Sdn. Bhd. E-5-4, East Wing, Subang Square Business Park, Jalan SS15/4, 47500 Subang Jaya, Selangor. Office: 03-5631 3203 bondmy2@gmail.com</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Ibn Battuta the Animated Series
Project Number	EC080101
Project Leader and Team Members	Leader: Mohamad Salmi Mohd Sohod
Field of Research	ICT – Content – Animated TV Series
Project Summary/ Objectives	The story begins in 14th century at Tangiers, with a restless but nonetheless idealistic young man named Ibn Battuta. Born into a family of Islamic legal scholars and highly respected Qadis (Judges), life was good for the young Battuta. Tangiers, being a port city, was host to many travellers and merchants who often shared their adventures in foreign lands, of strange and exotic cultures extending beyond the walls of Tangiers. Battuta was very much intrigued and inspired by these stories and was earnest to experience the adventures for himself. Endowed with an insatiable desire, Battuta set off from the comforts of Tangiers at the young age to Mecca and many other countries. Battuta returned to Tangiers at the court of the Sultan almost thirty years later and dictated accounts of his journeys to a scholar named Ibn Juzay. These accounts are the only source of information unfolding Battuta's adventures. The title of the legendary manuscript may be translated as A Gift to Those Who Contemplate the Wonders of Cities and the Marvels of Travelling, or famously known as the Rihla or "The Journey"
Publications/Products/ Outcomes	Animation Series: Ibn Battuta Number of Episode: 13 Episode Durations: 23 minutes Animation Style: 3D
Awards/Certificates	DigiCon6 - Winner of the Prize of Effort for the Malaysian Regional Award - 2008
Additional Information	Commercialisation: Commercialised product Gross Sales: Estimated at RM0.6 million
Contact Institution/Entity Address	In-Fusion Solutions Sdn. Bhd. Blok D, Level 22, Menara Park, Megan Avenue II, No. 12, Jalan Yap Kwan Seng, 50450 Kuala Lumpur.
Phone Number	Office: 03-2711 8338 H/p: 013-333 0190
e-Mail	msalmis@in-fusion.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	SOHO.NET.MY
Project Number	720071102
Project Leader and Team Members	Leader: Zaharah Sulaiman
Field of Research	ICT – Content – Portal Development
Project Summary/ Objectives	<p>The main objective of soho.net.my is to create a market place, a platform to serve and facilitate the large number of SOHO enterprises in Malaysia and the region to reach and connect with the market within Malaysia and thereafter globally. The objective also emphasises on the adoption of information and communication technology as a facilitating tool to improve their business marketing and communication processes.</p> <p>Soho.net.my has been developed with multi features integrated through the combination of business and trading applications. The built portal is an efficient and dynamic e-market trading platform which will be useful to the SOHO enterprises to market its 'small-time' products and services for the ever growing and competitive Malaysian / Overseas market. It also provides networking services designed to connect with other start-ups or small businesses elsewhere. It offers a great low-cost approach to access potential new markets by establishing a presence within like clusters or business categories.</p> <p>The project is completed and there will be ongoing data input on members, and other information. Currently the Company is embarking on enhancing the portal features for comprehensive customers convenience.</p>
Publications/Products/ Outcomes	SOHO Portal www.soho.net.my
Contact Institution/Entity Address	Cybernote Sdn. Bhd. 7, Lrg Abang Haji Openg 3, Taman Tun Dr. Ismail, 60000 Kuala Lumpur.
Phone Number	Office: 03-7727 6561 H/p: 019-288 8986
e-Mail	ara_warda@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Ahlus Syifa' Healing Repository
Project Number	4200744001
Project Leader and Team Members	Leader: Suhaimi Ahmad
Field of Research	ICT – Content - Portal
Project Summary/ Objectives	Ahlus Syifa' Healing Repository is project to develop Online Healing Repository based on the refreshing work of Ustaz Haji Abdul Jamil Ahmad. He develops a healing approach called Ahlus Syifa', which promotes the concept of "for healing to happen, a medically distressed person must, first and foremost, recognises and accepts that Allah S.W.T. is the REAL HEALER". One must start with healing his Faith and Beliefs; only then physical healing will happen. Thus, the right Doa, Zikir and prayers are as important as the medicine taken. Physical healing will then be supplemented by the right nutrition, medicinal and food products including the right exercises routine.
Publications/Products/ Outcomes	Ahlus Syifa' Healing Repository Portal: www.a hlussyifa.com.my
Additional Information	Social Community Project
Contact Institution/Entity Address Phone Number e-Mail	Perniagaan Qurba Sdn. Bhd. No.333 Jalan Tengku Maheran 14, Tmn Tengku Maheran, 06000 Jitra Kedah. Office: 04-918 9333 H/p: 012-412 8188 suhaimi@qurba.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Siri Animasi 'Duwi'
Project Number	EC080406
Project Leader and Team Members	Leader: Kamarudin Ismail
Field of Research	ICT – Content – Animated TV Series
Project Summary/ Objectives	This project is a form of animated entertainment series that revolves around the adventures and the journey of a girl named Duwi in the world to find her true origin. The series of 26 episodes is a combination of 2D and 3D animation. This adventure series will be shown on TV.
Publications/Products/ Outcomes	Animation Series: Duwi Number of Episode: 26 Episode Durations: 22 minutes Animation Style: 2D/3D Hybrid
Contact Institution/Entity Address	Quest Animation Sdn. Bhd. No 2-2, 1st Floor, Jln PJS 3/34, Tmn Sri Manja, Jln Klang Lama, 46000 Petaling Jaya, Selangor.
Phone Number	Office: 03-7784 1462 H/p: 016-213 7443
e-Mail	kamn45@hotmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Rasa-rasa Web Mobile Portal
Project Number	EC0802004
Project Leader and Team Members	Leader: Lim Siang Jin
Field of Research	ICT
Project Summary/ Objectives	Malaysia's local food culture, a key national and state heritage and a vital economic asset, warrants research, documentation and the dissemination and sharing of findings, via as many media channels as possible, to develop its potential as a national socio-economic contributor. The Rasa Rasa Web-Mobile portal (RRWMP) initiative, which follows three successful "proofs of concept" in print (Rasa Rasa Penang), basic web (Rasa Rasa: FoodSense. Malaysia) and event (Penang Food Hunt 2007), will extend such work onto a multi-channel platform involving the Internet, mobile and GPS. Through this initiative, RRWMP will cover Kelantan, Perak and the Klang Valley.
Publications/Products/ Outcomes	Rasa-rasa Web Mobile Portal (Pilot) www.rasarasa.net.my (formerly, www.rasarasa.net)
Contact Institution/Entity Address Phone Number e-Mail	Briolinks Sdn. Bhd. 9D, Jalan Medan Tuanku, Medan Tuanku, 50300 Kuala Lumpur. Office: 03-6201 7681 siangjin@gmail.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Heru The Last Guardian
Project Number	EC0804009
Project Leader and Team Members	Leader: Amir Irwan Baharuddin
Field of Research	ICT – Content – Creative Multimedia
Project Summary/ Objectives	Heru: The Last Guardian is a 3D fantasy action platform game which takes places in ancient times of Egypt , Greece, Babylon, The Amazons and the fabled Atlantis. The world has been peaceful for hundreds of years, resulting from a balance of the four elements of power, viz. Earth, Fire, Water and Wind. These four elements are guarded and maintained by a mythical being called the Guardian. The game takes place over the disappearance of the Guardian, which resulted in chaos sweeping across the land as the four elements have become imbalance, and strange magical forces and diseases as well as creatures have appeared to terrorise the lands.
Publications/Products/ Outcomes	Playable game Name: Heru, The Last Guardian
Contact Institution/Entity Address	E-One Studio Sdn. Bhd. Suite 1B-1-1, Level 1, Block 1B, Plaza Sentral, Jln Stesen Sentral 5, KL Sentral,
Phone Number	50470 Kuala Lumpur. Office: 03-7710 6977 H/p: 019-314 3892
e-Mail	amir@e-onestudio.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Stick Man
Project Number	EC0804008
Project Leader and Team Members	Leader: Kee Ju-Hun
Field of Research	ICT – Content – Creative Development
Project Summary/ Objectives	<p>Stick Man is conceived as a social “fix it” project to help the Urbanites. Urbanites face simple daily tasks such as changing a light bulb or a flat tyre and have no idea how to fix them. They also have little or no time to learn how to fix it. It is our intention to provide the Urbanites with instant access to solutions of life's daily problems.</p> <p>Delivery of Fix It solutions are now easier than ever as most of the Urbanites own mobile phones. The mobile phone is now a permanent extension of the Urbanite and the perfect delivery platform for Stick Man's essential Fix It tips. Now solutions to problems can be obtained anywhere and anytime. There is no need to ask embarrassing questions on how to fix it – just download and follow the Stick Man. Stick Man is easy to understand and follow. Minimal usage of text and maximum usage of visual animation will provide a universal language for all to understand, follow and fix it! Furthermore, Stick Man will be mixed in with a healthy dose of comedy to provide much needed laughs from the daily Urbanite pressures.</p> <p>Stick Man will eventually double not only as a fix it solution provider, but an entertainer as well. Its entertainment ability and its universal language will ensure that Stick Man will travel and will be continually watched.</p>
Publications/Products/ Outcomes	<p>Mini Animation Series: Stick Man</p> <p>For Public Message Services</p> <p>Animation Style: 2D</p>
Contact Institution/Entity Address	Accolade Management Sdn. Bhd. Accolade Services Sdn. Bhd., B-2-7, Block B, Megan Avenue 1, 189 Jalan Tun Razak, 50400 Kuala Lumpur.
Phone Number e-Mail	Office: 03-2697 1486 juhun.kee@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Star Rider – Production of An Animated Series for Preschoolers
Project Number	EC080502
Project Leader and Team Members	<p>Leader: Hira Zazalina Zahari</p> <p>Members: Hezeri Akib Nofan, Syed Azral Salim, Fizaril Ihsan Abdul Talib, Faridzul Narami, Indra Qirana, Suzenani Wahab, Azrin Bunaim, Faridil Atras Md Sood, Muhamad Rizal Mustafa, Syed Ahmad Yaser, Fazrina Azizul, Mohd Rashdan Ibrahim Astar and Razali Ismail</p>
Field of Research	ICT – Content – Creative Animated TV Series
Project Summary/ Objectives	Star Riders is a pre-school animated series for children 3-6 years of age. The show aims to expose children of this age to the different sounds and words of Mandarin, Malay and French. Adam, Adele and Li take a magical slide called Star Slide, which brings them to different parts of the world and even to faraway and make-belief lands. They go through amazing adventures whilst learning these three languages.
Publications/Products/ Outcomes	<p>Animation Series: Star Rider – Production of An animated series for preschoolers</p> <p>Number of Episode: 26</p> <p>Episode Durations: 22 minutes</p> <p>Animation Style: 2D and mixed media</p>
Contact Institution/Entity Address Phone Number e-Mail	<p>Enershia Sdn. Bhd. Suite 3A-16, Jln PJU 8/3, Perdana Business Centre, Bandar Damansara Perdana, 47820 Petaling Jaya, Selangor.</p> <p>Office: 03-7710 1770 H/p: 012-3166 630 hira@enershia.com</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Silang, The Animated Series
Project Number	EC0804014
Project Leader and Team Members	Leader: Aziz Mohamad Zaman
Field of Research	ICT – Content – Creative Animated TV Series
Project Summary/ Objectives	<p>The project is entitled ‘Silang, The Animated Series’. The action and thriller animation series uses various local Malaysian animal characters and locations in the present and future times. The main character is called “Silang”, an orphan eagle with his loyal and magical animal companions called “Che Dak”, a porcupine, “Kabut”, a squirrel, “Murai”, a magpie, “Mak Wang”, a honey bear, and “Pak Tu”, an owl.</p> <p>The story revolves around a group of animals living in the Malaysian tropical rainforest. An orphan young eagle has to survive and strive for its dignity. He has to learn the meaning of life and build his self confidence by throwing out of jealousy and not be prejudiced of others. He was rescued and protected by a group of small and weak animals that save him from the strong and arrogant ones, which was led by “Bongkak”, a sea eagle, and his gang, dubbed “The Ego Club”. Besides “Bongkak”, there are “Baran”, a cheetah, “Cengil”, a fox, and “Pak Itam”, a crow. In the journey to adulthood, Silang encounters many obstacles and adventures that teach him and his friends the meaning of life. He learns the meaning of loyalty, sincerity, trust, team work, respect and true friendship.</p>
Publications/Products/ Outcomes	Animation Series: Oscar Hallmark Number of Episode: 13 Episode Durations: 23 minutes Animation Style: 2D
Contact Institution/Entity Address Phone Number e-Mail	Oscar Hallmark No C10-2, Third Floor, Block C, Pusat Perdagangan Taman Dagang, 68000 Ampang, Selangor. Office: 03-4280 1278 azizaman@hotmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Bahasa Melayu Language
Project Number	EC080303
Project Leader and Team Members	Leader: Hayati Hashim
Field of Research	ICT – Content - Portal
Project Summary/ Objectives	<p>This project is the first Bahasa Melayu e-learning course using multimedia technique to uphold Bahasa Melayu through online platform. It is designed based on proven learning model and in line with the school and university curricula. It can also be used as a “crash course” material by tourists and expatriates. This e-learning portal content has been used by more than 1,000 domestic and international subscribers since April 2010. The portal has been used by the subscribers for various purposes. Foreign university students used the system to supplement their Bahasa Melayu courses. Malay Language teachers used it as supporting tools for classroom and tuition’s to expatriates. A case study was conducted for one month in four classrooms at four different schools (primary and secondary schools) using the system for the class sessions. The students loved it and teachers found it very useful. The system has been proven useful for P & P classroom sessions, which were enjoyed by students, and found to be functional for language laboratories.</p>
Publications/Products/ Outcomes	Bahasa Melayu language e-learning portal : www.e-kata.com.my
Contact Institution/Entity Address	Pixel Bytes Sdn. Bhd. 52-1-1B, Jalan Medan PB2B, 43650 Bandar Baru Bangi, Selangor.
Phone Number e-Mail	H/p: 012-699 1528 hhashim@e-kata.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Tenggiling Perak (Trailer)
Project Number	EC0804003
Project Leader and Team Members	Leader: Fadly Semi
Field of Research	ICT – Creative Multimedia – Animated TV Series (Trailer)
Project Summary/ Objectives	Tenggiling Perak is an animated 2D trailer that presents a story revolving around life, adventures, actions and friendships of three best friends, Fadly, Tun Awang Mimi and Nazmi. The story begins when Fadly gets special power by mistake, from the King of Tenggiling. Pengiran Umar who looks after Fadly deeply regrets the incident and seeks to find the cure, but he has since gone missing. The adventure begins when the three friends decide to look for the Pengiran Muda.
Publications/Products/ Outcomes	Animation trailer: Tenggiling Perak Animation style: 2D
Contact Institution/Entity Address	Zenith Animation Sdn. Bhd. A-3A-2, Pelangi Square, Pelangi Damansara, PJU 6, Persiaran Surian, 47800 Petaling Jaya, Selangor.
Phone Number	Office: 03-7729 9266 H/p: 012-300 3340
e-Mail	fadlysemi@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Islamkids.my Portal
Project Number	EC080407
Project Leader and Team Members	Leader: Mohammed Salled Mohd Fadzil
Field of Research	ICT – Creative Multimedia - eLearning
Project Summary/ Objectives	The Islamkids.my portal is a learning content portal with an interactive children characters learning the fundamentals of Islam and moral values in life. It has six interesting titles or modules: MyFirst Solat, MyFirst Iqra', MyFamily, MyFirst Kalimah, MyFirst Adab and MyFirst Arabic.
Publications/Products/ Outcomes	Islamkids.my Portal
Additional Information	Commercialisation: Commercialised product Gross Sales: Estimated at RM100K
Contact Institution/Entity Address	Islamkids Media Sdn. Bhd. No1, Jalan BM 5/5, Seksyen 5, Bandar Bukit Mahkota, 43000 Kajang, Selangor.
Phone Number	Office: 03-5636 4665 H/p: 016-247 6847
e-Mail	salleh.fadzil@islamkidsmedia.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Educational Preschool Series
Project Number	EC080416
Project Leader and Team Members	Leader: Bismillah Khatoon Abdul Kader
Field of Research	ICT – Creative Multimedia – Animated TV Series
Project Summary/ Objectives	<p>Vincent & Friends is an animated television series consisting of sixteen 11-minute episodes aimed at children between the ages of three and six. The series is designed to combine education and entertainment to convey defined learning objectives appropriate for children in this age group. This project intends to provide an educational and structured product that fosters a child's interest in communication skills and the English language.</p> <p>The series revolves around the adventures of two pre-school age children - a boy (Eddy) and his older sister (Rose), and their two magically endowed toys. Vincent, the magic paintbrush, can paint scenes that become 'doorways to discovery' when the children say the right passwords or magic words.</p>
Publications/Products/ Outcomes	<p>Animation Series: Educational preschool series</p> <p>Number of Episodes: 16</p> <p>Episode Durations: 11.5 minutes</p> <p>Animation Style: 2D</p>
Contact Institution/Entity Address	Internaxia Sdn. Bhd. C-G-15, Block C, SME Technopreneur Centre, 2270, Jln Usahawan 2, 63000 Cyberjaya, Selangor.
Phone Number	Office: 03-8318 5768 H/p: 019-218 2130
e-Mail	bismillah@internexia.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Think Like a Scientist Series
Project Number	EC080417
Project Leader and Team Members	Leader: KamalJit Singh
Field of Research	ICT – Creative Multimedia
Project Summary/ Objectives	“Think Like A Scientist” is an educational multimedia series of 16 modules (22 minutes each) that uses video and animation to teach critical thinking skills to the target market of ‘A’ Level, Pre-University and University students. The series is formatted for TV broadcast, DVD sets and internet downloads.
Publications/Products/ Outcomes	Educational multimedia series: Think Like a Scientist No. of modules: 16 Duration of each module: 22 minutes
Additional Information	Gross Sales: Estimated at RM0.7 million
Contact Institution/Entity Address	Global Innovation Research Centre Sdn. Bhd. E10-20 Amcorp Business Suites, Menara Melawangi, Amcorp Trade Centre, 18, Jalan Persiaran Barat, 46050 Petaling Jaya, Selangor.
Phone Number	Office: 03-7957 2110 H/p: 012-393 2668
e-Mail	kamal@GIROnline.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Animasi : Anak-anak Sidek
Project Number	EC080604
Project Leader and Team Members	Leader: Amir Yusuff Member: Mohammad Shadan Hashim
Field of Research	ICT – Creative Multimedia – Animated TV Series
Project Summary/ Objectives	Anak-anak Sidek is an animated series with 26 episodes, which portrays a biography of the renowned Sidek brothers, of international badminton fame. The stories were about the childhood of Dato' Haji Sidek's sons - Misbun, Razif, Jalaini, Rashid dan Rahman. This series is targeted for the younger generation and is full of the good values in life.
Publications/Products/ Outcomes	Animation series: Anak-anak Sidek Number of episodes: 26 Episode duration: 23 minutes Animation style: 2D
Additional Information	Commercialisation: Commercialised product Gross Sales: Estimated at RM 1.7 million
Contact Institution/Entity Address	Pengedaran Jas Sdn. Bhd. No. 2-1 & 2-2, Jalan 9/23E, Taman Danau Kota, off Jalan Genting Kelang, 53300 Setapak, Kuala Lumpur.
Phone Number	Office: 03-4149 6011 H/p: 016-642 2833
e-Mail	yusoffamir@gmail.com bep54@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	e-Falak Online
Project Number	EC080504
Project Leader and Team Members	Leader: Shahrin Ahmad
Field of Research	ICT
Project Summary/ Objectives	This project focuses on creating and managing a reference point and source of information on events, news and activities related to astronomy, in the form of a web portal. Falak Online (www.falak-online.net) is an effort to promote and capture the interest of astronomy enthusiasts in Malaysia. Individuals, groups and government agencies have used Falak Online as an intermediate (a communication) platform to disseminate information, promote seminars and public activities. The founder's interest and passion on astronomy for almost 24 years has helped to promote the science of astronomy to enthusiasts everywhere.
Publications/Products/ Outcomes	www.falak-online.net
Additional Information	Social development project
Contact Institution/Entity Address Phone Number e-Mail	Shahrin Ahmad 11, Jalan Kenanga, SD9/5C, Bandar Sri Damansara, 52200 Kuala Lumpur. H/p: 016-233 3565 shahgazer@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	The Ardh-1 Episode
Project Number	EC080413
Project Leader and Team Members	Leader: Azmi Bahari
Field of Research	ICT – Creative Multimedia – Animated TV Series
Project Summary/ Objectives	The Ardh is a futuristic 2D animation series about a kingdom facing threats in the forms of three ancient warriors - DIKA (land of sea), LANKASUKA (mainland) and KAYANGAN (land of air). The appearance of these warriors was caused by Ammar, who accidentally activated the secret ancient footway. King ARD, the wise ruler of Kota LAMA, sent a special mission called the FOG MACHINE expedition all over the world; it is a humanity mission with the aim to find a special means to weaken the powers of the three warriors. The mission should prevent the warriors from gathering many followers, and finally put them back to where they belong.
Publications/Products/ Outcomes	Animation series: The Ardh Number of episodes: 1 (pilot) Episode durations: 22 minutes Animation style: 2D
Contact Institution/Entity Address Phone Number e-Mail	Virtual Forte Sdn. Bhd. No. 17A, Jalan Pandan Jaya 2/3, Pandan Jaya, 55100 Kuala Lumpur. Office: 03-9274 0726 H/p: 016-256 6181 azmibahari@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Puyoo World
Project Number	EC080709
Project Leader and Team Members	Leader: Azrul Hassani Baharom
Field of Research	ICT – Creative Multimedia – Animated TV Series
Project Summary/ Objectives	The animated series, Puyoo World, is about the perpetual encounters of the fish, namely Puyu, Sepat, Haruan, Kalo and Keli, against Alligator and his followers, Bido and Bibo, in a freshwater river. The motley characters in this story make interesting viewing. Alligator and his followers never tire of disrupting the various activities undertaken by Puyu and his friends. The fishes, however, always manage to outwit Alligator and his gang. Two companies have shown interest in buying Puyoo World to be viewed in international market. One of them is Liangzi, from Suzhou, China, and the other is Angad Film, from Jordan.
Publications/Products/ Outcomes	Animation series: Puyoo World Number of episodes: Nil Episode duration: 23 minutes Animation style: 2D
Contact Institution/Entity Address	Funcel Sdn. Bhd. 97C, Jalan SS25/2, Taman Bukit Emas, 47301 Petaling Jaya, Selangor.
Phone Number	Office: 03-7803 0448 H/p: 012-272 6926
e-Mail	azrul@funcel.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Kalam – Murid Pintar
Project Number	EC080503
Project Leader and Team Members	Leader: Hazniera Romli
Field of Research	ICT – Creative Multimedia – Animated TV Series
Project Summary/ Objectives	Kalam is a 3D animated series presenting the story of schoolchildren, with the theme of stationery as the characters. Kalam is a smart boy in school and always help his friends to solve problems. This series brings positive messages that are able to influence the minds of children and will enhance the good effects.
Publications/Products/ Outcomes	Animation series: Kalam – Murid Pintar Number of episodes: 13 Episode duration: 23 minutes Animation style: 3D
Contact Institution/Entity Address Phone Number e-Mail	Two Tones Sdn. Bhd. 56-1, Biz Avenue NeoCyber , Lingkar Cyberpoint Barat, 63000 Cyberjaya, Selangor. Office: 03-8320 4400 H/p: 013-674 2503 hazniera@2tns.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Blood has Been Spilled
Project Number	EC080804
Project Leader and Team Members	Leader: Denise Tay
Field of Research	ICT – Creative Multimedia
Project Summary/ Objectives	This project involves the development of a 2D/3D game trailer for the client, Ubisoft, in Canada, for the upcoming game release. This project requires the Malaysian team to collaborate with Ubisoft using the local animation and design skills to create the gaming trailer for the promotion of a new game. The primary goal of the game is to carry out assassinations. To achieve this goal, the player must use stealth and variety of intelligence gathering tactics to collect information on their targets. These tactics include eavesdropping, interrogation, pick pocketing, and completing tasks for informers. Fellow assassins may provide information to the player, in exchange for assassination targets or flag collection.
Publications/Products/ Outcomes	Game Trailer Animation Style: 2D/3D
Additional Information	Commercialisation: Commercialised product Gross Sales: Estimated at RM300,000
Contact Institution/Entity Address Phone Number e-Mail	Hue Visualab Sdn. Bhd. Suite A-246, Kelana Centre Point, Jalan SS7/19, Kelana Jaya, 47301 Petaling Jaya, Selangor. Office: 03-7494 0235 H/p: 012-323 8852 denise@huevisualab.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Asuli & Ket
Project Number	EC080801
Project Leader and Team Members	Leader: Noryusmiza Abu Nasir
Field of Research	ICT – Creative Multimedia
Project Summary/ Objectives	The 2D animated series “Asuli & Ket” revolves around an intelligent child named Asuli. Asuli has deep curiosity and loves to try different things and interpret things according to his own way. He has an independent streak, full with tricks, and is mischievous, like other normal children.
Publications/Products/ Outcomes	Animation series: Asuli & Ket Number of episodes: 1 (pilot) Episode duration: 23 minutes Animation style: 2D
Contact Institution/Entity Address	TasminaQ I-Tech Sdn. Bhd. No.11-1B, Jalan UP 1/8, Ukay Perdana, 68000 Hulu Kelang, Selangor.
Phone Number	Office: 03-4105 4836 H/p: 019-318 0277
e-Mail	yusttw@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Sugar Pal
Project Number	EC080711
Project Leader and Team Members	Leader: Evelyn Lee
Field of Research	ICT – Creative Multimedia – Animated TV Series
Project Summary/ Objectives	Sugar Pal' is an all-new and original animation TV series developed by Backbone Entertainment Sdn Bhd. This 2D flash animation series is entirely created by Malaysians. The 13 episodes x 23 minutes adventure/education series is targeted to 5-7 year old children. It is aimed to teach youths of their daily challenging childhood lives and the true meaning of friendship.
Publications/Products/ Outcomes	Animation series: Sugar Pal Number of episodes: 13 Episode duration: 23 minutes Animation style: 2D
Contact Institution/Entity Address	Backbone Entertainment Sdn. Bhd. 11-3-8, Jalan 3/109F, Danau Business Centre, Taman Danau Desa, 58100 Kuala Lumpur.
Phone Number	Office: 03-7984 6190 H/p: 019-212 3103
e-Mail	elvideo@streamyx.com /evelynlee@elvsb.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	UPSR Science Animation Content
Project Number	EC080902
Project Leader and Team Members	Leader: Azri Mohamad Saleh
Field of Research	ICT – Creative Multimedia - eLearning
Project Summary/ Objectives	<p>The method for designing courseware is based on active learning with virtual games approach. The goal is to build a courseware that integrates explanation with animation and makes student an active participant. Each storyboard displays short scenarios/activities and ends with exercises for quick assessment. This new form of visual interactive exercise is implemented to gauge primary students' ability to understand the subject prior to examinations. This courseware is developed with a fun quiz style concept that allows the students to learn Science and English at the same time. Science is the main topic of the courseware and the language used in this program is English. The two topics/themes granted by BTP for the pilot project are as follows: 1. Investigating Force and Energy , 2. Investigating Materials. The two themes are split into nine storyboards, to enhance students understanding of each Learning Object for multimedia development.</p>
Publications/Products/ Outcomes	UPSR Science Animation Content/Courseware Animation Style: 2D
Additional Information	Commercialisation: Commercialised product Gross Sales: Estimated at RM200K
Contact Institution/Entity Address	Intelsoft Sdn. Bhd. No 36-3, Jln Bandar Lima Belas, Pusat Bandar Puchong, 47160 Puchong, Selangor.
Phone Number	Office: 03-5882 7907 H/p: 012-322 0227
e-Mail	azri.intelsoft@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	CE1 (3D CGI Animation Movie)
Project Number	EC080714
Project Leader and Team Members	Leader: Mohd Hezle b Mohd Helan
Field of Research	ICT – Creative Multimedia – Animated Film
Project Summary/ Objectives	CE1 is a feature film with CGI, targeted at children and young adults. The story revolves around a boy with interest in robotics. It is set in a Malaysian background so that it appeals to the local crowd but still maintain its universal appeal as an action adventure robot movie. Being the first robotic movie in Malaysia, this action adventure utilises the state of the art facilities for animation, CGI, special effects, and has an excellent creative team to drive the story. Having gone through meticulous steps to ensure uncompromised quality, we aim to build a community of local robot driven activities, in line with the government's target to nurture creative innovation in Malaysia.
Publications/Products/ Outcomes	Feature Film with CGI: CE1 Film Durations: 90 minutes
Contact Institution/Entity Address	Hez Communications Sdn. Bhd. No.2, Jln PJS 10/7, Tmn Subang Indah, 46000 Petaling Jaya, Selangor.
Phone Number	Office: 03-5632 1800 H/p: 016-208 7219
e-Mail	hezlehelan@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Development of Web-Based Interactive Animations for the Teaching and Learning of Form 4 and Form 5 SPM Science Subjects
Project Number	EC080601
Project Leader and Team Members	Leader: Hanafi Atan
Field of Research	ICT – Creative Multimedia - eLearning
Project Summary/ Objectives	<p>This project proposes the development of web-based interactive computer animations for the teaching and learning of Form 4 and Form 5 Sijil Pelajaran Malaysia (SPM) science subjects of Biology, Physics and Chemistry. Currently, there is no multimedia based interactive computer animations available via the Internet for these subjects that conform to the syllabuses specified by the Ministry of Education Malaysia (MOE). Specifically, this project involves animating the experiments of the Form 4 and Form 5 science subjects. In the online learning environment, experiments are converted into interactive computer animations which are embedded in e-learning platforms so that students can undertake the relevant experiments within the virtual environments.</p> <p>The concept of the animations proposed in this project is in the form of interactive 2-D flash computer animations. Sliders/animations are used to move the frames, one after the other, thus creating moving images where the illusion of continuous movement can be achieved. The movement of the sliders/animations representing the change of the scientific parameters in the experiment and the effect of such changes are represented by the continuous motion of the graphics. It is proposed that a total of 72 experiments for the three subjects will be animated at an average of three animations per month in the estimated two-year period of the project. The deliverables are the successful development of the three animations per month and the successful incorporation of these animations into the i-Teacher e-learning system.</p>
Publications/Products/ Outcomes	<p>72 animated clips insertion for subject of Biology, Physics and Chemistry.</p> <p>The animation can be viewed at: www.i-teacher.com.my</p>



Additional Information	Commercialisation: Commercialised product Gross Sales: Estimated at RM0.5 million
Contact Institution/Entity Address	e-Educator Sdn. Bhd. No. 3, Lintang Nibong, Bayan Baru, 11950 Bayan Lepas, Pulau Pinang.
Phone Number	Office: 04-653 3265 H/p: 012-404 0056
e-Mail	hanafi.atan@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Arnab & Kura-kura Musim ke 3 & 4
Project Number	EC080807
Project Leader and Team Members	Leader: Mohamad Zubir Mohd Zain
Field of Research	ICT – Creative Multimedia – Animated TV Series
Project Summary/ Objectives	The “Arnab & Kura-kura Musim ke-3 & 4” features Rabbit and Friends. The story revolves around their daily activities which appeals to all walks of life, ages and with universally acceptable motives. The primary target audience is children at the age of 5 to 12 years; the series may also appeal to other age groups.
Publications/Products/ Outcomes	Animation series: Arnab & Kura-kura Musim ke-3 & 4 Number of episodes: 26 Episode durations: 22 minutes Animation Style: 3D
Additional Information	Commercialisation: Commercialised product Gross Sales: Estimated at RM0.6 million
Contact Institution/Entity Address	Digilogic (M) Sdn. Bhd. 2-10-1 Presint Alami, Pusat Perniagaan Worldwide 2, Persiaran Akuatik, Seksyen 13, 40100 Shah Alam, Selangor.
Phone Number	Office: 03-7804 0064 H/p: 017-366 8238
e-Mail	zubir.3d@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Food and Beverage Made Easy (FBME)
Project Number	EC080716
Project Leader and Team Members	Leader: Ooi Soo Ching
Field of Research	ICT – Creative Multimedia - eLearning
Project Summary/ Objectives	“Food and Beverage Made Easy” (FBME) is an education and training multimedia series of 16 modules (15 minutes each) that uses video and animation to teach skills and knowledge in food and beverage service sector. The target market is of waiters and waitresses, particularly in the small & medium enterprises (SMEs) hotel and/or restaurants in Malaysia. The series is formatted for sale as DVD sets.
Publications/Products/ Outcomes	Training Material : Food and Beverage Made Easy
Contact Institution/Entity Address	Roxbury Food House Sdn. Bhd. No. 1808-1809B, Jalan Perusahaan Auto-City, North-South Highway Juru Interchange, 13600 Prai, Penang.
Phone Number	Office: 04-399 8285 H/p: 012-478 5667
e-Mail	jeffreYROxbury@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Petrosims, Simulation Training for the Oil & Gas Industry
Project Number	EC080808
Project Leader and Team Members	Leader: Cheryl Sim Mei Chern Member: Christopher Dickson
Field of Research	ICT – Creative Multimedia - eLearning
Project Summary/ Objectives	<p>PetroSims is an innovative training solution that delivers safe and effective preparation for practical and real-life situations in the oil and gas industry. By using leading 3D game technologies, high-end graphics, users are able to experience realistic environments and test scenarios. This first-person-perspective simulation training enables trainees to improve their safety awareness, fight real fire situations, encounter real abandonment procedures and much more. Ultimately, this scenario-based training tool enables more efficient competency assessment and results in cost saving.</p> <p>PetroSims empowers users and enrich their skills with innovative learning and teaching paradigms. By using immersive game technologies, we enable greater human capital development for the oil and gas industry. PetroSims was launched on the 23 March 2010, at the Getenergy event (Global Education and Training for Energy) in Kuala Lumpur. It received recognition from various international oil and gas operators such as Total, Chevron, Saudi Aramco, PDVSA (Petróleos de Venezuela), RasGas Company, and oil and gas training and service providers such as Falck, Petroleum Development Oman LLC, IHRDC, Petroskills and SapuraAcergy. PetroSims has also received positive responses from other local organisations such as Shell Sarawak, Petronas Carigali, Nippon and Murphy Sarawak.</p>
Publications/Products/ Outcomes	Game / Training Simulation: Petrosims Animation Style: 3D



Contact Institution/Entity Address	Kea Studios Sdn. Bhd. 1st Floor, Lot 882 of 875, Waterfront Commercial Centre, Jalan Permaisuri, 98000 Miri, Sarawak.
Phone Number	Office: 08-542 0004 H/p: 016-860 3679
e-Mail	cheryl@keastudios.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Virtual Batu Caves
Project Number	EC081104
Project Leader and Team Members	Leader: Biruntha Letchumi Mooruthi
Field of Research	ICT – Creative Multimedia
Project Summary/ Objectives	The “Virtual Batu Caves” is designed to provide historical background information about the national heritage, where the visitor can virtually walk through the different perspectives of this place by visiting the ancient temple's historical sites, supported with a geological aspects of the place. Virtual Batu Caves is not only an educational tool; it can also enhance and promote Malaysia's tourism development.
Publications/Products/ Outcomes	Interactive multimedia learning CD: Virtual Batu Caves
Contact Institution/Entity/ Address Phone Number e-Mail	Apsra Sdn. Bhd. 81, SS 12/2 E, 47500 Subang Jaya, Selangor. H/p: 012-399 2478 biru_ipr@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	e-Content Underground Utility Mapping Database (ECUMAD)
Project Number	EC081202
Project Leader and Team Members	Leader: Shaifullah Mat Swadi
Field of Research	ICT – Software Development
Project Summary/ Objectives	<p>The project consists of promoting, educating and applying GIS to cater management, cost and accident prevention related to underground utility cables especially on the aims listed below:</p> <ul style="list-style-type: none"> i. Provide better, new and optional method for the authorities and related parties to view and manage the underground utilities as opposed to the use of CAD. ii. Utilising and maintaining permanent electronic as-built underground utility cable files for easy access, hence providing manageable, easy to enhance update system for users to extract information as needed using GIS technology. iii. Provide the analysis for the best practice and safe excavation management for underground utility cable project and works to reduce human fatality and financial losses.
Publications/Products/ Outcomes	e-Content Underground Utility Mapping Database (ECUMAD)
Contact Institution/Entity Address Phone Number e-Mail	Plusline Valley Sdn. Bhd. No. 5A, Tingkat 1, Jalan Sg.3/4, Tmn Sri Gombak, 68100 Batu Caves, Selangor. Office: 03-6189 1300 H/p: 019-334 8334 shaifullah@pluslinevalley.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Your Tiny Surgeon (YTS)
Project Number	EC081102
Project Leader and Team Members	Leader: Mohd Ashraf Kamarul
Field of Research	ICT – Creative Multimedia - eLearning
Project Summary/ Objectives	<p>“Your Tiny Surgeon” animation is very useful for presentation during Continuous Medical Education (CME) at government hospitals to provide surgeons the principles of Maggot Debridement Therapy (MDT). MDT is defined as the use sterile maggot or larvae for the debridement of wounds in human and animal. Historically, maggot have been known to help heal wounds and MDT was implemented successfully in Western and European countries. “Your Tiny Surgeon” is an Informative Multimedia Series of 12 Modules (5-15 minutes each) that use Video and Animation to provide information on the existence of useful flies in the world, teach the application of sterile maggots for MDT as well as the benefit of the treatment.</p>
Publications/Products/ Outcomes	Animated training material: Your Tiny Surgeon (YTS)
Contact Institution/Entity Address Phone Number e-Mail	Medical Biotherapy Sdn. Bhd. No . 9C Jalan SG 3/1, Pusat Bandar Sri Gombak, 68100 Batu Caves, Selangor. Office: 03-6189 1042 H/p: 012-702 0435 medbiotherapy@gmail.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Encyclopedia of Malaysian Natural History
Project Number	EC080708
Project Leader and Team Members	Leader: Lim Kooi Fong Member: Ghazally Ismail
Field of Research	ICT (Web Portal)
Project Summary/ Objectives	<p>The biodiversity of Malaysian tropical rainforests is so immense that less than 1 percent of its millions of species have been studied by scientists for their active constituents and possible uses. To date there is still no comprehensive, one-stop digital storehouse for Malaysia's Natural History content. Much of the country's historical taxonomic content are housed overseas, such as:</p> <ul style="list-style-type: none"> i. The Natural History Museum, London, UK ii. National Museum of Natural History, Leiden, The Netherlands iii. The Field Museum of Chicago, USA <p>Local researchers who wish to have access to such materials stored in other countries have to pay desk fees just to look and record documents of the species (even for making digital images). The Malaysian Encyclopedia of Life aims to address these critical issues with its main objective to bring back the country's natural heritage from these locations via digital means.</p>
Publications/Products/ Outcomes	Encyclopedia of Malaysian Natural History Portal: www.eol.my
Additional Information	<p>International Linkages:</p> <ul style="list-style-type: none"> 1. Moths of Borneo/Natural History Museum, London 2. New Zealand Mosses <p>Gross Sales: NZ\$ 120,000</p>
Contact Institution/Entity Address	Biovis Informatics Sdn. Bhd. 45B, Jalan SS24/8, 47301 Petaling Jaya, Selangor.
Phone Number	Office: 03-7804 7615 H/p: 016-222 1839
e-Mail	kooifong.lim@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	AIRSENSE - Development of a High Resolution Aerial Web Content Database for Malaysia's Economic Development Corridors
Project Number	EC090101A
Project Leader and Team Members	Leader: Ismail Ibrahim
Field of Research	ICT – Creative Multimedia Content
Project Summary/ Objectives	This project is the pilot or showcase of Unmanned Aerial Vehicles (UAV) aerial photo system, the design and development of high resolution imagery content gallery web portal and the acquisition of approximately 50 square km high resolution imagery of focuses Iskandar Malaysia Region Development Corridor. The criteria of selection areas to be acquired and offered in AirSense web portal are based on following: i. area within national development corridors - High interest development area as indicated by by Iskandar Region Development Authority (IRDA). ii. high population and property density. iv. high potential growth areas as stipulated in the development blueprint reports. iv. tourism destination.
Publications/Products/ Outcomes	AIRSENSE portal: http://airsense.geosense.com.my/alpha/ http://www.geosense.com.my/
Contact Institution/Entity Address Phone Number e-Mail	Geo Senses Sdn. Bhd. T06 03, Jln Century Square, Blok 2320, 63000 Cyberjaya, Selangor. Office: 03-8318 7959 / 51 ismaili@geosense.info



COMPENDIUM OF MOSTI FUNDED PROJECTS – E-CONTENT (ICT)

Project Title	Dragon Snooker
Project Number	EC090223
Project Leader and Team Members	Leader: Damien Leong Yiew Choong
Field of Research	ICT – Creative Multimedia – Animated TV Series
Project Summary/ Objectives	This hybrid 2D+3D, 26 episodes animation series, titled “Dragon Snooker”, depicts a fantasy world of futuristic snooker which features real-life Chinese snooker champion – Ding Junhui – as its protagonist. The project is developed in a joint-venture arrangement with global conglomerates from Japan, China and Hong Kong.
Publications/Products/ Outcomes	Animation series: Dragon Snooker Number of episodes: 26 Episode duration: 23 minutes Animation style: 2D/3D Hybrid
Contact Institution/Entity Address	Centraline Animation Sdn. Bhd. 1st Floor, Shoplot 1-12, Perdana The Place, Jalan PJU 8/5, Bandar Damansara Perdana, 47820 Petaling Jaya, Selangor.
Phone Number	Office: 03-7725 0105 H/p: 012-206 8307
e-Mail	damien@centraline.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Talentsoft Talent Management Suite
Project Number	TPF-4001
Project Leader and Team Members	Leader: Lai Kean Men Member: Khoo Pee See
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	TMS is an integrated enterprise class human capital development solution; consist of the e-recruitment, e-learning and e-performance system.
Publications/Products/ Outcomes	Software development
Additional Information	Gross Sales: RM2,500.00
Contact Institution/Entity/ Address	Talentsoft Technology Jtrend, MSC Malaysia Tech Comm, Multimedia University, 63000 Cyberjaya.
Phone Number	Office: 03-3168 2707 H/p: 016-295 2856
e-Mail	keanmeng1975@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	LegalOffice
Project Number	TPF-4012
Project Leader and Team Members	Leader: Ng Sheau Feng Member: Liang Yet Lew
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	General purpose practice management software for legal services industry & peripherals e.g. Property, Financial, Insurance & Statutory Bodies (Commonwealth).
Publications/Products/ Outcomes	Software development
Additional Information	Gross Sales: RM100,000.00
Contact Institution/Entity Address Phone Number e-Mail	Lex 10 Sdn. Bhd. C1-08-5 Vista Komanwel Seri Petaling 57000 Kuala Lumpur H/p: 012-488 6473 ngsf@futurevision.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	SMSBicara
Project Number	TPF-4014
Project Leader and Team Members	Leader: Noraini Ali Member: Ahmad Relauddin Ismail
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	SMS Bicara - How to learn reading al-Quran via VOIP and SMS services.
Publications/Products/ Outcomes	Support services
Contact Institution/Entity Address Phone Number e-Mail	Techreach Solutions 1-1L, Jalan Pandan 3/10 Pandan Jaya, 55100 Kuala Lumpur Office: 03-8733 0513 H/p: 013-341 1502 wani74@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Blu-Wireless
Project Number	TPF-4019
Project Leader and Team Members	Leader: Zulfahan Pagon Member: Mohamed Jalaluddin Mohd. Ismail
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A specialised product that serves memory market for mobile devices with added storage on the fly using available technology.
Publications/Products/ Outcomes	Hardware design
Contact Institution/Entity Address Phone Number e-Mail	Blu Wireless B115, Block B, Kelana Square, Jln SS7/26, Kelana Jaya, 47301 Petaling Jaya, Selangor. Office: 03-7803 1006 H/p: 016-2166006 zulfahan@bridgewireless.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	PixPocket
Project Number	TPF-4018
Project Leader and Team Members	Leader: Aaron Ajit Gill-Wang Member: Paulvinder Tan Teck Kheong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Web-based contact management, email/SMS marketing campaign manager and info-on-demand service.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Salient Platform 15-2, Plaza Danau 2, Taman Danau Desa, 58100 Kuala Lumpur. H/p: 017-369 8089 sinner_g98@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Virtual Books for Children
Project Number	TPF1-4001
Project Leader and Team Members	Leader: Edwin Ong Yong Yeow Member: Eleena Ong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Combination of the static nature of printed material with mediums like computer games, film, and video along with a 3D animated virtual books will result in a simulation of physical hardcover books on the computer. Users will flip through its pages with a click of the mouse button; the illustrations and content will come to life just like the magical books in the Harry Potter movies.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address Phone Number e-Mail	Pixiries 37, Jalan Loh Poh Heng, Tanjung Bungah, 11200 Pulau Pinang. Office: 04-890 7280 H/p: 012-447 0047 edwin@pixeries.com

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Occupational Safety and Health Management System (OSHMS)
Project Number	TPF1-4009
Project Leader and Team Members	Leader: Wan Cheng Huat Member: Nicholas Ong Swee Heng
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Online web-based occupational safety and health management system (eOSHMS).
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	EOSHMS Sdn. Bhd. No 8, PJS 9/18, Bandar Sunway, 46150 Petaling Jaya, Selangor. Office: 03-5638 1608 H/p: 017-3939 372 Chone_glwk@yahoo.com wanchenghuat@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Mobile Information Tagging Engine (MITE)
Project Number	TPF1-4027
Project Leader and Team Members	Leader: Amirudin Md Isa Member: Jafizwaty Ishahak
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Research, development and commercialization of integrated communication framework to bridge the gap between mobile devices, tagging objects & back-end systems using near field communication technology (NFC) to enable interactive mobile content.
Publications/Products/ Outcomes	Interactive Mobile Content: Mobile Tagging, Smart Poster, Mobile Advertising, Mobile Payment
Awards/Certificates	MSC Malaysia Status
Additional Information	Commercialisation: Yes Gross Sales: RM350,000.00
Contact Institution/Entity/ Address Phone Number e-Mail	Crespro Technologies Sdn. Bhd. (769210-A) NW-03A-23, Cova Square, Jalan Teknologi, PJU 5, Kota Damansara, 47810 Petaling Jaya, Selangor. Office: 03-6142 3911 miamir@crespro.com URL : www.crespro.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	e-Commerce & Online Intercative Product Customizer Application
Project Number	TPF1-4038
Project Leader and Team Members	Leader: Syazirul Azman Shair Member: Norshida Zid
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Automatic generation of mini-website and sell them under a profit sharing basis. Customers can customise their design templates.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Urekka Online 23, Jalan Sri Siantan 47, Taman Sri Andalas, 41200 Klang, Selangor. Office: 03-3374 6080 H/p: 019-477 6517 syazirulazman@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Global Affiliate Network Provider and e- Commerce Processing Enabler
Project Number	TPF1-4041
Project Leader and Team Members	Leader: Nor Kamil Ahmad Zukni Member: Hatim Ismail
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Billing and marketing services enabler for vendors and suppliers to sell digital products via the internet
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address	Ivy Ritz Sdn. Bhd. 11A-3, PJU 8/5 (1), Damansara Perdana, 47820 Petaling Jaya, Selangor.
Phone Number	Office: 03-7880 4260 H/p: 013-344 3536
e-Mail	kamil@strongweb.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	VTB -Multimedia Travel Content System Incorporated with GPS
Project Number	TPF1-4043
Project Leader and Team Members	Leader: Irnie Amelia Zainal Member: Chew Pang Hua
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	It is a multimedia travel content system incorporated with GPS devices to replace or complement normal map or guide book. It is to assist locals and overseas tourists to navigate and understand tourist spots/information more conveniently. The content also includes the latest promotion and e-coupon system to enhance their stay in Malaysia.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	VTB Sdn. Bhd. Suite 1707, 17th Floor Kenanga International, Jalan Sultan Ismail, 50250 Kuala Lumpur. H/p: 019-314 9682 irnie@celcom.com.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Analytic & Predictive Software for FOREX Market
Project Number	TPF1-4045
Project Leader and Team Members	Leader: Tai Boon Seng Member: Edward Tai Lik Yii
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Envisage FX is a financial analysis engine for the FX spot market.
Publications/Products/ Outcomes	Software development
Additional Information	Gross Sales: RM180,000.00
Contact Institution/Entity Address Phone Number e-Mail	Envisage Software Sdn. Bhd. M-3-19, Plaza Damas, Sri Hartamas, 50480 Kuala Lumpur. Office: 07-467 1145 H/p: 012-701 2119 bentbs@hotmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	A Comprehensive Internet Content Filtering and Management Solution
Project Number	TPF1-4048
Project Leader and Team Members	Leader: Tan Su Tung Member: Alwin Kumar Rathinam
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	An extensive and multifunctional internet content filtering/management solution that specialised in maintaining healthy internet content based on Asian cultures and values.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	Solutioniser Labs Sdn. Bhd. No 82, Jalan Puteri 8/3, Bandar Puteri, 47100 Puchong, Selangor .
Phone Number	Office: 03-8062 6826 H/p: 012-208 1895
e-Mail	sutung@gmail.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Sistem Amalan Nasihat Wajar (ANSAR)
Project Number	TPF1-4057
Project Leader and Team Members	Leader: Mohammad Salleh Mohamad Member: Nor Shahrin Haron
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	In-house software development focusing on software based Islamic Financial Services especially the Islamic Insurance (Takaful). The software will enable the Takaful agents to carry out PAP (Proper Advice Practices) process which is a requirement by Bank Negara Malaysia. It will also enable agents to manage their prospects efficiently.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Wide Knowledge Sdn. Bhd. 907C, Tingkat 4, Kompleks Diamond, Bangi Business Park, 43650 Bandar Baru Bangi, Selangor. Office: 03-8925 6317 H/p: 019-359 2113 salleh.mohamad@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Mobile Marketing/Advertising Solution
Project Number	TPF1-4060
Project Leader and Team Members	Leader: Saravanakumar Thevar Yohevel Member: Eswaran Yohevel
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/Objectives	Mobile marketing that can easily upload ring tones and movies through mobile phone.
Publications/Products/Outcomes	Creative multimedia content
Contact Institution/Entity Address	E-Jaaring.Com No 141-1, Lorong Haruan 5/5, Oakland Commerce Square, 70300 Seremban, Negeri Sembilan.
Phone Number	Office: 06-7679 332 H/p: 012-646 3981
e-Mail	takalika_man@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Plug & Play Server for SMEs & Schools
Project Number	TPF1-4063
Project Leader and Team Members	Leader: Muhammad Ghazali Tahir Member: Razali Abdul Majid
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/Objectives	A customised mobile server software appliance for SMEs companies.
Publications/Products/Outcomes	Software development
Contact Institution/Entity Address	Serverworx 258-B, Jalan Bandar 12, Metro Melawati, 53100 Kuala Lumpur.
Phone Number	H/p: 016-612 5282
e-Mail	zali@serverworx.org



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Xeus: Expert Optimisation GIS Software for 2G and 3G Radio Networks
Project Number	TPF2-4003
Project Leader and Team Members	Leader: Andre Sean Sequerah Member: Chan Huan Kean
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The development of mobile network GIS software for an expert system capable of identifying network problems in 2G and 3G radio networks. The software is an aid to Radio Planners and Optimisation engineers in Mobile Operator's engineering departments to be used for analysis and improvement of network quality.
Publications/Products/ Outcomes	<ol style="list-style-type: none"> 1. Prototype of Expert Software System 2. The Desktop Client software prototype was able to import log-files from Ericsson and Nokia data collection tools. Running its own algorithms on these logs, the software was able to detect a substantial number of normally recurring network problems which cause Quality of Service issues.
IP Status	Copyright; Trade Secret
Additional Information	<p>Commercialisation: Commercialised in 2008.</p> <p>Spin-off: Server based multi-data source , multi-vendor optimisation platform</p> <p>Gross Sales: RM751,102 (2008-2009)</p>
Contact Institution/Entity Address	Aexio Software Sdn. Bhd. Suite 1107, Block B, Phileo Damansara I, No. 9, Jln. 16/11, 46350 Petaling Jaya, Selangor.
Phone Number	Office: 03- 7665 0255 H/p: 016-255 8000
e-Mail	andre.sequerah@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Mobile Web Middleware
Project Number	TPF2-4007
Project Leader and Team Members	Leader: Chu Tzu Ming Member: Pun E-Ken
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Mobile web middleware for mobile user to create, aggregate, convert and monetise internet web content. The features include social book marking, mobile advertising networking, MP3 transcoding, avi & flash files into efficient format such as 3GP and MMS.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Mobvides 24, Jalan SS 3/2, 47300 Petaling Jaya, Selangor. Office: 03-5633 5340 H/p: 019-316 8813 tzuming@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Digital Commerce Network to Connect Online Advertisers with Publishers
Project Number	TPF2-4009
Project Leader and Team Members	Leader: Jasim Pura Puthucheary Member: Naleen Nair Sekaran Nair
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Emagin AdBank is an intermediary that provides technology and services to connect online advertisers with publishers in a pay per performance revenue model.
Publications/Products/ Outcomes	Internet based businesses
Additional Information	Gross Sales: RM1,118,763.00
Contact Institution/Entity Address Phone Number e-Mail	Emagin Sales Network No 1-1, Prisma Ville, Jalan 26A/70A, Desa Sri Hartamas, 50480 Kuala Lumpur. Office: 03-6203 2137 H/p: 012-288 8918 jasim@emagin.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	FBBI
Project Number	TPF2-4011
Project Leader and Team Members	Leader: Roziah Abdul Ghani Member: Roshimah Abdul Ghani
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Software application that is specialised in hospitality and F&B related solution.
Publications/Products/ Outcomes	Software development
Additional Information	Gross Sales: RM60,000.00
Contact Institution/Entity Address Phone Number e-Mail	Insight Sdn. Bhd. No.1, Second Floor, Jalan Peniaga U1/34, Hicom-Glenmarie Industrial, 40150 Shah Alam, Selangor. Office: 03-7956 7959 H/p: 019-660 8549 zeegerber@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	A Global Real Time News Portal
Project Number	TPF2-4012
Project Leader and Team Members	Leader: Premesh Chandran Jeyachandran Member: Aizuddin Akmal Ahmad
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A global real time news portal which offers worldwide breaking news videos uploaded by users (citizen journalist). It is fully integrated real-time, video-based and community-driven news site. Includes incoming mobile phone broadcasts and instant videos sent via MMS or 3G phone network.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address Phone Number e-Mail	247 Media Sdn. Bhd. 48, Jalan Kemuja, Bangsar Utama, 59000 Kuala Lumpur. Office: 03-5634 4147 H/p: 017-878 3900 prem@malaysiakini.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	A Wireless Automated Power Meter Reader
Project Number	TPF2-4013
Project Leader and Team Members	Leader: Khoo Han Wei Member: Chong Zan Kai
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Wireless automated power meter reader is an integrated wireless control and sensor networks for the purpose of automatic reading power and controlling meters remotely.
Publications/Products/ Outcomes	Software development
Additional Information	Gross Sales: RM497,213.00
Contact Institution/Entity Address	Xirien Suite 1119, Level 11, Block A4, Leisure Commerce Square, 46150 Petaling Jaya, Selangor.
Phone Number	Office: 03-8075 5581 H/p: 013-932 3539
e-Mail	hanwei@forwen.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	A Project Management System for Cabling Contractors
Project Number	TPF2-4014
Project Leader and Team Members	Leader: Ngu Kee Kui Member: Ting Kok Hwa
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Cloud-computing project management system for infra-development industries, such as telco, power (TNB, oil & gas), water, civil (railway, road & highway, buildings) town councils, development & maintenance of government agencies.
Publications/Products/ Outcomes	Ability to monitor Real-Time project data from the ground, increase project productivity and profitability.
Awards/Certificates	MSC Achievement Award – Best Sales Performance
IP Status	Trademark 'SOR' and Copyrighted SOR products.
Additional Information	International Linkages: SingTel Singapore Industrial Linkages: Telekom Malaysia (TM) Technology Licensing: Telekom Malaysia JKH and Mini JKH Contractors (50licensing) on SaaS(Software-as-a-Service), MAXIS and MAXIS Contractors on SMS Commercialisation: Telco Industry at present moment Spin-off: From SOR SYSTEM SDN BHD Gross Sales: RM 1,319,042.00
Contact Institution/Entity Address	SOR Systems Sdn. Bhd. Level 30, Menara MSC Cyberport, No.5, Jln Meldrum, 80300 Johor Bahru, Johor.
Phone Number	Office: 07-387 9318 H/p: 019-772 0762
e-Mail	stephen@sor.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	AGE Homework Tools Enables Self-correcting and Small Sized Worksheets/Tutorials
Project Number	TPF2-4016
Project Leader and Team Members	Leader: Foo Ho Kok Member: Looi Siew Kin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	AGE paperless homework has developed AGE by using older OS with DOS/Windows combination to create a tiny sized but powerful multimedia content that can reach out to anyone, anywhere and anytime.
Publications/Products/ Outcomes	Creative multimedia content
Additional Information	Gross Sales: RM124,900.00
Contact Institution/Entity Address Phone Number e-Mail	Paperless Homework Sdn. Bhd. 5-2, Jalan 2/137B, Resources Industrial Centre, Off Old Klang Road, 58000 Kuala Lumpur. Office: 03-7980 9901 H/p: 019-375 4266 paperlesshomework@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Software Application for Virtual Design of Robot Manipulators
Project Number	TPF2-4018
Project Leader and Team Members	Leader: Lee Jer Vui Member: Sazlina Mat Said
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Software application for virtual design of robot manipulators for the education and manufacturing sectors.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	MYFINGO Sdn. Bhd. A-8-8 Oakleaf Park Condo, Persiaran Bukit Jaya, Taman Bukit Jaya, 68000 Ampang, Selangor.
Phone Number e-Mail	H/p: 012-355 6140 jervui@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(DICT)

Project Title	Developing High Resolution Aerial Imagery Content of Iskandar Malaysia Region (Using Unmanned Aerial Vehicle)
Project Number	TPF2-4019
Project Leader and Team Members	Leader: Ismail Ibrahim Members: Major Rashid Mydin, Mohd Safie Mohd and David Low Jia Wei
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Utilising the latest UAV technology, acquiring high resolution images of high interest area within Malaysia Economic Corridor for planning, mapping and project monitoring.
Publications/Products/ Outcomes	www.geosense.com.my
Additional Information	International Linkages: Quantalab, Cardoba Spain. Industrial Linkages: GIS, Remote Sensing and Unmanned Aerial Vehicle Commercialisation: Commercialize since September 2010 Spin-off: Civilian Unmanned Aerial Vehicle For Remote Sensing and Mapping Gross Sales: RM150,000.00
Contact Institution/Entity Address	Geo Sense Sdn. Bhd. 79A, Jalan Seri Impian 1, Taman Impian Emas, 81300 Skudai, Johor.
Phone Number e-Mail	H/p: 019-726 6411 ismaili@geosense.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(DICT)

Project Title	Enterprise Engineering Design and Simulation Tool for SME Manufacturers
Project Number	TPF2-4021
Project Leader and Team Members	Leader: Foo Fook Min Member: Koh Lee Ching
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Enterprise engineering design and simulation tool for SME manufacturers such as automatic parts, metal, plastics, electrical and electronic products.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	Automated Design Xpress Sdn. Bhd. Unit 313 & 315, Block C, Kelana Jaya Square, 17, Jalan SS7/26, Kelana Jaya , 47301 Petaling Jaya, Selangor.
Phone Number e-Mail	H/p: 012-634 1855 foofookmin@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Global E-commerce Digital Copyright Depository
Project Number	TPF2-4022
Project Leader and Team Members	Leader: David Oh Kit Yan Member: Renuka Senathipathy
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Secured Web based digital copyright depository where owners/creators can electronically store their IPs. In the event of dispute, the ownerscreators can retrieved their certificate of deposit as independent proof that their copyright existed at a certain time.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Ultra Bridge Sdn. Bhd. Suite B-10-11, Plaza Mont Kiara, 50480 Kuala Lumpur. H/p: 012-395 5884 david@mindvault.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Global Distribution System (GDS) for Travel Industry in Malaysia
Project Number	TPF2-4024
Project Leader and Team Members	Leader: Halim Moktar Member: Melia Masram
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Global Distribution System (GDS) for travel industry to enable real time hotel checking and booking of hotel rooms.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Integrated Distribution Solutions Sdn. Bhd. 9B, Jalan Pandan Indah 4/6A, Pandan Indah, 55100 Kuala Lumpur. Office: 03-6272 5651 H/p: 019-330 1655 halim@ashtravel.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	A Device that Incorporates Bluetooth Technology for the Purpose of Reminding the Users of Their Belongings
Project Number	TPF2-4026
Project Leader and Team Members	Leader: Wong Kum Theen Member: Jayanthi Maniam
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Blue Alarm is a device that incorporates Bluetooth technology. The purpose of this device is to remind the users to take their belongings in order to reduce the occurrences of forgetful mishaps. Besides that, it also can be used to prevent pickpocket. It reminds the users by beeping and vibrating when the belongings are away from them.
Publications/Products/ Outcomes	Hardware design
Contact Institution/Entity Address	Blue Alarm Sdn. Bhd. No 42, Jalan Delima 1/1, Subang Hi-Tech, 40000 Subang Jaya, Selangor.
Phone Number	Office: 03-3323 0511 H/p: 016-251 7615
e-Mail	dexter.ktwong@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Musical Cartoon Series Called 'Cingkus the Blues'
Project Number	TPF2-4028
Project Leader and Team Members	Leader: Adley Azamin Zulkifli @ A. Mansor Member: Mohamad Nazri Abd Karim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/Objectives	It is a 23 minutes English animation pilot project called Cingkus.
Publications/Products/Outcomes	Creative multimedia content
Contact Institution/Entity Address	SANA Corporation Sdn. Bhd. 6 Jln BP 11/7, Bandar Bukit Puchong 2, 47100 Puchong, Selangor.
Phone Number	H/p: 016-237 3372
e-Mail	adrtz_design@yahoo.co.uk; adley@sana.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	An Online-greeting Card Portal Selling User Created Designs
Project Number	TPF3-4002
Project Leader and Team Members	Leader: Lau Chak Onn Member: Alvin Yu Toh Woon
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/Objectives	Foldees.com is an online greeting cards portal selling users created designs and it allows users to purchase greeting cards made by others.
Publications/Products/Outcomes	Internet based businesses
Additional Information	Gross Sales: RM20,031.00
Contact Institution/Entity Address	Energion Sdn. Bhd. 1st Floor, No 8, Jalan Emas SD 5/1A, Bandar Sri Damansara, 52200 Kuala Lumpur.
Phone Number	Office: 03-77284 032 H/p: 017 393 9372
e-Mail	chakster@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Traditional Complimentary Medicine (TCM) System
Project Number	TPF3-4004
Project Leader and Team Members	Leader: Goh Diap Tee Member: Chu Chee Meng
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A clinical management software with knowledge based of common ailments and cures that is integrated with hardware device.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	TCM International Sdn. Bhd. 3, Jalan Molek 2/9, Taman Molek, 81100 Johor Bahru. Office: 07-355 3567 H/p: 012-772 7788 rule115@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Yellow Elevator
Project Number	TPF3-4006
Project Leader and Team Members	Leader: Wong Sui Cheng Member: Wong Ken S'ng
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Recruitment portal for quality job prospects through personal referrals and strong personal recommendations. This portal allows companies/individuals to post job advertisements. Referrers will refer and recommend their best job prospects to match the most suitable job vacancies online.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Yellow Elevator Sdn. Bhd. 9, Lebuhraya Jesselton, 10450 Georgetown, Penang. H/p: 012-481 3968 sui.cheng.wong@d-pomelo.com

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Hotstores, Search Engine (Web Portal) which Will Match a User's Search or Request with a Retailer's Offer
Project Number	TPF3-4008
Project Leader and Team Members	Leader: Bala Subramani Ramasamy Member: Sathiah Sudakaran
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Hotstores is an idea to provide a platform for small and medium retailers to use it as an advertising and promotional platform. Hotstores also bring other small retailers into the platform and the retailers will be responsible in bringing their customers into the platform by creating awareness. Retailers and general consumers will be able to create and share contents by their preferences.
Publications/Products/ Outcomes	Internet based businesses
Additional Information	Gross Sales: RM77,000.00
Contact Institution/Entity Address	Hotstores Solutions Sdn. Bhd. 16, Jalan Rawang Putra 10, Taman Rawang Putra, 48000 Rawang, Selangor.
Phone Number	Office: 03-6093 1750 H/p: 012-209 1106
e-Mail	balasmrao@gmail.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Mileage Assistant for Mobile Professionals
Project Number	TPF3-4009
Project Leader and Team Members	Leader: Kenny Khoo Kuan Yew Member: Lim Lee Hwa
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A system that helps companies to manage the mileage claim process automatically by using sensor. The sensor will be placed at the meter reader in order to detect the mileage and the route.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	Gyrio Technology Sdn. Bhd. 100C, Jalan 17/1, Seksyen 17, 46200 Petaling Jaya, Selangor.
Phone Number e-Mail	H/p: 012-225 9712 kennykhooky@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Intelligent Bridge Health Monitoring System for Mobile Computing
Project Number	TPF3-4011
Project Leader and Team Members	Leader: Sophia C. Alih Member: Mohd Rosman Abd Rahman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Development of bridge inspection system to monitor the behaviour of bridges.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	Inovaseer Sdn. Bhd. No 77, Jalan Persiaran Dahlia 1, Taman Dahlia, 81200 Tampoi, Johor.
Phone Number e-Mail	H/p: 012-719 9701 sophiacalih@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Sinbad Search, Information Retrieval Application on Mobile Phone
Project Number	TPF3-4018
Project Leader and Team Members	Leader: Teng Chou Ming Member: Teng Chin Ming
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A complement to the web browser designed to simplify web browsing for smart mobile phone.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Sinbadsearch.com Sdn. Bhd. 5, Jalan SS 3/60, 47301 Petaling Jaya, Selangor. Office: 03-7874 1565 H/p: 012-382 1271 cmteng@xoverload.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	SARO, the Development of an Interactive 3D Visualization Software Toolkit
Project Number	TPF3-4019
Project Leader and Team Members	Leader: Susila Thiagarajan Member: Jason Veeramani
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	SARO is an Interactive 3D Software Toolkit that integrate with Open Source Software (OSS) Model created for scientists and researchers mainly in fluid mechanics.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	I-Scientific Labs Sdn. Bhd. Level 2, Block A (North), Pusat Bandar Damansara, 50490 Kuala Lumpur. Office: 03-4292 4596 H/p: 012-371 2997 susila@i-scientificapplications.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Zipped Messaging System (ZMS)
Project Number	TPF3-4020
Project Leader and Team Members	Leader: Wong Thai Min Member: Yau Wei Heong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Software that can compress and decompress SMS to enable the mobile users to send more information in a single page message.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Ezyst Technologies Sdn. Bhd. 43, Jalan Setia Impian U13/6F, Seksyen U13, 40170 Setia Alam, Selangor. H/p: 016-260 4306 thaimin@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Real-time Mobile Logistic Platform
Project Number	TPF3-4022
Project Leader and Team Members	Leader: Khairun Nisah Kamaruzaman Member: Jason Ng Ming Xian
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project was carried out to develop and commercialise a solution for the automation of courier, logistics and transportation business operations (pick-up and delivery process) by utilising real-time communications.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Advanced Real Time Systems Sdn. Bhd. E3A-5 Pelangi Damansara, Persiaran Surian PJU 6, 47100 Petaling Jaya, Selangor. H/p: 017-377 7313 nisakz@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Global Positioning System (GPS) Matrix Communicator (HW/SW)
Project Number	TPF3-4023
Project Leader and Team Members	Leader: Ng Heng Lim Member: Lim Keang Khiang
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Integrated software for GPS/GSM/Rfid and Wi-Fi technologies, allowing matrix communication between this technology and call centre software.
Publications/Products/ Outcomes	Support services
Contact Institution/Entity Address Phone Number e-Mail	Krumlov Technologies Sdn. Bhd. 12, Jalan USJ 13/3F,USJ, 47610 Subang Jaya, Selangor. H/p: 017-440 8742 ken_hl_ng@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Simulation Training Technology (STT) Prototype Development
Project Number	TPF3-4024
Project Leader and Team Members	Leader: Cheryl Sim Member: Jennie Soh Yan Khoon
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Simulation Training Technology (STT) prototype development is an engine (KeaEngine) to provide simulation and training in an interactive 3D environment using leading-edge 3D game technologies that provides a unique addition to the learning process to enrich the user's experience.
Publications/Products/ Outcomes	Software development
Additional Information	Gross Sales: RM4,800.00
Contact Institution/Entity Address Phone Number e-Mail	Kea Studios Sdn. Bhd. 74, Taman Pisau Edar, Pisau Garden, 98000 Miri, Sarawak. Office: 085-614 680 H/p: 016-860 3679 cheryl@keastudiosom cheryl@cherylsim.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Management of Ideas and Development System (MINDS)
Project Number	TPF3-4027
Project Leader and Team Members	Leader: Mohammad Husain Mohd Dawoed Member: Jastina Kamarudin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Management of Ideas and Development System (MINDS) is a system to collect, track, manage, auto-qualify, auto-evaluate and escalate selected ideas, recommend improvements and suggestions to promote innovation culture in any type of organisation.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Minds Solutions Sdn. Bhd. No. 131A, Jalan SS17/A. 47500. Subang Jaya.Selangor. H/p: 019-252 7936 husaindawoed@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Recruit Map
Project Number	TPF3-4030
Project Leader and Team Members	Leader: Angela Yong Wen-Tsae Member: Anson Yau Chuan Liang
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Vertical search engine which specialised in searching jobs listed on corporate websites and subscribers' websites.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Recruitmap Sdn. Bhd. Block 4-8-4, 8th Floor, Queens Avenue, Jalan Bayam, Cheras, Kuala Lumpur. Office: 03-9075 7680 H/p: 017-276 8262 ywtangela@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Honor and Money
Project Number	TPF3-4031
Project Leader and Team Members	Leader: Terence Tan Boon Aik Member: Rustum A D Scammel Dzil Qamar
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Focusing on the development of an original IP for a video game.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address Phone Number e-Mail	Big Bad Robots Sdn. Bhd. 127, Jalan SS22/22,Damansara Jaya, 47400 Petaling Jaya,Selangor. Office: 03-7874 1020 H/p: 012-373 2797 terence@bigbadrobots.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Amilin.tv 'The Online Islamic Financial News Channel'
Project Number	TPF3-4033
Project Leader and Team Members	Leader: Syaiful Naim Othman Member: Jamaludin Md Desa
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Amilin.tv is a global multimedia based Islamic financial news channel that reports market news on the move. It provides online news and events at real time and electronic communications, 24 hours a day through the Internet.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Amilin Media Sdn. Bhd. Java Technopreneur Development Center, MSC Central Incubator, Cyberjaya, 63000 Cyberjaya, Selangor. H/p: 019-637 0007 syaifulnaim@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Unit Trust Investment Tracking
Project Number	TPF3-4034
Project Leader and Team Members	Leader: Rose Mohd Junid Member: Sufian Khairi Ahmad Maulana
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The system is tailored for individuals who are investing in unit trust. It provides information on individual's REAL current value of the investment according to the initial date of investment.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	VHold Solutions Sdn. Bhd. A105, Kelana Park View, No. 1, Jalan SS6/2, 47301 Kelana Jaya, Selangor. Office: 03-7880 1258 H/p: 012-935 7293 rosejonid@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	EPOST.COM.MY
Project Number	TPF3-4039
Project Leader and Team Members	Leader: Nin Chiou San Member: Wong Li Wan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	System that allows senders to send physical greeting cards, emails, audio cards through online request via the web browser for free of charge.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Enveluv Sdn. Bhd. Cnergy, Multimedia University, Jalan Multimedia, 63000 Cyberjaya, Selangor. H/p: 016-319 3912 nin_san@hotmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	AKEETOONS (Web-based edutainment e-Zine & e-Cartooning)
Project Number	TPF4-4005
Project Leader and Team Members	Leader: Lim Swee Kee (Stanley Lim) Member: Chin Wing Lai @ Wendy Chin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Development of an edutainment portal/e-magazine for the youngs to stimulate creative thinking and encourage young talents in cartooning, writing and producing creative content.
Publications/Products/ Outcomes	Creative multimedia & content <ol style="list-style-type: none"> 1. e-Comic, e-Cartooning & e-magazine 2. Online Cartooning Course 3. AkeemationKidz – Online 2D Animation Modules for Kids 4. Akeepen-Graphic Tablet Pen 5. TASK (Total Animation Solution for Kids)
Awards/Certificates	<ol style="list-style-type: none"> 1. Special Mention Award in Digital Art Category - MSC Malaysia Kre8tif Digital Content Conference Dec 2009 2. Finalist for the Best of E-Learning Category - APICTA Awards 2008
IP Status	Akeetoons.com – 4 SD signed for Copyrights
Additional Information	<p>International Linkages:</p> <ol style="list-style-type: none"> 1. Asia Business Matching For Creative Economy 2010E), Phuket, Thailand. Aug 2010. 2. ToonBoom Master Class in Singapore. June 2010 3. Hong Kong International Film&TV Market (FILMART). Mar 2010 4. The 5th CHINA International Animation Art Festival, Changzhou, China. Sep 2008 5. World Congress on IT (WCIT), KLCC. May 2008 <p>Industrial Linkages:</p> <ol style="list-style-type: none"> 1. Member of Software Consortium of Penang (SCoPE) since 2008 2. Member of POSTAM (Post Production, Animation & Creative Content Association Malaysia) <p>Commercialisation: Commercialised in 2010</p> <p>Gross Sales: RM40,000.00</p>



Contact Institution/Entity Address	Akeetoons Sdn. Bhd. No. 2P, Jalan Ru 2, Bandar Baru Air Itam, 11500 Penang.
Phone Number	Office: 04-827 3001 H/p: 012-472 9001
e-Mail	stanley@akeetoons.com akeepenang@gmail.com www.akeetoons.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(DICT)

Project Title	Cyberflex 101 (Security Solutions Software)
Project Number	TPF4-4014
Project Leader and Team Members	Leader: Daniel Ng Kah Keong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Interface for integrating multiple types of DVR to be accessed via one login system.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Cyber Flex Technology Sdn. Bhd. 608V, Mukim 16, 11500 Ayer Itam, Pulau Pinang. Office: 04-827 8913 Daniel@cyber-flex.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(DICT)

Project Title	Wise Airport Gate Allocation System
Project Number	TPF4-4018
Project Leader and Team Members	Leader: Zulfakar Aspar Member: Suraya Ismail
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Wise Gate Allocation System (Wise GAS) is an automated system to schedule gates and bays for specific aircrafts parking in a specific period of time. Artificial Intelligent scheduling engine was developed to assist the users to optimize the scheduling. A real-time graphic engine was developed in order to have a fast and more accurate response.
Publications/Products/ Outcomes	Software development, Wise Gate Allocation System (GAS) version 3.0
IP Status	a) Company trademark b) Proprietary IPs (AI and Graphic engines)
Additional Information	Industrial Linkages: Malaysian Airport Holding Berhad (MAHB) Commercialisation: In discussion with MAHB
Contact Institution/Entity Address	Wise Aviation Sdn. Bhd. No. 31A, Jalan Utama 43, Mutiara Business Center, Taman Mutiara Rini, 81300 Skudai, Johor.
Phone Number	Office: 07-521 2166 Fax: 07- 521 5697 H/p: 019-731 1350
e-Mail	zulfakar@wiseaviation.com.my zulfakar@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Manufacturing Diagnostics Software Solutions
Project Number	TPF4-4019
Project Leader and Team Members	Leader: Soh Beng Hock (BH Soh) Member: Tetty Henney Zulkifli
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Manufacturing diagnostic software solution computerisation project called LEAN ScoreBoard.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	Manufacturing Intelligence Sdn. Bhd. No 22, Jalan NJM 1/3, Taman Nusa Jaya Mas, Nusa Jaya, 80800 Skudai, Johor.
Phone Number	Office: 07-512 5251 H/p: 019-714 3039
e-Mail	tij@po.jaring.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	SMS JOBS
Project Number	TPF4-4023
Project Leader and Team Members	Leader: Loo Yean Ming, Davy Member: Lim Chee Ming
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Providing real time job placement info to job seekers via SMS, and to provide cost efficient recruitment solutions to employers.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address	Mobile Jobs Sdn. Bhd. No. 167, Jalan Slasiar, Taman Tasek, 80200 Johor Bahru.
Phone Number	Office: 07-556 7879 H/p: 012-720 9019
e-Mail	davyoa@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Restaurant Guide and Online Reservation System
Project Number	TPF4-4024
Project Leader and Team Members	Leader: Fay Khoo Su Ming Member: Tan Jek Hui
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Provide a reservation system for restaurants via extensive network. The system enables update of listings; add photos and A&P to online community. Patrons will be able to make bookings, search for restaurants and review the ratings and comments.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address	Integricity Press Sdn. Bhd. Suite S6-S7, Centrepont Bandar Utama, Lebuh Bandar Utama, 47800 Petaling Jaya, Selangor.
Phone Number	Office: 03-7725 2500 H/p: 012-222 2246
e-Mail	fay.khoo@integricity.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Mobile Double Click
Project Number	TPF4-4026
Project Leader and Team Members	Leader: Seah Kok Wah Member: Lai Thien Loon
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Mobile double click is the first Asia mobile double click business model which is focusing on digital marketing. Provide value-ads to members by combining mobile ad-push, mobile coupon and SMS marketing tools.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number	Moads Media Sdn. Bhd. 11-3, Plaza Damas 2, Jalan 2/109F, Taman Danau Desa, 58100 Kuala Lumpur.
e-Mail	Office: 03-7981 5355 H/p: 012-336 1933 sean.seah@bimbit.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	SMART KALAM
Project Number	TPF4-4027
Project Leader and Team Members	Leader: Rohana Sulaiman Member: Rohaya Leman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/Objectives	CD based Al-Quran with computer aided learning through “Tilawah” method with “Thalaqimusyafahah” approach.
Publications/Products/Outcomes	Creative multimedia content
Awards/Certificates	Finalist Best Start up Company for NEF Awani Award 2010
Contact Institution/Entity Address	Mawaddah Creative Multimedia Development Sdn. Bhd. Tingkat 1, Farmasi Alang S/B, Kompleks Perniagaan, 78300 Masjid Tanah, Melaka.
Phone Number	Office: 06-384 3704 H/p: 016-665 3062
e-Mail	rohana_mt@yahoo.com mawaddahcreative07@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	One Stop Centre for Local Government (e-OSC)
Project Number	TPF4-4031
Project Leader and Team Members	Leader: Mohd Hussaini Morid Member: Ina Nur Ashudah Derauh
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/Objectives	Automated development approvals OSC for local government.
Publications/Products/Outcomes	Software development
Additional Information	Gross Sales: RM40,000.00
Contact Institution/Entity Address	Intelnet Solutions Sdn. Bhd. Suite 9.17, 9th Floor, Wisma Zelan, Jalan Tasik Permaisuri 2, Bandar Tun Razak, 56000 Kuala Lumpur.
Phone Number	Office: 03-9173 9010 H/p: 012-225 9620
e-Mail	hussaini@innovations.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	OHJEE-Expert Comparison-shopping Website Using Fuzzy Logic and Artificial Intelligence
Project Number	TPF4-4040
Project Leader and Team Members	Leader: Ahmad Faisal Adham Shaazi Shaarani Member: Ng Theng Chun
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Search and comparison engine with expert moderation for online comparison-shopping using fuzzy logic and artificial intelligence
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address	Ohjee Technologies Sdn. Bhd. 176, Jalan BK 5B/1, Bandar Kinrara, 47180 Puchong, Selangor.
Phone Number	Office: 03-8076 8370 H/p: 012-608 0745
e-Mail	ashaazi@unifiedvision.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Senang Dot Com
Project Number	TPF5-4001
Project Leader and Team Members	Leader: Hafiz Musa Member: Musa Ismail
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Online words and web page language translation search engine.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number	Ekancil Consultant and Computing Sdn. Bhd. 232, Jalan Medan 15, Taman Medan Baru, 46000 Petaling Jaya, Selangor. Office: 03-8943 5364 H/p: 017-603 3124
e-Mail	hafizmusa@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Cross DM
Project Number	TPF5-4008
Project Leader and Team Members	Leader: Goh Wah Loon Member: Tiew Meng Huei
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This proposed project is to provide simple tools that will enable users to generate a form that can be placed and modified at any website or blog at any time; in record time. This generated forms will enable users to gather valuable data for digital marketing purposes (stored in centralised server) to be used in the present or in the future. Digital marketing tools and services such as email, fax, SMS and others, are readily available for users to organise, coordinate and handle their internet marketing campaigns and expenditures.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Digilon Sdn. Bhd. 23-2, 1st Floor, Jalan USJ 21/1, UEP, 47630 Subang Jaya, Selangor. Office: 03-7880 0613 H/p: 012-224 5779 wgoh@pd.jaring.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	FranchiseNet Alliance System
Project Number	TPF5-4013
Project Leader and Team Members	Leader: Wong Ing Lok Member: Looi Hooi Leng
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	FranchiseNet Alliance System serves as a servicing platform for merchants and members to create a new buy and sells market place. Besides this, the Mobile Order Services (MOS) system is also developed to integrate with local banks and providers using the new created mobility solutions for easy buy and payment purposes. The aim of the project is to create a new business environment with new designed MCPT and IMCBPS System.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Cyboss Ecosystem Sdn. Bhd. No. 18, Jalan Badik 20, Taman Putri Wangsa, 81800 Ulu Tiram, Johor Bahru. Office: 03-8943 8377 H/p: 013-866 6699 eforcebuy@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	DoubleWood-Intelligent Car Park System (DW-ICPS)
Project Number	TPF5-4016
Project Leader and Team Members	Leader: Lim Tau Hon Member: Yap Joon Kee
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Intelligent car park management system.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Doublewood Computer System Sdn. Bhd. MSC Technology Malaysia Commercialisation Centre, 63000 Cyberjaya, Selangor Office: 03-4296 1017 H/p: 012-209 0070 th@doublewood.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Document Capture and Transformation System
Project Number	TPF5-4022
Project Leader and Team Members	Leader: Tan Chee Kwang Member: Jeffery Yeo Seng Chuan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Automates the transformation of paper documents into digital formats using leading edge capture technologies to recognise and extract business-critical information from scanned documents to enable electronic workflow processes and delivery to enterprise business applications and archives. The total solution comprises two sub-products, a structured forms capture system and an unstructured documents capture system, developed with enterprise-class features to ensure accuracy, quality control and efficient operations.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	Petraware Technologies Sdn. Bhd. Lot 2-1A, Support services, T echnology ParkMalaysia, Lebuhraya Sg Besi-Puchong, Bukit Jalil, 57000 Kuala Lumpur.
Phone Number	Office: 03-4044 7012 H/p: 012-395 2866
e-Mail	goldontan188@yahoo.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Soccabots
Project Number	TPF5-4023
Project Leader and Team Members	Leader: Yong Ching Wen Member: Leong Kok Wai
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A fully 10 minutes 3D animated trailer as a platform/pilot to do a complete movie that to be screened nationwide. Soccabots are the main characters in the animation that will battle against the aliens who invade Malaysia. The project will feature most of the local scenes with universal value for local and overseas market.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address Phone Number e-Mail	Artkio Animation Sdn. Bhd. 37-10A, The Boulevard, Midvalley City, Lingkaran Syed Putra, 59200 Kuala Lumpur. Office: 03-7981 3179 , H/p: 012-661 8960 stevieyong@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Car Pooling / Ride Sharing System
Project Number	TPF5-4025
Project Leader and Team Members	Leader: Alvin Selvam Dass Member: Mohd Johan Ismail
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project intends to promote car pooling/ride sharing concept in Malaysia. In order to meet this objective, the project has developed a common web based platform for users to exchange their travel information and form a travel partnership. Apart from accessing the web, information can also be made through call centre and SMS services.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Tune Travel Sdn. Bhd. 32, Jalan SS25/15, 47301 Petaling Jaya, Selangor. Office: 03-7805 1735 , H/p: 012-229 9656 alvindass@gmail.com

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	E-Contest Solution
Project Number	TPF5-4036
Project Leader and Team Members	Leader: Leam Bee Teik Member: Choong Yee kher
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Flash based games/contests for retailers.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address	C-Channels Sdn. Bhd. 409, Block A, Pandan Lake, View Apartment, Jalan 5/1, Pandan Perdana, 55300 Kuala Lumpur.
Phone Number	Office: 03-9287 5919 H/p: 012-332 0885
e-Mail	william3838@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	“Kandang” Automatic System
Project Number	TPF5-4038
Project Leader and Team Members	Leader: Mohd Yusof Ahmad Member: Mohd Sharil Md Jussin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Automatic hardware system and electronic parts that build a perfect software filling application.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address	Technomotion Sdn. Bhd. Suite 1.26, Bangunan Inkubator K-Ekonomi, Bandar MITC, 75450 Ayer Keroh, Melaka.
Phone Number	Office: 06-268 1809 H/p: 012-642 8693
e-Mail	smt_ayus@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Enterprise Mail ISO Documentation Archiving and Lateral Search Solution
Project Number	TPF5-4042
Project Leader and Team Members	Leader: Kan Weng Hoe Member: Phee Chiew Phaik
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project is on the development of enterprise level archiving and search solution. The principle activity of the project is to provide licensing and remote archiving and management services to MNC and PLC.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Arus Solutions Sdn. Bhd. 1-1-13, Mayang Mall Complex, Jalan Mayang Pasir 1, 11900 Penang. Office: 03-79822873 H/p: 012-3021081 joe@klbusiness.net

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	E-leadership Assessment Software
Project Number	TPF5-4043
Project Leader and Team Members	Leader: Faroze Nadar Farim Umar Member: Mohamed Syakri Md Salikon
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	E-leadership assessment centre that focuses on talent management.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Dibta Technology Sdn. Bhd. Suite C-10-3, 10th Floor, Wisma Goshen, PlazaPantai, Off Jalan Pantai Baru, 59200 Kuala Lumpur. Office: 03-7955 4645 H/p: 016-907 0047 faroze@dibtagroup.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Mandarin Multimedia Courseware with Speech Recognition
Project Number	TPF4-4004
Project Leader and Team Members	Leader: Chew Soo Noan Member: Choy Wui Kong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A multimedia interactive teaching and learning courseware development. The principle activity of the project is to provide the creative multimedia content to teach and learn languages.
Publications/Products/ Outcomes	Creative multimedia content
Additional Information	Gross Sales: RM24,556.00
Contact Institution/Entity Address Phone Number e-Mail	Tsinghua Interactive Sdn. Bhd. 1-1-13 Mayang Mall Complex, Jalan Mayang Pasir 1, 11950 Penang. H/p: 012-453 1102 noan98@hotmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	MyoBT Software Suites
Project Number	TPF6-4001
Project Leader and Team Members	Leader: Ooi Boon Sheng Member: Kew Lee Ming
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Business software using streaming technology
Publications/Products/ Outcomes	Software development
Additional Information	Gross Sales: RM13,094.00
Contact Institution/Entity Address Phone Number e-Mail	Web Bytes Sdn. Bhd. No. 2, Tingkat Bunga Kekwa, Taman Kekwa, 14000 Bukit Mertajam, Penang. Office: 04-538 8743 H/p: 012-472 9615 boonsheng@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	HAILER – Mobile Audio Channel Platform
Project Number	TPF6-4008
Project Leader and Team Members	Leader: Cheong Takhoe Member: Goon Y-Kong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Audio transmission solution for mobiles.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	Hailer Communications Sdn. Bhd. D12-1, 1st Floor B1K D12, Pusat Perdagangan Dana 1, Jalan PJU 1A/46, 47301 Petaling Jaya, Selangor.
Phone Number e-Mail	H/p: 012-282 6002 takhoe@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Development of E-learning System and Six Sigma E-learning Module
Project Number	TPF6-4015
Project Leader and Team Members	Leader: Kok Lye Wah Member: Kuok Chi-Sin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	To develop software system to be used for technical based on the concept of e-learning.
Publications/Products/ Outcomes	Software development
Additional Information	Gross Sales: RM500,000.00
Contact Institution/Entity Address	Mindtrac Consulting Sdn. Bhd. Tingkat 1, Bangunan Sapura, Lot 2, Jalan Enggang, Kawasan Perindustrian PKNS, 54200 Kuala Lumpur.
Phone Number e-Mail	H/p: 012-323 6812 lye.wah.kok@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	PLANNPLOT.COM: Easy-To-Use Web Based Interior Design Application
Project Number	TPF6-4019
Project Leader and Team Members	Leader: Roni Shah Mustapha Member: Ahmad Razlan Shah Mustapha
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Roo.my is an easy to use web-based interior design application; meanwhile VideoAd is a real time platform for advertising in videos.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address	Urekalabs Sdn. Bhd. Suite 327, MBE Kolam Ayer Lama, Lot 36904 Ampang, Jalan Kolam Ayer Lama, 68000 Ampang, Selangor.
Phone Number e-Mail	H/p: 012-388 5249 ronshah@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Online Artiste Marketing and Promotion Console (AMP)
Project Number	TPF6-4022
Project Leader and Team Members	Leader: Selvatheisan Salvarajoo Member: Yahya Ratnam Dawson
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A software solution that offers artists an integrated interface to market and promote their creative works via the web and mobile communication. Beyond merely creating web presence, artists can take their music careers to the next level as the proposed platform not only gives them better market exposure but also increases their potential revenue streams.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Ghettogarrage.com Sdn. Bhd. 20.01, 20th Floor, Menara Tan & Tan, 207, Jalan Tun Razak, 50400 Kuala Lumpur. Office: 03-913 4509 H/p: 012-290 1179 theisansalva@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Intelligent Traffic Data Sensor
Project Number	TPF6-4027
Project Leader and Team Members	Leader: Leow Aik Peng Member: Dinesh Karathu
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>A Neural Network & Artificial Intelligence software technique to detect the presence of vehicle's pixel pattern through CCTV camera, in order to provide traffic census information on "the number of vehicle" & "the type of vehicle" passing through the identified road.</p> <p>Data can be input into the Expert System (supported by solar power) to design the phase timing of a traffic junction. The system can be lifted-up at any road that needs to carry out traffic census.</p>
Publications/Products/ Outcomes	Software development
Additional Information	Gross Sales: RM64,000.00
Contact Institution/Entity Address	E-Trifecta Solutions Sdn. Bhd. Office 1, 1st Floor, Resource Centre, Technology Park Malaysia, Lebuhraya Sg. Besi-Puchong, Bukit Jalil, 57000 Kuala Lumpur.
Phone Number e-Mail	H/p: 012-318 2300 aikpeng@hotmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Machine Performance Monitoring System and Statistical Process Control (SPC) for Semiconductor Industry and Electronic Manufacturing Industry
Project Number	TPF6-4028
Project Leader and Team Members	Leader: Murugan Kandiah Member: Kumararajah Kandiah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Machine performance analysis software involving alarm analysis, loss time analysis and performance analysis to monitor the performance of each machine or machine type targeting semiconductor and electronic manufacturing industry. The project will develop SPC software to cover for Die Shear to monitor the process sampling failures & alert the manufacturing operators of failures.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	Ornet Solutions Sdn. Bhd. Suite 19, Incubator Wing, 1st Floor, TechnoCentre, KulimHi-Tech Park, 00900 Kulim, Kedah.
Phone Number	Office: 04-502 5003 H/p: 017-410 6117
e-Mail	muruganraj@yahoo.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Maddiction.com
Project Number	TPF6-4032
Project Leader and Team Members	Leader: Justin Foo Yoong Koon Member: Hor Teng Jie Kevin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Maddiction.com will be an independent music web store developed and operated by Crave Cast. It will be the first and most technologically advanced music web store of its kind in South East Asia, allowing independent artistes (music) to sell and expose their work to the world. Maddiction.com will be developed using the highest and latest in web technology, representing our artistes in a professional, world class environment which allows consumers to purchase high quality music securely and with ease.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Cravecast Sdn. Bhd. No. 7, Jalan PJS 9/12, Bandar Sunway, 46150 Petaling Jaya, Selangor. Office: 03-5633 0172 H/p: 016-618 0055 justinfoo@cravecast.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Jungoot.com Online Contact Management and Marketplace
Project Number	TPF6-4044
Project Leader and Team Members	Leader: Asyraf Abdul Rahman Member: Mohd Azzart Moideen
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Business networking marketplace and on-line business card management to enable businesses all over the world to connect with customers. Portal will be developed on ruby on rails framework, AJAX and Linux technology.
Publications/Products/ Outcomes	Internet based businesses
Additional Information	Gross Sales: RM290,000.00
Contact Institution/Entity Address Phone Number e-Mail	Consoci8 Sdn. Bhd. AB18, MSC Malaysia Technology, Commercialization Centre, 63000 Cyberjaya, Selangor. H/p: 019-232 5501 asyraf902@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Smart Adaptive Student Assessment System (SASAS)
Project Number	TPF6-4046
Project Leader and Team Members	Leader: Peter Kua Seng Choy Member: Wong Ai Wei
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	An intelligent and adaptive Performance-Based Assessment system that evaluates students' abilities with learning objectives, and has the ability to act as a personal tutor. It runs on Java, and AJAX. The target markets will be the primary and secondary school students.
Publications/Products/ Outcomes	Internet based businesses
Additional Information	Gross Sales: RM1,295.00
Contact Institution/Entity Address Phone Number e-Mail	Mysasas Sdn. Bhd. Suite D-13A-11, Seri Maya, Jalan Jelatek, 54200 Kuala Lumpur. Office: 03-7727 4216 H/p: 012-241 6272 petekua@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Universal Machine Interface Unit for Remote Maintenance System (ReMaS)
Project Number	TPF6-4047
Project Leader and Team Members	Leader: Marsha Azizah Ahmad Shamsuddin Member: Syed Muhammad Shuib Syed Yusoff
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A hardware design for wheelchair lifts.
Publications/Products/ Outcomes	Hardware design
Contact Institution/Entity Address Phone Number e-Mail	Remastech Sdn. Bhd. No.45, Jalan Putra Perdana 6/24, 47100 Puchong, Selangor . Office: 03-8319 1268 H/p: 017-357 8787 marshaazizah@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	MYPHOTOID™ Security Solution
Project Number	TPF6-4060
Project Leader and Team Members	Leader: Joan Lai Members: Lai PC, Victor Tan, Irene Lim and Zaid
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Security solution using pictures. Pictures that inspire, cognitive movements that improve memory, security that gives Peace of Mind.
Publications/Products/ Outcomes	Software development (Product also known as Passpicture™/PICSECUREID™)
Awards/Certificates	The Winner of the Best of Research & Development MSC APICTA at the annual 'industry Oscar' for the Malaysian ICT industry and Merit award at the International Asia Pacific Information Communication Technology Award in 2008
IP Status	Patent Filed in 2008
Contact Institution/Entity Address Phone Number e-Mail	Globalclas Technology Sdn. Bhd. Suite 4.104, 4th Floor, Wisma Central, Jalan Ampang, 50450 Kuala Lumpur. 03-2056 2188 enquiry@globalclas.com

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Big Satellite
Project Number	TPF6-4061
Project Leader and Team Members	Leader: Devan Singaram Member: Tee Choon Yen
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Contextual shopping software for cottage entrepreneurs which enable them to sell cause-based products to a socially-conscious audience.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Elevyn Sdn. Bhd. 24, Jalan Sri Hartamas 12, Sri Hartamas, 50480 Kuala Lumpur. H/p: 012-202 7092 devan@ifuzion.net

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Virtual Item Trading Portal
Project Number	TPF6-4066
Project Leader and Team Members	Leader: Wong Choon Hooi Member: Goh Zhong Xi
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Internet based platform that allows online game players or individual game forum to trade their virtual items in real money (clothes, shields, weapons & etc). Similar to eBay, but focusing in virtual item trading.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Myviw Sdn. Bhd. 21, 1st Floor, Resource Centre, Technology Park Malaysia, Lebuhraya Puchong-Sg. Besi, Bukit Jalil, 57000 Kuala Lumpur. Office: 03-7877 4020 H/p: 013-363 0669 wchoonhooi@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Children Web Education Channel
Project Number	TPF7-4007
Project Leader and Team Members	Leader: Hor Chee Hong Member: Chin Ken Chien
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A programme called Free Internet Application which involves free education. The proposed project is a combination of information technology, internet and multimedia to create new revolution in children's education system. It is targeted to be the world leading children's education web channel for parents to download these animated content and games for their children to watch and play at home. Revenue is based on video advertisements and sponsorship.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address	Joove Enterprise Sdn. Bhd. B-5-9, Block B, Level 5, Unit 9, Megan Avenue II, No. 12, Jalan Yap Kwan Seng, 50450 Kuala Lumpur.
Phone Number	Office: 03-5636 4270 H/p: 013-244 8862
e-Mail	chhor5883@hotmail.com hor@cheechoong.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Innovative Library - RFID Solutions
Project Number	TPF7-4009
Project Leader and Team Members	Leader: Kong Kok King Member: Vernon Seaton
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project is on RFID Book Dispensing Kiosk (BDK) that enable the Library to provide convenient book borrowing and return services to its community without needing patrons to physically head over to the library because the RFID BDK can be conveniently located in areas such as cafeterias, dormitories and lecture halls and having to construct new branch libraries which costs so much more compared to the RFID BDK. The RFID Automated Book Sorter (ABS) will enable university libraries to drastically lessen human effort and long term overhead costs needed to sort the hundreds of books returned daily.
Publications/Products/ Outcomes	Software development
Additional Information	Gross Sales: RM49,056.00
Contact Institution/Entity Address	RF Sensa Sdn. Bhd. 19-3, Jalan PJU 5/10, Dataran Sunway, 47810 Petaling Jaya, Selangor.
Phone Number	Office: 03-4292 1397 H/p: 012-322 0816
e-Mail	kongkokking@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	3D Structure Monitoring System
Project Number	TPF7-4014
Project Leader and Team Members	Leader: Lim Kiew Tian Member: Lee Eng Han
Field of Research	ICT
Project Summary/ Objectives	3D structure monitoring system is an online monitoring of 3D movement and deformation of structures for construction, civil engineering, risk study, design and research purposes.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	S.E.A Engineering Solutions Sdn. Bhd. Level 30, (P.O. Box 23), Menara MSC Cyberport, 5, Jalan Bukit Meldrum, 80300 Johor Bahru.
Phone Number	Office: 07-234 9928 H/p: 016-716 9928
e-Mail	tian9928@streamyx.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Smart Engine
Project Number	TPF7-4018
Project Leader and Team Members	Leader: Mohd Zulhisam Yaakub Member: Mohamad Zaimi Yaakub
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Search engine for IHLs
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	MohdZul Sdn. Bhd. No. 6, 2nd Floor, Block B, CIDB Complex Building, Sultan Tengah Road, Petrajaya, 93050 Kuching, Sarawak.
Phone Number	H/p: 013-822 3258
e-Mail	mohdzul@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Q-Bo Lut Lut
Project Number	TPF7-4021
Project Leader and Team Members	Leader: Pua Yin Chye Member: Tan Eng Hong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Animation on fun, adventurous & hilarious 3D animation series with cute and loveable characters starring lut lut, q-bo, gai gai, champen and booi zui. They will embark into the journey to gain knowledge with trivia questions, which is amazing, catchy and unbelievably interesting.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address	Framemotion Animation Studio Sdn. Bhd. MSC Malaysia Animation Creative Content, Centre (MAC3), Multimedia Development Corporation, B-1-2A, SME Technopreneur Centre 2, 2260 Jalan Usahawan 1, 63000 Cyberjaya, Selangor.
Phone Number	Office: 03-7804 1833 H/p: 012-238 8162
e-Mail	jeandpua@framemotion.net



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	SME Business Matching Enabler
Project Number	TPF7-4028
Project Leader and Team Members	Leader: Tee Kok Soon (Eric) Member: Low Woei Chang
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Solution to help SME manufacturers to market their products.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Ideal Evolution Resources Sdn. Bhd. No. 57, Jalan Indah 12/12, Taman Bukit Indah, 81200 Johor Bahru. Office: 07-232 0036 H/p: 016-702 2898 eric@idealresources.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Hescar (Higher Education Search Compare Apply and Registration)
Project Number	TPF7-4035
Project Leader and Team Members	Leader: Edwin Tay Heng Aun Member: Lai Li Hoon
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	To create a Web 2.0 portal which will provides a solution to match high school leavers with institutions of higher education (IHE). This service would carry out lead generation (of student applicants) for colleges, universities and other institutes of higher education.
Publications/Products/ Outcomes	Internet based businesses
Awards/Certificates	MSC Status
IP Status	Trademark
Additional Information	International Linkages: Australia, Indonesia, India (Agents) Commercialisation: Yes
Contact Institution/Entity Address	Hescar Sdn. Bhd. Plug & Play Technology Garden, Level 7, The Gardens South Tower, Mid Valley City, Lingkaran Syed Putra, 59200 Kuala Lumpur, Malaysia
Phone Number	Office: 03-2264 5345 03-2264 5355
e-Mail	H/p: 012-316 5148 hello@hescar.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Network Traffic Analysis
Project Number	TPF7-4037
Project Leader and Team Members	Leader: Ihsan Junaidi Ibrahim Member: Abdul Hamid Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Network monitoring solution for telcos/ISPs.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	NXF Systems Sdn. Bhd. 139, SS 22/27, Damansara Jaya, 47400 Petaling Jaya, Selangor.
Phone Number	Office: 03-7722 2679 H/p: 019-386 0442
e-Mail	ihsan.junaidi@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Lumba
Project Number	TPF7-4040
Project Leader and Team Members	Leader: Liaw Gwo Sheon Member: Ahmad Azmir Abdul Rahman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The company has developed a platform for a comprehensive Feedback Management (EFM) tool that could be used for business consultant and business user to collect internal and external feedback from survey or questionnaires that they posted. This collection of feedbacks and data could be used for decision making to improve products, services and also market penetration.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address	Innolumba Sdn. Bhd. 25th Floor, Menara Tun Razak, Jalan Raja Laut, 50350 Kuala Lumpur.
Phone Number	Office: 03-4021 6049 H/p: 012-360 0557
e-Mail	sheon.liaw@ez-bizsolutions.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Mysport.com.my
Project Number	TPF7-4046
Project Leader and Team Members	Leader: Nithiananthan Vegayathunam Member: Nithiseelan Vegayathunam
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	mysports.com.my is a portal that provides sports content and on-line-services for the Asian community. It is a Malaysian based online service that will capture and excite Asian sports fan. This portal offers sports news and services. The content varies from news services, syndicated articles to fans' experiences. On the other hand, the services are advertising space, merchandising, online registration for events and sports tourism.
Publications/Products/ Outcomes	Internet based businesses
Additional Information	Gross Sales: RM125,056.00
Contact Institution/Entity Address	Hoohaasia Sdn. Bhd. No 51, Jalan SS 18/6, 47500 Subang Jaya, Selangor.
Phone Number	Office: 03-5637 3821 H/p: 012-309 6488
e-Mail	anand@hooha.asia

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(DICT)

Project Title	Do It Yourself Malay Wedding Portal (DITM)
Project Number	TPF7-4051
Project Leader and Team Members	Leader: Sharizan Mohd Arshad Member: Zamzuri Ahmad
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The Do It Yourself Malay-Wedding portal (DIYM) is an Internet Base Business (IBB) that provides a platform and an environment for Users to plan Malay Weddings and Engagement ceremonies. Malay weddings and engagement ceremonies are steeped in traditions and are rather complicated to plan and implement.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Engagements And Weddings Sdn. Bhd. No. 19-1, Jalan Wangsa Delima 13, D'Link, Wangsa Maju, 53300 Kuala Lumpur. Office: 03-4142 2101 H/p: 016-388 5708 sharizan.a@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(DICT)

Project Title	The Unified BPO Outfit
Project Number	TPF7-4053
Project Leader and Team Members	Leader: Tan Chiang Poong Member: Ng Chooi Lee
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project is to facilitate the delivery of BPO Services (with focus on Customer Care and IT Services). It leverages on the end-to-end, All-in-One Web-based BPO Platform with a view to implement best practices and achieve operational excellence.
Publications/Products/ Outcomes	Shared Services Outsourcing
Additional Information	Gross Sales: RM110,000.00
Contact Institution/Entity Address	Dare BPO Sdn. Bhd. B-2-01, SME Technopreneur Centre Cyberjaya, 2270, Jalan Usahawan 2, 63000 Cyberjaya, Selangor.
Phone Number	H/p: 03-9132 9880 012-339 2933
e-Mail	jeffrey@phenomenal-uam.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Asset Inventory and Desktop Management System
Project Number	TPF7-4063
Project Leader and Team Members	Leader: Mohd Anuar Ali Mohamed Jalali Member: Shahidah Banu
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/Objectives	Appliance based asset inventory and desktop management system.
Publications/Products/Outcomes	Software development
Contact Institution/Entity Address	AuRadium MSC Sdn. Bhd. Suite 5-4-2, Complex Putri, Jalan Mat Raji, Padang Jawa Industrial Zone, 40000 Shah Alam, Selangor.
Phone Number	Office: 03-554 29786 H/p: 05-716 5899
e-Mail	anuar_mohd@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Online Journal with Indexing Search Technology
Project Number	TPF7-4069
Project Leader and Team Members	Leader: Kan Weng Chew Member: Kan Yuet Wah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/Objectives	A compilation of journals will be easily retrieved in this online journal site with fast indexing search technology. The site will emphasize on local journals with its principle activity to create a mass source of credible local information online.
Publications/Products/Outcomes	Internet based businesses
Contact Institution/Entity Address	Malaysian Journal Online Sdn. Bhd. 15, Jalan PJS 11/9, Bandar Sunway, 46150 Petaling Jaya, Selangor.
Phone Number	Office: 03-5632 6726 H/p: 03-7982 2873
e-Mail	vincent@emobooks.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Used Car Accident and Repair Records
Project Number	TPF7-4039
Project Leader and Team Members	Leader: Kuok Ming Yen Member: Tan Sok Choon
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Software that provides back office solution to store used car accident, repair and maintenance records.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	Ookar Sdn. Bhd. 147A Jalan Perisai, Taman Sri Tebrau, 80050 Johor Bahru.
Phone Number	Office: 07-333 8835 H/p: 012-737 6737
e-Mail	philip@infoarch.net

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Information and Fraud Management
Project Number	TPF7-4052
Project Leader and Team Members	Leader: Sunder Rekhraj Member: Harinderjeet Singh
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A fraud detection system for insurance.
Publications/Products/ Outcomes	Shared Services Outsourcing
Contact Institution/Entity Address	Vias Sdn. Bhd. 4-103, Kenanga Apartment, Jalan 3/1, Selayang, Selangor.
Phone Number	Office: 03-9100 2775 H/p: 012-221 4149
e-Mail	srekhraj@tm.net.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Interactive Dictionary (Internet & Mobile Based)
Project Number	TPF8-4006
Project Leader and Team Members	Leader: Aizatul Arbayaah Kamsan Member: Arbaa Ali
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Interactive Dictionary or better known as ID is an educational product to educate multiracial users in order to learn more than one language. The standard package of ID come default with translation for 2 languages which are Bahasa Melayu and English. ID users also have an advantage to interact with the ID application by adding more vocabulary that they want.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address	Digital Creative Idea Sdn. Bhd. 56-1, Biz Avenue NeoCyber, Lingkar Cyberpoint Barat, 63000 Cyberjaya, Selangor.
Phone Number	Office: 03-8961 6242 H/p: 013-380 8909
e-Mail	goshk3rs@hotmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Terminal X
Project Number	TPF8-4021
Project Leader and Team Members	Leader: Amru Najmi Osman Member: Mohamed Azlan Ghazali
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A 3D television drama for children.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address	Digital Human Sdn. Bhd. No. 8-2, Jalan 15/48A, Sentulraya Boulevard, Jalan Sentul, 51000 Kuala Lumpur.
Phone Number	Office: 03-8318 5642 H/p: 013-380 0888
e-Mail	amrunajmi@hotmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Multi-channel Customer Interaction System
Project Number	TPF8-4026
Project Leader and Team Members	Leader: Loh Jia Hau Member: Thomas Kuan Chee Ming
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project involves the development of a multi-channel self-service customer interaction system that allows companies to create a self-service inbound/outbound SMS, email, fax and voice campaign from a web based hosted system. The service is designed to alleviate cost related problems in companies intending to build/expand contact centres and marketed as a pay per use business model.
Publications/Products/ Outcomes	Software development
Additional Information	Gross Sales: RM7,300.00
Contact Institution/Entity Address	FonPackets Sdn. Bhd. P119 - The Tropics, Jalan PJJ 8/1, Damansara Perdana, 47820 Petaling Jaya, Selangor.
Phone Number	Office: 03-7958 3427 H/p: 016-295 5669
e-Mail	russel@fonpackets.com russel.loh@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Bend It Like Bugs
Project Number	TPF8-4030
Project Leader and Team Members	Leader: Shaik Abdul Raheem Member: Tan Kar Hooi
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A programme that specialises in producing series of animation programmes. It starts with a cartoon series for pilot episode (prototype) called "Bend It Like Bugs". Football is the most popular and watched sports in the world, hence it make sense to encourage the audience to watch an animated series of football matches in the insect world. The insects portrayed in this series have many similarities with the real world football, i.e. some bugs will look like the football superstars, managers and personalities.
Publications/Products/ Outcomes	Creative multimedia content
Additional Information	Gross Sales: RM6,500.00
Contact Institution/Entity Address	Third Rock Creation Sdn. Bhd. Suite 1B-3-1 (Office 6), Level 3, Block 1B, Plaza Sentral, Jalan Stesen Sentral 5, Kuala Lumpur Sentral, 50470 Kuala Lumpur.
Phone Number e-Mail	H/p: 012-203 8827 sheikh@3rd-rock-creation.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	YouthSays.com: Youth Panel Provider
Project Number	TPF8-4036
Project Leader and Team Members	Leader: Joel Neoh Eu-Jin Member: Soo Liyeng
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	It is a youth panel provider that caters for research and advertising opportunities by utilising the state of art technology. They offer a ready cluster of youth that will meet client's need in conducting market research and advertising promotions.
Publications/Products/ Outcomes	Internet based businesses
Additional Information	Gross Sales: RM677,927.00
Contact Institution/Entity Address	Youthsays Sdn. Bhd. A702, Kelana Square, 17, Jalan SS 7/26, Kelana Jaya, 47301 Petaling Jaya, Selangor.
Phone Number	Office: 03-5633 8690 H/p: 012-223 3310
e-Mail	joelneoh@hotmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	'Spree' Social Network
Project Number	TPF6-4048
Project Leader and Team Members	Leader: Muhd Sharuzzamal Bakri Member: Zolkifly Mohd
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A localised social networking avenue targeted towards users with innovative functionalities.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address	Persada Terbilang Sdn. Bhd. Upper Ground Floor,Wisma Bumiraya, 10, Jalan Raja Laut, 50350 Kuala Lumpur.
Phone Number	H/p: 012-709 2379
e-Mail	amai@rocketmail.com

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Socialwalk - Business Social Networking Platform
Project Number	TPF9-4010
Project Leader and Team Members	Leader: Tham Keng Yew Members: Azzart Moideen, Asyraf Abdul Rahman, Ismail Mohd Noor, Fadhli Rahim and Eileen Feng
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Socialwalk is a business matching platform preferred by global conference and tradeshow organizers (MICE). Our business matching algorithm is implemented for events and looks at buyer-seller matching from a social, economic and product perspective and is one of the most advanced in the world today. We have expanded regionally and used by global tradeshow and global players such as Messe Dusseldorf and Messe Frankfurt
Publications/Products/ Outcomes	Internet based businesses
Awards/Certificates	Techcrunch, Mashable, Singtel Top 50
Additional Information	International Linkages: Singapore, India Industrial Linkages: MACEOs, SACEOs Commercialisation: Yes Gross Sales: RM500,000.00
Contact Institution/Entity Address	Socialwalk Sdn. Bhd. MSC Malaysia Technology Commercialisation, Centre (Formerly known as MSC Central, Incubator-Accelerator), 63000 Cyberjaya, Selangor.
Phone Number	Office: 03-2163 4045 H/p: 012-332 2798
e-Mail	thamkengyew@socialwalk.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Cameraless Vision System
Project Number	TPF9-4025
Project Leader and Team Members	Leader: Yu Teck Chin Member: Tan Sieow Yeek
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	It is a software and hardware design in optical inspection technology which will effectively prevent human error in product labeling process in a manufacturing system. This technology consists of camera, video card, computer and image processing software to replace human eye and mental comparison process (brain), which is known to be quite unreliable and error prone for repetitive task.
Publications/Products/ Outcomes	Hardware design
Contact Institution/Entity Address	Techeye System Sdn. Bhd. 4B, Jalan Puteri 5/16, Bandar Puteri, 47100 Puchong, Selangor.
Phone Number	Office: 03-7875 0300 H/p: 017-887 8001
e-Mail	techeye06@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Cardiac Data Miner
Project Number	TPF9-4030
Project Leader and Team Members	Leader: Patrick Then Hang Hui Members: Enn Ong Siong Ean and Raman Valliappan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	To develop a data mining software research. This software is important and considered as marketable knowledge discovery application for discovering critical data. The knowledge stored will be useful in driving better healthcare planning and analytical activities. Moreover, the primary healthcare service sector in Malaysia is in the process of maturing and the tertiary research-oriented healthcare service sector is expanding.
Publications/Products/ Outcomes	Software development
Additional Information	International Linkages: Purdue University, USA Industrial Linkages: Sarawak General Hospital
Contact Institution/Entity Address	Logos Biomed Systems Sdn. Bhd. Tkt. 1, Kompleks Negeri, Jalan Simpang Tiga, 93576 Kuching, Sarawak
Phone Number	Office: 082-260 862 H/p: 012-894 0888
e-Mail	hhthen@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Genuine History: Quest for the Perfect Gene
Project Number	TPF9-4048
Project Leader and Team Members	Leader: Loo Chong Shen Member: Lum Lai Ying
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A programme that develops a premium digital content and a web platform to launch the digital content. The web platform will be the tool to market and distribute local digital content. The proposed digital content will be the first local Hollywood-ready content published on a web platform. The digital content is a comic story which revolves around the story of genuine history: Quest for the Perfect Gene. It is the first episode of a trilogy production and the project will only cover the first episode.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address	Sheniti Sdn. Bhd. Suite 518, No. 51- G, Jalan USJ 10/1, 47620 Subang Jaya, Selangor.
Phone Number	Office: 03-2096 9137 H/p: 013-301 5666
e-Mail	csloo1015@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Intellectual Properties Software as a Service (SaaS) Platform
Project Number	TPF10-4013
Project Leader and Team Members	Leader: Jeffrey Tiong jee Hui Member: Lee Chia Min @ Li Jiamin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	To develop a new software on IP management & analytics system for companies based in Asia Pacific. All companies can use this IP management & analytics system to manage their IP portfolios, IP rules & regulations, IP filings, IP search and perform IP analytics.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Patsnap Technologies Sdn. Bhd. E-05-16, 5th Floor, Plaza Mont' Kiara, No. 2, Jalan Kiara, Mont' Kiara, 50480 Kuala Lumpur. H/p: 016-830 2988 Jeffrey.tiong@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Diabetic Homecare Solution
Project Number	TPF10-4038
Project Leader and Team Members	Leader: Tan Eng Hoo Member: Kang Fong Luan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Providing innovative tele health solutions based on the emerging user driven health care and persistent clinical encounter model.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	E2 Informatics Sdn. Bhd. 31, Jalan SL 2/3, Bandar Sg. Long, 43000 Kajang, Selangor. H/p: 012-408 1353 enghootan@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Project Chummy and Champ
Project Number	TPF10-4046
Project Leader and Team Members	Leader: Ahmad Azlan Pa'wan Member: Shahrul Hisham Mohd Tahir
Field of Research	Information, Computer and Communication Technology (ICT)
Category	ICT
Publications/Products/Outcomes	Creative multimedia content
Awards/Certificates	1. Finalist (Digicon 2010) 2. Finalist Cannes Mipcom Junior Super Pitch Competition (2010)
IP Status	In progress for TM application
Additional Information	International Linkages: Everest Distribution (USA) Commercialisation: In progress Spin-offs: 1. Chummy & Champ Children's News Channel (7-minute news content for children and on the environment) 2. Chummy & Champ Ecobites (2-3 min animated version) 3. Chummy & Champ interactive website 4. Chummy & Champ Eco Games 5. Chummy & Champ eBook 6. Chummy & Champ Bedtime Stories 7. Digital and modernised "Wayang Kulit"
Contact Institution/Entity Address	Bigbeak Pictures (M) Sdn. Bhd. Suite 11, IB-3-1, MSC Malaysia Cybercentre @ Plaza Sentral, Jalan Sentral 5, 50470 Kuala Lumpur.
Phone Number	Office: 03-2785 1823 H/p: 012-287 5142
e-Mail	azlan.pawan@bigbeakpictures.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	SOHOW Entrepreneur Training Programme
Project Number	TPF10-4050
Project Leader and Team Members	Leader: Hew Hui Shan Member: Hew Kuan Cheong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	To create a multi-media 'game' for players to gain the business skills required to be 'real' entrepreneurs in the Malaysian business environment. In a fun and exciting way, players learn to plan, start, manage, source for funds and solicit business for their virtual companies. Specific events will be introduced to simulate the uncertainties and ever changing business environment.
Publications/Products/ Outcomes	Creative multimedia content
Additional Information	Gross Sales: RM2,000.00
Contact Institution/Entity Address	Sohow Sdn. Bhd. No. 03-08-08, Kuchai Brem Park, Jalan Selesa Dua, Taman Gembira, 58200 Kuala Lumpur.
Phone Number	Office: 03-798 3476 H/p: 012-231 8535
e-Mail	huishan.bstorm@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Assistive Technology
Project Number	TPF10-4055
Project Leader and Team Members	Leader: Muhammad Fakhri Abu Bakar Member: Hawa Omar
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project is to develop speech synthesis tool for the speech impaired. Speech synthesis has long been a vital assistive technology tool and its application in this area is significant and widespread. It allows environmental barriers to be removed for people with a wide range of disabilities. The longest application has been used are screen-readers for people with visual impairment, but text-to-speech systems are now commonly used by people with dyslexia and other reading difficulties as well as by pre-literate youngsters.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Assistive Technology Sdn. Bhd. No. 7, Lorong 8/2C, 46050 Petaling Jaya, Selangor Darul Ehsan. Office: 03-6141 7894 H/p: 012-530 1110 md.fakhri@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Independent E-bookstore
Project Number	TPF10-4062
Project Leader and Team Members	Leader: Quah Cheng Eng Member: Benjamin Chu Min Xian
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	An e-commerce website platform to promote books by independent publishers & authors with Asia as the focus market. Buyers have options to pay as they want (i.e. they can actually set the price lower than minimum price given). This will allow the books to reach a wider audience.
Publications/Products/ Outcomes	Internet based businesses
Additional Information	Gross Sales: RM14,571.00
Contact Institution/Entity Address Phone Number e-Mail	Booqc Sdn. Bhd. 3-3, Jalan PJU 5/4, Dataran Sunway, 47810 Kota Damansara, Selangor Office: 03-6148 5188 H/p: 12-657 4226 quahchee@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Land Acquisition Form System or LAFOS
Project Number	TPF11-4002
Project Leader and Team Members	Leader: Shaifullah Mat Swadi Member: Sariyani Salim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A new software for land acquisition form system that produce forms via centralised database for land agencies.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Lafos Solutions Sdn. Bhd. No. 5A, Tingkat 1, Jalan SG 3/4, Taman Sri Gombak, 68100 Batu Caves, Selangor. H/p: 019-334 8334 shaifullah@padangmajubina.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	E-sampah
Project Number	TPF11-4033
Project Leader and Team Members	Leader: Hairun Azmi Hashim Member: Hairun Azuwarino Hashim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A software for waste management system known as e-Sampah Software, I-Button and T-Probe. I-Button will be placed at the garbage truck to record the data. T-Probe will read and analyse the data by using the specific software (E166:E167). The data details such as the time, date, day, and the person in charged of collecting the garbage will be recorded.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Hairun Technologies Sdn. Bhd. No. 20(1st Floor), Jalan Tahan, Bandar Baru Jerantut, 27000 Jerantut, Pahang. H/p: 019-6641869 miccyber@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Software E-tika
Project Number	TPF11-4034
Project Leader and Team Members	Leader: Roshayati Ahmed Member: Muhamad Firdaus Mohd Fadzir
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	e-Tika is a new software to manufacture clothes. This platform is invented for tailors and fashion designers. It has been successfully established and it is now made available to the user.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Y & F Technology Sdn. Bhd. A-119, Tingkat 1, Sri Dagangan, Jalan Tun Ismail, 25000 Kuantan, Pahang. H/p: 016-986 2024 atikaberjaya@yahoo.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	E-cartoon Aza
Project Number	TPF11-4036
Project Leader and Team Members	Leader: Abd Razak Sofhi Member: Aminuddin Alias
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	E-cartoon Aza is a project that published digital comic in handphone. The consumer can purchase the digital cartoon messenger via WAP and GPRS applications.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address	A.R. Digital Sdn. Bhd. No. 20, First Floor, Jalan Tahan, Bandar Baru Jerantut, 27000 Jerantut, Pahang.
Phone Number	Office: 09-266 7149 H/p: 019-333 9980
e-Mail	azaloose@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Organisation Management Software
Project Number	TPF12-4039
Project Leader and Team Members	Leader: Fu Ching Yee Member: Mak May Ling
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Organisation Management Software has developed a cost effective organisation management software for Non-Profit Organisations (NPOs). The proposed product is a combination of software and services, designed to increase the efficiency of managing a growing organisation by using information technology in the most optimal manner. This flexible business software model allows the NPOs to get the best answer to their mounting cost. In summary, software will not only benefit NPOs in managing their organisations effectively.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	Senedi Labs Sdn. Bhd. 11-15-1, Jalan 15/155B, Taman Esplanade Commercial Centre, Bukit Jalil, 57000 Kuala Lumpur.
Phone Number	Office: 03-8994 0911 H/p: 016-2633 911
e-Mail	chingyee.fu@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Uncle Bugs Malaysian Stories for Kids
Project Number	TPF11-4070
Project Leader and Team Members	Leader: Tan Yeow Kiang Member: Tan Yeow Leng
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Adventurous stories based on local culture, and heritage, with good moral, educational and inspirational messages. It is an animated trailer of 2 minutes in 2D & 3D. This trailer is the proof of concept and will be used as marketing sample for future projects.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address Phone Number e-Mail	Uncle Bugs Creations Sdn. Bhd. 11, Jalan USJ 6/3B, UEP, 47600 Subang Jaya, Selangor. H/p: 013-388 7800 bugstan@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Virtual Haj
Project Number	TPF9-4013
Project Leader and Team Members	Leader: Mohd Shahrin Ismail Members: Mohd Fazidin Jabar, Abdul Halim Ahmad, Md Najib Osman and Sri Kusumawati Mohd Daud
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Virtual Haj is a new medium to teach Haj principles and practices to all Haj ready Muslims who wanted good training before performing the real pilgrimage in Mecca. A Virtual Reality (VR) technology running on medium end notebook and projector with a game engine as the base application is used whereby 3D, interaction, data, audio/video, information and decision are all dealt with in real-time. It was designed to be educational, experiential, exciting, playful, and enjoyable besides creating a more immersive, intuitive and highly interactive environments for education. Logics and Artificial Intelligence (AI) are programmed to monitor and manage the player(s).
Publications/Products/ Outcomes	Creative Multimedia Content
Awards/Certificates	1. Gold medal for Education Category at ITEX Awards 2010 2. Finalist for the MSC Malaysia Asia Pacific ICT (APICTA) Awards 2009 in E-Learning, Content Design
Contact Institution/Entity Address	Halimunan Kreatif Sdn. Bhd. No. 19, Desa Seri Setia, Jalan Seri Setia, Giching Sepang, 43900 Selangor.
Phone Number e-Mail	H/p: 013-363 7927/ 019-712 7304 cyberyen@yahoo.com azid21@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Health Check Central
Project Number	TPF10-4060
Project Leader and Team Members	Leader: Lee Kok Leong Member: Tan Chun Chee
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Health Check Central is an intelligent engine that communicates with various critical personal health data measurement devices. It allows monitoring of important vital signs such as blood pressure, pulse, weight, waist size and cholesterol level.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address	Inno Planet Sdn. Bhd. Microsoft Innovation Centre, MSC Technology Commercialization Centre, Multimedia University, 63100 Cyberjaya, Selangor.
Phone Number	Office: 03-8948 2268 H/p: 012-418 8511
e-Mail	kok_leong_lee@yahoo.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Your Free Mobile Voice Call Service
Project Number	TPF13-4021
Project Leader and Team Members	Leader: Phuah Yee Keat Member: Khoo Bee Theng
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	To develop a platform and mobile client that enables price-sensitive consumers to make free calls from their mobile. The entire system will consist of call server management platform, advertiser management platform and IP Call mobile client. This project will allow mobile users to call to any telephone network for free. Their low-cost voice over IP call charges will be paid forth by advertisers. Advertisement will be played as ring-back tone and call-in options as part of the revenue generation mechanism.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address	Flexus Communications Sdn. Bhd. 22, Jalan PP3/13, Taman Putra Prima, 47100 Puchong, Selangor.
Phone Number e-Mail	H/p: 016-295 6839 ykphuah@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	BWave™ Connected Home Digital Lifestyle System
Project Number	TPF13-4027
Project Leader and Team Members	Leader: Tharmaindran K.Gannasin Members: Yuri V.Klimets and Yap Heong Wooi
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	BWave Digital Lifestyle System is a holistic wireless solution for connected home applications. BWave has been invented and designed to promote convergence by bringing all technologies in home together into one complete, elegant and connected device. The core of the BWave solution will be the end user device (Smart Control Centre-SCC) and an intuitive user interface software for the HomePad (tablet/ touch panel) and smartphones. BWave is a all-in-one novel innovation for energy management, security/safety features, surveillance, climate control, A/V control and automation with complete mobility over 4G network. BWave will be a pinnacle of innovation for home control solution.
Publications/Products/ Outcomes	Hardware :Wireless Smart Control Centre on embedded Linux . User Interface(Software): System control GUI for tablets, smartphones, PC. Centralised billing and monitoring solution
IP Status	Pending registration
Additional Information	International Linkages: Lightros Pte.Ltd. (Moscow) Industrial Linkages: BT Multimedia Sdn.Bhd.
Contact Institution/Entity Address	BNetworks Sdn. Bhd. A3-05, PJ Industrial Park, Jalan Kemajuan, 46200 Petaling Jaya, Selangor.
Phone Number e-Mail	Office: 03-3341 2710; H/p: 019-6616048 tharma@bnetworks.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	iPIPE
Project Number	TPF13-4030
Project Leader and Team Members	Leader: Chew Hoo Weng@Daniel Member: Lim Woon Kian
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This programme will develop a platform to push content on mobile devices intelligently via subscription similar to Skype and YouTube. All the active subscribers are able to contribute and receive near-real-time content based data on customisable preferences according to their own interest.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address	Conixo Technologies Sdn. Bhd. Suite 2302, 23rd Floor, Wisma Tun Sambanthan, No. 2, Jalan Sultan Sulaiman, 50000 Kuala Lumpur.
Phone Number e-Mail	Office: 03-2166 6785 danielchw@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Hydra Workflow System for Trading Company
Project Number	TPF13-4056
Project Leader and Team Members	Leader: Kelvin Yong Sze Shung Member: Yong Sze Shung
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This software will develop an on-demand multi-tenant online workflow engine that is scalable, configurable and user-friendly. The workflow engine will generate templates of processes defined by user and create the workflow based on those templates. The first template will be based on the trading company processes such as quotations, sales and purchase cycles. These are the most commonly used process which usually leverages on Microsoft technologies, before transferring it to the next generation workflow system. It will come out as a working prototype system with the basic full functioning features.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	Unispace Technologies Sdn. Bhd. 39C, Jalan SS 21/60, Damansara Utama, 47400 Petaling Jaya, Selangor
Phone Number e-Mail	H/p: 012-275 8332 sskelviny@gmail.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Fleetwork Trainer 2.0 (FWT2)
Project Number	TPF13-4069
Project Leader and Team Members	Leader: Muhammad Nazri Hussein Member: Mohd Nazri Mohamad Zain
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Fleet Work Trainer integrates computing power, 3D modeling, ship hydrodynamic, oceanography, environment, and navigation charts to produce a near realistic training environment to train the Communication Officer, Radio Operator, Officer of the Watch and young officers to keep themselves abreast with the tactical communication rules and procedures.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	Altriz Technology Sdn. Bhd. A-1-12, Block A, First Floor, SME Technopreneur Centre 2 Cyberjaya, 2260, Jalan Usahawan 1, 63000 Cyberjaya, Selangor .
Phone Number	Office: 03-8320 2050 H/p: 012-212 9004
e-Mail	nazrih@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Car Multi Controller
Project Number	TPF13-4099
Project Leader and Team Members	Leader: Diminic Wong Shui Foong Member: Lim Kheng Teong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	CMC is an application developed on the Apple Cocoa platform utilizing the technology of the iphone such as its multitouch features, accelerometer and connectivity for the ultimate mobile car multi controller experience.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address	Pixnix (M) Sdn. Bhd. 119, 4th Floor-B, Jalan SS6/12, Kelana Jaya Urban Centre, 47301 Petaling Jaya, Selangor.
Phone Number	Office: 03-7710 5092 H/p: 012-688 0500
e-Mail	wdom.n.c@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	FDA 21 CFR Part 11 Compliance Document Management System
Project Number	TPF13-4112
Project Leader and Team Members	Leader: Lee Chaw Sin Member: Diong Choi Mee
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	It is a document management software system compliance with FDA regulation 21 CFR part 11 which governs the agency's acceptance of electronic records as authentic and electronic signature as legally binding.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	InfoQms Sdn. Bhd. 30-01, Jalan Sagu 15, Taman Daya, 81100 Johor Bahru, Johor.
Phone Number	Office: 07-3573228 H/p: 016-7140251
e-Mail	vincentlee@infoqms.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Akil Story
Project Number	TPF13-4117
Project Leader and Team Members	Leader: Khatijah Abd Rashid Member: Nur Azura Kalikurahman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	“Akil Stories” is about making a Holy Quran stories become alive for children. This project will develop a 2D animation cartoon based on “stories” from the Holy Quran. The Ever-Glorious Quran presents the stories of the Prophets and their companions. Through these stories, we identify a group of animals that have played a great significant role in history to be the players in “Akil Stories”.
Publications/Products/ Outcomes	Creative multimedia content
Additional Information	Gross Sales: RM2,530.00
Contact Institution/Entity Address	Khalifa Production MSC Malaysia Technology Commercialisation Centre, (Formerly known as MSC Central Incubator-Accelarator) 63000 Cyberjaya, Selangor.
Phone Number e-Mail	H/p: 013-942 6983 ilhamku_5133@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	<i>Pembangunan Pakej Sistem Pengurusan Bestari Bagi Pelbagai Organisasi Dalam Sistem Pendidikan Malaysia</i> The Development of Smart Management Package System for Multiple Organisation in Malaysian Education System
Project Number	TPF14-4006
Project Leader and Team Members	Leader: Syed Mustafa Kamal Syed Sulaiman Member: Syed Ahmad Kasyfillah Syed Sulaiman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The development of smart management package system for multiple organisation in the Malaysian education system, which consist of three modules. The objective of the project is to increase the quality and delivery system in the education organisation.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Ciphercurious Sdn. Bhd. No. 21, Jalan Susur Dewata 1, Taman Larkin Perdana, 80752, Johor Bahru. Office: 07-236 0701 H/p: 019-778 6295 symustafa@yahoo.com.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	<i>Kisah Lima Sahabat</i>
Project Number	TPF14-4016
Project Leader and Team Members	Leader: Wan Hamidah Wan Mahmud Member: Nur Aqilah Che Azmy
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	" <i>Kisah Lima Sahabat</i> " is developed in a 3D animation in Malay language. The story is about five close friends and their interesting daily activities. A total of 10 episodes will be produced from this project and each of them will run for 15 minutes.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address	Multi Listic Sdn. Bhd. 1355-D, Kg. Gelugor Kedai, 20050 Kuala Terengganu, Terengganu.
Phone Number e-Mail	H/p: 013-969 5058 wn_hamidah@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	SPMS
Project Number	TPF14-4093
Project Leader and Team Members	Leader: Lin Kok Liong Member: Lee Nong Yuen
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	A provider of IT and management consulting services to organisations in the Financial Services industry.
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address	Aristal Technologies Sdn. Bhd. Unit 901, Block A, Damansara Intan, No. 1, Jalan SS20/27, 47400 Petaling Jaya, Selangor.
Phone Number e-Mail	H/p: 012-226 8601 lin.kok.liong@aristalsolutions.com

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	WonderTech Wireless Microphone
Project Number	TPF14-4123
Project Leader and Team Members	Leader: Syed Syahrul Zarizi Syed Abdullah Member: Fadhilah Othman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This service will develop a portable wireless microphone that can be used with mp3 player or hand phone with FM radio. It can also function as a receiver for teaching and training aid.
Publications/Products/ Outcomes	Support services
Contact Institution/Entity Address Phone Number e-Mail	Wonder Stuff Sdn. Bhd. No. 91, Jalan Rimba 56, Bandar Seri Alam, 81750 Masai, Johor. Office: 013-770 6981 H/p: 07-386 5809 syed.syahrul@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Online Hard Disk Diagnostics and Recovery System
Project Number	TPF14-4124
Project Leader and Team Members	Leader: Teh Chong Leng Member: Teh Chong Wie
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This is an online hard disk diagnostic and recovery system to help computer users to salvage their most valuable data in the shortest time possible.
Publications/Products/ Outcomes	Software development
Additional Information	Gross Sales: RM40,500.00
Contact Institution/Entity Address Phone Number e-Mail	Dareco Origin Sdn. Bhd. No. 39-3, Jalan Metro Perdana 7, Taman Usahawan Kepong, Kepong Utara, 51200 Kuala Lumpur. Office: 03-6257 7651 H/p: 017-3167 2261 kennethwy@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Action Role Playing Game
Project Number	TPF14-4130
Project Leader and Team Members	Leader: Kow Tze Perng Member: Chen Kok Fei
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Developing a computer action role playing game (ARPG). Fast-pace, action intensive, offline, single player.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address	Gamedge Entertainment Sdn. Bhd. No. 3-2, 2nd Floor, Jalan PJS 8/18, Dataran Mentari, 46150 Petaling Jaya, Selangor.
Phone Number	Office: 03-56301120 H/p: 012-6903082 /03-56301120
e-Mail	jasonkow@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	The Beginning
Project Number	TPF13-4020
Project Leader and Team Members	Leader: Mohd Imaduddin Mohd Azam Member: Hazrian Adrin Jasin Awang Darmo
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This is a 3D animation movie that will be using a 3D Platform. The platform will use Renderman technology or normally known as Render Farm. . The targeted audiences are adults, teenagers and children (age between 10 to 30 years old).
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address	Aquareiru Sdn. Bhd. 31, Jalan Seri Putra 3N, Bandar Seri Putra, 43000 Kajang, Selangor.
Phone Number e-Mail	H/p: 013-624 8852 z.uniten@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	ZELREALM
Project Number	TPF12-4020
Project Leader and Team Members	Leader: Khoo Kien Yong Member: Kok Si Chyi
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	It is an integrated consumer-to-consumer virtual item trading platform for online game environment. It is used to develop the massive online gaming industry's such as First Plug & Play, and Player-to-Player E-commerce as an engine for online game publishers to monetise the untapped trading market.
Publications/Products/ Outcomes	Internet based businesses
Contact Institution/Entity Address Phone Number e-Mail	Zelrealm Sdn. Bhd. No.7, Jalan Sutera Pulai 2/13, Taman Sutera Utama, 81300 Skudai, Johor. H/p: 017-286 9772 khookienyong@gmail.com / kienyong.khoo@zelrealm.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Virtual Learning Centre
Project Number	TPF15-4052
Project Leader and Team Members	Leader: Nizamodeen S.O.K Abdul Gaffoor Member: Aizima Abdul Rahman
Field of Research	ICT
Project Summary/ Objectives	Virtual learning centre (cikgu2u.com) is an online learning centre that combines online questions, e-notes, e-submissions and streaming videos for secondary students i.e. for form 3 to form 5 .
Publications/Products/ Outcomes	Software development
Contact Institution/Entity Address Phone Number e-Mail	Solsitech Sdn. Bhd. No.1A, Jalan Nuri 7A, Sek 7, Kota Damansara, 47810 Petaling Jaya, Selangor. Office: 03-6157 4300 H/p: 013-693 5509 admin@mymarket2u.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Ultrasound Power Meter (UPM-308)
Project Number	TPF15-4059
Project Leader and Team Members	Leader: Murni Norestri Mohd Nordin Member: Nik Mohamad Arif Jamaludin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Ultrasound Power Meter (UPM-308) is a device to measure ultrasound power generated by the diagnostic and therapeutic ultrasound machines
Publications/Products/ Outcomes	Hardware design
Contact Institution/Entity Address	Emend Corporation Sdn. Bhd. Kompleks Usahawan Teknologi MARA, Technovation Park, 81300 Skudai, Johor.
Phone Number	Office: 07-553 7567 H/p: 012-596 2676
e-Mail	emend_85@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – MSC Pre Seed Fund Programme(ICT)

Project Title	Math Quest
Project Number	TPF16-4027
Project Leader and Team Members	Leader: Mohd Hezri Amir Abdul Latif Member: Mohd Ramzan Rozali
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Math Quest is an educational and entertaining game which incorporates the Role Playing Game (RPG) concept. The main focus of this game is to teach mathematic for primary school students.
Publications/Products/ Outcomes	Creative multimedia content
Contact Institution/Entity Address	Hezmedia Interactive Sdn. Bhd. c/o MAD Incubator Sdn. Bhd. Lot 2-1A, Support Services, Technology Park Malaysia, Lebuhraya Puchong-Sg. Besi, Bukit Jalil, 57000 Kuala Lumpur.
Phone Number	Office: 03-3393 4070 H/p: 019-339 7720
e-Mail	hezriamir7@gmail.com

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Smartag Radio Frequency Identification (RFID) Trial Project in Pasir Gudang Port, Johor
Project Number	TF1108C150
Project Leader and Team Members	Leader: Lim Peng Keong Members: Hans Choong, Hamzah VK Ismail, Ho Ee Lock and Nor Hazaimi Hamzah, Evizal
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>The Johor Port trial project, which was a collaboration effort between Smartag and Johor Port deployed the best technologies and standards in its showcase. The project has adopted the most recently published ISO 18186:2010 standard set forth by the ISO committee, where the hardware readers and RFID tags used in the trial complied in accordance with the ISO standard. The tracking system capabilities are inter-operable and in conformance to EPCIS, and are certified by EPC Global.</p> <p>The successful implementation of this project via cooperation with SIPG, SuperRFID and EPC Global has gained significant recognition and support by the ISO TC104 members, and has thus become the primary reference for other countries. This project has also given a substantial boost to the level of awareness of ISO 18186:2010 and ECPIS within Malaysia and neighbouring countries, a positive sign that will ensure Malaysia to be at the forefront of container RFID technology.</p>
Publications/Products/ Outcomes	<ol style="list-style-type: none"> 1. Stable communication of the RFID e-seal tag with the ready was establish in areal environment at the Johor Port. 2. The Smartware is able to handle multiple requests from the container management system. 3. A seminar was held on 15th April 2010. 4. Showcase the first pre-commercialisation RFID e-Seal tag for container in a port in Malaysia
Awards/Certificates	<ul style="list-style-type: none"> • Asia Pacific APICTA Merit Award Recipient 2010 for Best of eLogistics • MSC APICTA Merit Award Recipient 2010 for Best of eLogistics
Contact Institution/Entity Address Phone Number e-Mail	<p>Smartag Solutions Sdn. Bhd. 368-4-1, Belissa Row, Jalan Burmah, 10350 Georgetown, Pulau Pinang. Office: 04-227 5013 limpk@smartag.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	The Development and Implementation of a Digital Smart Community Platform Using RFID (Radio Frequency Identification) System
Project Number	TF0206C009
Project Leader and Team Members	Leader: Syed Idris Syed Hassan Member: Widad Ismail, Manan Razali
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>A digital community is a community that is fully served by digital infrastructures and other digital facilities, such as computers, servers, databases, such that all personal services, administrative processes, access of personal data and other information can be carried out through digital network infrastructures, computers, fixed and mobile communications facilities.</p> <p>A Wireless Local Area Network (WLAN) is a world-wide standardisation for low power consumption to enable battery operation for mobile devices. The usage is possible without a special permission and/or licenses. The transmission technology is robust and could simplify a spontaneous cooperation at customer points. The simple use and administration can also retain former investments in the fixed network area. Other aspects are the obtained security in regards to the tapping of confidential data and emissions, as well as transparency in regards to applications and protocols of higher layers in the network communication protocol system.</p> <p>Combining the Wireless LAN technology with the 3G high-speed multimedia data, with speeds ranging from 128 Kbps to several megabits per second (defined by the ITU under the IMT-2000 global framework), there are many applications one can do for such a network.</p>

Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Alani, M, Ismail, W., and Singh, M. 2008. Active RFID system and applications. <i>IEEE Transactions on Consumer Electronics</i>. 2. Ismail, W., Singh, M, J.S. and Abdulla, R. 2008. Wireless Zigbee Transponder with Temperature Sensor Capability for RFID Application. <i>RFID Journal</i>. 3. Mohammed Elhefnawy, Ismail, W. 2008. A Circularly Polarized Microstrip Antenna Array with Butler Matrix. <i>Proceedings of Asia Pacific Symposium on EMC & 19th International Zurich Symposium On Electromagnetic Compatibility</i>, 19-22 Mei 2008. 4. Mohammed Elhefnawy, Ismail, W, and Mandeep J.S. 2009. Circular Polarization Diversity with Small Size Microstrip Antenna. <i>International Journal of Electronics</i>, ID TETN-2008-0058. 5. Mohammed Elhefnawy and Widad Ismail (2009). A Microstrip Antenna Array for Indoor Wireless Dynamic Environments. <i>IEEE Antenna and Propagation Transaction</i>.
Awards/Certificates	<ol style="list-style-type: none"> 1. Best Award For The Invention Of Contactless Active Integrated RFID (CAIRFID) In Malaysia Technology Expo (MTE) 2009 2. Gold Medal & Wipo Best Women Inventor In ITEX 2009 For The Invention Of RFIDTM-Reusable RFID Based Module For Networked Based Heterogeneous System 3. Gold Medal At Nuclear Innovation Award 2009 For The Invention Of Radio Frequency Identification (RFID) System For Multiple Range Detection In Nuclear Power Plant Management
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Sains Malaysia (USM) Pejabat Pengurusan dan Kreativiti Penyelidikan (RCMO), Universiti Sains Malaysia, 11800 Minden, Pulau Pinang. Office: 04-599 6050 H/p: 012-425 2683 ssyed@eng.usm.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Multiband All Terrain (MATE) Microwave Link System
Project Number	TF0206C002
Project Leader and Team Members	Leader: Zulkarnain Mohd Yusof Members: Zaiki Awang and Mazlaini Yahya
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>This project was initiated with the main objective to design and develop commercially viable locally manufactured microwave link system where low cost and broadband performance have been identified as the main benchmarks. The project initial design was to develop four divided sub-systems with clear physical separation of individual outdoor and indoor units to complete the microwave-link system that have been commonly used in the commercial market. Another objective was to design and develop a long range microwave system that is able to mitigate the problem of Non Line-Of-Sight (NLOS) as opposed to Line-Of-Sight (LOS) wireless transmission.</p> <p>The benefits of NLOS are as follows:</p> <ol style="list-style-type: none"> Low cost and flexible installation Independent of communication tower requirement Independent of Fresnel Zone fading Independent transmission channel <p>In addition to NLOS benefits, the microwave link system must be able to maximise benefits of LOS wireless transmission to achieve beyond geographical boundaries and operability on all types of terrain and weather conditions.</p>
Publications/Products/ Outcomes	Products: Low cost and broadband microwave link system.
IP Status	Patent Granted (United State)
Contact Institution/Entity Address	Telekom Research & Development Sdn. Bhd. TM R&D Innovation Centre, Lingkar Teknokrat Timur, 63000 Cyberjaya, Cyberjaya.
Phone Number	Office: 03-8883 9595 H/p: 013-344 3473
e-Mail	rizal@tmrnd.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Computerised Diabetic Retinopathy (DR) Monitoring and Grading System
Project Number	TF0206C129
Project Leader and Team Members	Leader: Ahmad Fadzil M.H. Members: Lila Iznita Izhar, Hermawan Nugroho, Chu Jenn Weng , Pang Kin Wai , Lim Yi Peng, Cheah Ching San, Lim Kai Sek , Lim Leh Han, Mariam Ismail , Elias Husein, Nor Fariza Ngah, Tara Mary George, Nomarisa, Kasmani and Asran
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>The Computerised Diabetic Retinopathy (DR) monitoring and grading system is a medical device that grades the severity and progression of diabetic retinopathy of diabetic patients. The system uses digital image analysis to determine the enlargement of the foveal avascular zone (FAZ) as a parameter for DR grading. The current pathology based grading method is only effective with fluorescein angiography and in detecting moderate to severe non proliferative DR cases. This new approach uses normal colour fundus images to enable early screening of individuals who may be at risk of developing DR and provides a fast and effective diagnostic tool to detect and grade DR severity. In the project, a DR system prototype is developed and tested in clinical trials. The system comprises of an external fundus camera connected to an image processing computer that digitises retinal image (fundus image) and performs DR analysis. The fundus camera is integrated with the Vitrox vision system that runs the analysis software. The DR image analysis algorithm developed by UTP in an earlier research has been converted using Vitrox system development tools in order for the DR analysis software to work on the Vitrox platform. Clinical trials provide a larger image database for testing and upgrading system's functionality, for calibration of DR grading thresholds to achieve accuracy and sensitivity needed for medical practice, and to obtain feedback from ophthalmologists.</p>



Publications/Products/ Outcomes	Products: Computerised DR Monitoring and Grading System Prototype of DR grading protocol based on enlargement of FAZ using digital image analysis on colour fundus imagesillion.
Awards/Certificates	<ol style="list-style-type: none"> 1. International Invention, Innovation & Technology (ITEX) 2009: 1 Gold Medal 2. iENA Nuremberg - International Trade Fair Ideas-Inventions-New Products 2009: 1 Gold Medal
IP Status	<ol style="list-style-type: none"> 1. Malaysia and International Patent File (PI 20083503); A Non-Invasive Method for Analysing the Retina for Ocular Manifested Diseases, 10 September 2008. 2. Malaysia Patent filed (PI 20091936) and Korea Patent Filed; <i>An Apparatus for Monitoring and Grading Diabetic Retinopathy</i>, 12 May 2009.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Petronas Research Enterprise Office, Universiti Teknologi PETRONAS, Seri Iskandar, 71350 Tronoh, Perak. Office: 05-368 8170 zamri_yusof@petronas.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Enhancement and Development of High-throughput Machine Translation System
Project Number	TF1107C039
Project Leader and Team Members	<p>Leader: Robert Geogre Hercus @ Abdul Karim Hercus</p> <p>Members: Munirah Abdul Hamid, Zaidon Omar Baki, Ivan Chhua, Ng Yin Ping, Ahmad Zulhafizudin, Mohd Siddiq Rosely, Ho Kim Fong, Liu Kai Siang, New Teong Chuan, Amy Chong, Nasriyah Ariffin, Rohayah Ngah, Noor Hidayu Abu Halim, Nor Izyan Shahirah, Mohd Zabri Dullah, Asmawati Abu Hassan, Richard Chong, Jasmine Tan, Reena Kumari, Felicia Chong, Sally Chhua, Nurmeinah Sari, Zakirah Ramli, Siti Suhaida Jaaffar, Soraya Mohd Arsad Phang Ing Siong, Kenny Lim, Julie Murshidah, Roslilawati Che Mat, Ismail Ishaq, Junita Kang, Nurmeinah Sari and Catherine Konggidinata</p>
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>This project was proposed in support of the enhancement and development of high-throughput machine translation technology that may contribute to bridging the digital divide that exists in Malaysia and other countries.</p> <p>Most commercial machine translation systems are developed using heavy programming of linguistic rules, which results in systems which are computationally complex and typically slow. A different approach was taken that involves training a system using large corpora of monolingual text and aligned bilingual text in the source and the target language. The resulting system is able to offer high-throughput translation, a feature critical to enabling seamless searching and surfing of English Internet content in Bahasa Malaysia, Chinese and Bahasa Indonesia.</p>
Publications/Products/ Outcomes	<p>Products:</p> <p>Linguamatix's online translation portal.</p> <p>English – Malay</p> <p>English – Mandarin</p> <p>English - Indonesia</p>
Contact Institution/Entity Address	Linguamatix Sdn Bhd No. 27-9, Level 9, Signature Office, Bandar Mid-Valley, 59200 Kuala Lumpur.
Phone Number e-Mail	Office: 03-2283 3860 hercus@linguamatix.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Development and Pre-commercialisation of my.akses 3G/HSDPA
Project Number	TF0206C059
Project Leader and Team Members	Leader: Rohzan Abd. Rahman Members: Asri Ahmad, Siti Sara Ahmad and Nik Noor Nadiyah Ibrahim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	my.akses 3G is a new emerging product that takes advantage of the new 3G network provided by four (4) 3G license holders. It works as a Customer Premises Equipment (CPE) to a variety market sector.
Publications/Products/ Outcomes	Products: My.Akses 3G
IP Status	Patent Disclosed to MyIPO
Contact Institution/Entity Address	Ridaa Associates Sdn Bhd 23-7, USJ 9/5Q, Subang Business Centre, 47620 UEP Subang Jaya, Selangor.
Phone Number e-Mail	Office: 03-8023 1678 rohzan@ridaa.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Integrated Radiology Information System / Picture Archiving and Communication System for Health Care Services
Project Number	TF0206C093
Project Leader and Team Members	Leader: Saleh Shahid Members: Asbi Ali, Mohamad Gapar Mohamad Johar, Norfatimah Yunus, Saleh Shahid , Kenneth Ho, Allen Huo and Terry Tu
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>The main objective of the project is to develop the product of Picture Archiving and Communication System (PACS). It consists of four modules which comprise of:</p> <ul style="list-style-type: none"> i. Non - DICOM Gateway; ii. DICOM Report; iii. RIS System; and iv. Work list <p>These modules provide basic diagnosis functions for referring clinicians to complete patient examination. Functionally, non-DICOM gateway and DICOM-Report modules are medical image management sub-systems that provide facilities to store medical images and reports in digital format. Whilst RIS and Worklist modules provide facilities for patient registration and patient automation such as in test and check up scheduling and facilities booking.</p>
Publications/Products/ Outcomes	Products: PACS/RIS system DT-PACS System
Contact Institution/Entity Address	Developtrends Sdn. Bhd. 6.01, Office Block, Pudu Plaza, Jalan Landak, Off Jalan Pudu, 55100 Kuala Lumpur.
Phone Number e-Mail	Office: 03-9101 9615 vpasia@tm.net.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Distributed Multi-Access Platform (DMAP)
Project Number	TF0206C099
Project Leader and Team Members	Leader: Azrin Aris Members: Siti Sawiah Ramli, Saiful Adha Abdul Rahman and Nurul Shuhada Ahsan@Miskam
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>The D-MAP/ADSL2/2+ system consist of two components, namely, modem front-end subsystem (D-MAP Remote/ADSL2/2+ Card) and CO-based switching subsystem. The modem front-end unit is located within a DLC while the CO-based switching subsystem is located in a central office. Data in analog signal format from the ADSL CPE equipment located at the subscriber premise is sent to/from the Modem Front-end Subsystem via a typical twisted pair copper plant. The Modem Front End Subsystem processes the ADSL data in analog format and converts the resulting data into an ATM format. A gigabit Ethernet connection is used to transport the data back to the Switching Subsystem located in a CO. The switching system delivers the data that comes from several Modem Front End Subsystems, which is then piped to the public internet. An Element Management System (EMS) running in the CO-based Switching System is used to manage the Modem Front End Subsystems connected to the CO-based Switching System. To expand the system for more subscribers, fibre patching to daisy-chain all D-MAP Remote/ADSL2/2+ Cards is possible. The maximum subscriber of 24 is the limit for each Combo card while the maximum of daisy-chain is virtually unlimited, however the fiber connection will limit to 1 Gbps.</p> <p>The DLC based DMAP Remote is similar to DLC-based where it uses only one single D-MAP/ADSL/2+ card. The major different is the metal enclosure is used to hold a single combo card instead of standard chassis cabinet that allows multiple combo cards to be inserted. The metal enclosure can be mounted virtually anywhere such as street poles and buildings. It creates flexibility for deployment of fewer subscribers' areas to reduce implementation cost.</p>
Publications/Products/ Outcomes	Products: Distributed Multi-Access Platform (DMAP) System

Contact	Telekom Research & Development Sdn. Bhd.
Institution/Entity	TM R&D Innovation Centre,
Address	Lingkar Teknokrat Timur, 63000 Cyberjaya, Cyberjaya.
Phone Number	Office: 03-8883 9595 H/p: 013-344 3472
e-Mail	rizal@tmrnd.com.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Virtual Science Museum Malaysia
Project Number	TF0106C336
Project Leader and Team Members	Leader: Syed Naqiz Shahbuddin Member: Mohd. Irman Nawawi
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>The MSE allows the creation of any environment and exhibits it virtually, which allows users to explore these environment interactively, and exhibits from anywhere in the world.</p> <p>Technical milestones achieved including model/camera collision detection for 3D navigation, 3D virtual environment, Flash interface, multi user and online networking.</p> <p>The skill-sets that were developed during the course of the project allows us the flexibility to customise and commercialise the MSE to be used across different economic sectors such as education, culture/heritage, construction and even as pure entertainment such as multiplayer games.</p> <p>This would allow the creation of new local content that would be beneficial for people across a wide range of industries and the nation as a whole.</p>
Publications/Products/ Outcomes	<p>Product: Virtual science museum prototype</p> <p>Outcomes:</p> <ol style="list-style-type: none"> Enhancing interaction between students and teachers through virtual classes. Providing virtual platform medium for visualisation of exhibits and galleries for local museum. Enable virtual construction of buildings allowing architects and developers to explore and rectify design before actual construction is carried out.
Contact Institution/Entity Address	Purple Flame Sdn. Bhd. E-2-11, Plaza Damas 60, Jalan Sri Hartamas 1, Sri Hartamas, 50490 Kuala Lumpur.
Phone Number	Office: 03-2169 6160 H/p: 013-389 7449/ 012-302 8356
e-Mail	naqiz@naqiz.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Integrated Field Service Solution
Project Number	TF0308C028
Project Leader and Team Members	<p>Leader: Khairil Anuar Abd. Majid</p> <p>Members: Catherine Lee Ismail Azizi, Mazlina Mohamed, Wardah Ismail, G. Malarvilli, Allan Low, Wan Amril Ramirez, Emyzai Zainuddin, Normala Murat, Azrul Hisham Mohamed Amin, Muhammad Zamros A. Rahim, Mohd Zairol Nazam Kamaruddin and Fadzlullah Zahari</p>
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>MoFFAS is a system specifically designed for mobile workforce for example, field technicians, repairmen, maintenance technicians (hereon referred to as Field Force Teams), who typically work at multiple sites, installing, maintaining or repairing machines and equipment. It enables the Field Force Teams to access the information required to perform their day-to-day jobs, from their mobile hand-held device or PDA including:-</p> <ol style="list-style-type: none"> Repair and Maintenance information Job/Work Order information Machine/Equipment information Location Information Materials/Spare Parts Information <p>At the same time, the Field Force Teams can communicate back to the control centre supervisor for estimated time for repair job status and action taken.</p> <p>These information, together with the time stamps is automatically recorded in the console system at the control center. The information can also be interfaced to the back-office financial system for computation of service/materials costs, and interfaced to the front-end Customer Relationship Management (CRM) system for more accurate update to the customer.</p>
Publications/Products/ Outcomes	<p>Product:</p> <p>MoFFAS Integrated field service solution.</p>
Contact Institution/Entity Address	DDSB(M) Sdn. Bhd. No.45, Level 3-Unit A, Block A, Plaza Damansara, Medan Setia 1, Bukit Damansara, 50490 Kuala Lumpur.
Phone Number	Office: 03-2095 8880 H/p: 019-233 8800
e-Mail	khairil@ddsb.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Pre-next Generation Communication: MayaMe
Project Number	TF0206C153
Project Leader and Team Members	<p>Leader: Mohd. Nazri Mohd. Nor</p> <p>Members: Raswizar Abd. Razak, Mohammad Redzuan Sulaiman, Eungroh Ahn (Thomas), Hurairah Mat Nawi, Mior Zairuddin Nior Abdul Rani, Jamalis Jamaluddin, Amirudin Kulop, Hamizah Kasmon, Mursyid Mohamed and Mohd Nazri Mohd Nor</p>
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>MayaMe comprises of Element Manager, MayaWeb, MayalM, MayaGroupWare, MayaXI :</p> <ul style="list-style-type: none"> i. Element Manager: ii. MayaWeb: It is the portal for managing Community or Organisation. iii. MayalM (MayaMe Basic): All the authorised users will be able to use features provided such as sending memo, sms, chatting and making a free IP call. iv. MayaGroupWare (MayaMe Intermediate): All the authorised users will be able to access this feature where they can manage their contacts, events, e-mails and find their contacts. v. MayaXIP (MayaMe Advance): It provides advance feature where users can make/receive charged PSTN In/Out Call, sending voice mail, making a conference call and click a call
Publications/Products/ Outcomes	<p>Products:</p> <p>MayaMe Communication System</p>
Contact Institution/Entity Address Phone Number e-Mail	<p>Tel-Lab International Sdn. Bhd. Blok H, UPM-MTDC, Technology Incubation Center One, Universiti Putra Malaysia, 43400 Serdang, Selangor. Office: 03-8946 2877 H/p: 013-392 4740 nazri@ibtech.com.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Development and Implementation of an Interactive and Secure Mobile Banking System
Project Number	TF0408C057
Project Leader and Team Members	Leader: Mazlee Md. Ramli Members: Hanafiah Muhammad and Kunasekaran Kuppusamy
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>This project involves the development of a new application and system for Mobile Banking. The system will make mobile banking to be ubiquitous, secure and fast, compared to current mobile banking systems. SIMER Solutions Sdn. Bhd. had embarked on the development of a system known as the Spontaneous Interactive Mobile Encrypted Response or SIMER in short. Its objective is to address the shortcomings in the SMS system. SIMER had a launch of the MICE in collaboration with Technology Park Malaysia. This centre will serve as the nucleus body for the support and retraining of graduates in the mobile world. Besides, it would also act as the platform to facilitate the entry of technopreneur into the world of mobile telecommunication.</p> <p>MICE leverage on the current infrastructure and network which allows ones company to maximise their profit and minimize cost. MICE also educates through introducing entrepreneurs development courses and academic achievement courses. Besides it generates the 3R which is Reputable, Responsible and Responsive. Reputable and world recognition from industry will be sought by the centre, responsible and ethical practice for the community and responsive to the market changes.</p>
Publications/Products/ Outcomes	<p>Product: Secure Mobile Banking Solution</p> <p>Outcome: MICE (Moblie Innovation Centre for Excellence)</p>
Contact Institution/Entity Address	Simer Solutions Sdn. Bhd. Suite 3.5, Aras 3, Menara Hap Seng, Jalan P.Ramlee, 50250 Kuala Lumpur.
Phone Number e-Mail	Office: 03-20315712 mmr@simer.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Makcik PC
Project Number	TF0208C020
Project Leader and Team Members	Leader: Ahmad Helmi Abdul Halim Member: Shahidan Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>The objective of the project was to develop and implement a low cost ICT literacy tool to reduce Digital Divide among the low income population in Malaysia.</p> <p>MAKCIK PC is a device targeted as an ICT literacy tool to beef up the usage of modern information system in order to promote the usage of internet as mean of knowledge resource. It is targeted to be used in rural area with the emphasis on simplicity for use and low cost of ownership.</p> <p>JEN-ii device developed to address the ICT illiterate will not be able to stand by itself in the market without Internet access. The device needs to be attached to the Internet as the information on the device will be retrieved from a server which currently resides in MIMOS. Due to this the project worked with the Internet Service Providers (ISP) to use JEN-ii and another MIMOS product (WIWI) in the Bridging Digital Divide project. This project was to help Bridge Digital Divide (BDD) amongst the poor and underserved communities who are ICT illiterate. Since the target group is quite big, the team worked with Ministry of Women, Family and Community Development (MWFCDD) to identify the women and senior citizens who fall under the bigger group. The roles played by MWFCDD include identifying the initial participants for the project as well as identifying the relevant content for the two groups. The study on the success of the BDD project was undertaken by EKOM. The result of the study was presented during the National Information Technology Council (NITC). The study also looked into the effectiveness of the JEN-ii and WIWI devices to bridge the digital divide amongst the target group.</p>
Publications/Products/ Outcomes	i. JEN-i motherboard

<p>IP Status</p>	<p>Malaysian Patent Pending:</p> <ol style="list-style-type: none"> 1. Electronic Visual Display Assembly for Personal Computer 2. A computer-implemented content and application management and delivery system 3. A web content customization system 4. A profiling remote management system and a method of profiling remote management 5. A device for controlling display of content 6. A method of caching application system for automatic semantic based mining <p>Malaysian Registered Design:</p> <ol style="list-style-type: none"> 1. Stylus ID No. 07-01699-0102 2. Enclosure ID No. 07-01707-0103 3. Enclosure with stand ID No. 09-01457-0100
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>MIMOS Berhad Technology Park Malaysia, Bukit Jalil, 57000 Kuala Lumpur. Office: 03-8996 5000 helmi.halim@mimos.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Personal e-Kiosk
Project Number	TF0206C054
Project Leader and Team Members	Leader: Muhammad Farid Ridhwan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The personal eKiosk is a low cost customer premise equipment (CPE) that is normally used as a chip card based prepaid fixed line telephone, which also reads MyKad to allow for authenticated access for pre-registered payment of bills, some banking enquiries and transaction and access to government services. The project had built a low cost CPE that needs MyKad and MyKid. Originally, the device was intended for PSTN connectivity but at the end of the project, it can also work over broadband and satellite network. The device is beneficial for consumer as well as marked segments requiring low cost extremely secure MyKad authentication system.
Publications/Products/ Outcomes	Products: Low-cost CPE which reads MyKad, MyKid and which is normally used as a chip card based prepaid telephone.
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed (P120081224); <i>Systems and Methods for Telephone Authentication with Biometric information</i>, 24th April 2008 2. Malaysia Patent Filed (P120084207); <i>System and Methods for identification of Telephone Caller</i>, 22nd October 2008 3. Malaysia Patent Filed, <i>Voice Command driven Information Retrieval</i>, 26th January 2010
Contact Institution/Entity Address Phone Number e-Mail	Personal e-Kiosk Sdn. Bhd. 57-2, Medan Setia Satu, Plaza Damansara, Bukit Damansara, 50490 Kuala Lumpur. Office: 03-2094 3322 Farid @aliftelecom.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Intelligence Management Enterprise System (iMES)
Project Number	TF0206C088
Project Leader and Team Members	Leader: Rahilah Zahari Members: Shahrul Kamaruddin, Rosnah Idrus, Ahmad Nizam Abd Azid and Maznun Zahari
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	iMES is a set of related system which collect, process, automate, store, retrieve and analyse information to support all levels of internal and external entities, whether in their organisation or outside of the organisation in order to support daily operations, knowledge workers and management level. iMES was designed to fulfill Application Service Provider (ASP) model in order to help Small & Medium Enterprise (SME) to use five main modules: HR and Admin, Financial, Operation, Raw material and Finished Product, with a very low subscription fee and low risk software implementation.
Publications/Products/ Outcomes	Products: iMES software
Awards/Certificates	Company Awarded SIRIMISO 9001:2008
IP Status	iMES was trademarked.
Contact Institution/Entity Address Phone Number e-Mail	Skill Solutions Sdn. Bhd. NO 18-2, Jalan USJ 9/5P, Jalan UEP Subang Jaya, 47620 Selangor. Office: 03-8023 3235 skillsolutions_sb@yahoo.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (ICT)

Project Title	Development of Holistic Islamic Corporate and Retail Banking System (CORE): A Multi-Tiered Architecture
Project Number	TF0106C323
Project Leader and Team Members	Leader: Halimah Badioze Zaman Members: Tengku Mohd Tengku Sembok, Daud Bakar, Izwan Ismail, Puteri Apza Shamsudin, Mohd Din Abu Bakar, Akbar Yasin, Fok Kah Keat and Ravichandran
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>The objective is to capitalise on the rapid growth and demand of Islamic products within the Financial Services Industry (FSI) whilst tapping on to the large global Islamic wealth available today through our potential product, CORE. CORE is an Islamic Corporate and Retail Banking System, based on a Multi-tiered Architecture. CORE will comprise of three main components:</p> <ol style="list-style-type: none"> The Islamic CORE Modules and Sub modules The Islamic CORE Framework The Enterprise Application Integrator (EAI) <p>Research elements in the project comprise of the followings:</p> <ol style="list-style-type: none"> Development of Rule Based Knowledge Representation in parameters driven system. Implementation of rules for various products in Islamic Banking and Financing currently available. Creation of new products and their appropriate rules based on syariah law. Architecture for EAI based on multi-tier model with connectivity to heterogeneous platform. <p>The prototype is fully functional with retail and deposit module. A company from Iran is interested to deploy the banking system in banks in Iran.</p>
Publications/Products/ Outcomes	Product: Holistic Islamic Corporate and Retail Banking System (CORE)
IP Status	The HICORE & DR trademark was filed and granted.
Additional Information	Spin-off: MINDS Technology Sdn Bhd
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia Pusat Pengurusan Penyelidikan dan Inovasi, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number e-Mail	Office: 03-8921 6786 tmts@ftsm.ukm.my

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Hardware and Software Design of Body Sensor Network Device
Project Number	01-02-07-SF0010
Project Leader and Team Members	Leader: Wong Kiing-Ing Member: Nader Barsoum
Field of Research	Engineering Sciences
Project Summary/ Objectives	<p>This project is to prototype a body sensing node health and disease based on TinyOS version 2.x. The body sensing node has attributes as low-cost, light-weight, low-powered, wireless linked and wearable. It must also be able to adapt to different patient needs. The design of body sensing node consists of a customised sensor board and a commercially available wireless sensor network (WSN) device. The sensor board integrates an electrocardiogram (ECG) amplifier circuit, an accelerometer, a voltage regulator and a low-powered microcontroller on a signal PCB board. The sensor board is responsible to sample the ECG and accelerometer output signals at high sampling rates (e.g. ~200Hz). It is also able to analyze the ECG wave, the heart rate variability (HRV) variable and radio the HRV variable to the base station for further processing and storage.</p>
Publications/Products/ Outcomes	Publications: <ol style="list-style-type: none"> 1. Wong, K. I. and Ho, M.M.S. 2008. Fast Prototype of a Wireless Cardiac Interpretive Instrument, <i>Proceedings of the 30th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 08)</i>, Vancouver, Canada. 2. Wong, K. I. and Ho, M.M.S. Wearable Biosignal Monitoring Node Real-time Electrocardiogram and Motion Measurement, <i>Proceedings of the 5th International Workshop on Wearable and Implantable Body Sensor Networks</i>, Hong Kong, China, pp. 190-193. 3. Wong, K. I. 2009, "Real-time Heart Rate Variability Detection on Sensor Node", <i>IEEE Sensors Application Symposium</i>, New Orleans, USA
Contact Institution/Entity Address Phone Number e-Mail	CURTIN Curtin University of Technology, 98009 Miri, Sarawak. Office: 08-544 3816 H/p: 012-878 9001 wong.kiing.ing@curtin.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Wireless Intelligent Incontinence Management System Using Smart Diapers for Elderly People and Children
Project Number	01-02-12-SF0012
Project Leader and Team Members	Leader: Seng Kah Phooi Members: Soraya Kunayagam, Philip Poi Jun Hua, Thong Meow Keong, Ang Li-Minn and Ow Siew Hock
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>Incontinence Detection System & Smart Diapers There are three major components in the incontinence detection system: Smart tags, sensors and the diapers. 40 smart tags with one sensor each was developed successfully.</p> <p>Smart Wireless Technology There are three major components that have been designed and developed: Smart Nodes, Smart Mesh Network, and Smart Gateways. The wireless technology consists of a mesh network to receive data from Smart tags and ward the data. Ten smart nodes (including one smart gateway) have been developed.</p> <p>The Intelligent Central Management System With Instant Notification Technology This system is a software integration. The wireless network reports its measurements to the Smart Gateway and stores it or send the data for processing or display.</p> <p>In summary, the lab prototype & software of the Wireless Intelligent Incontinence Management System has been developed successfully.</p>
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Ang, L.M., Ow, S.H., Seng, K.P., Tee, Z. H., Lee, B.W., Thong M. K., Poi J. H. And Kunanayagam S., 2008. Wireless intelligent incontinence management system using smart diapers, <i>Proceedings of the Fifth Annual International Conference of Electrical Engineering/ Electronics, Computer, Telecommunications & Inmation Technology (ECTI-CON)</i>, Vol. 1, pp. 69-72, <p>Products:</p> <ol style="list-style-type: none"> 1. Incontinence Detection System & Smart Diapers 2. Smart Wireless Technology 3. The Intelligent Central Management System With Instant Notification Technology
Contact Institution/Entity Address Phone Number e-Mail	<p>Nottingham Nottingham University Malaysia, Faculty of Engineering, Jalan Broga, 43500 Semenyih, Selangor. Office: 03-8924 8157 jasmine.seng@nottingham.edu.my</p>

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Pipeline Riser Defect Prediction Using Support Vector Machines
Project Number	01-02-12-SF0035
Project Leader and Team Members	Leader: Dino Isa Amshah Members: Woo Ko Choong, Roselina Arelhi, Mutasim Ibrahim Nour and Rajprasad Kumar Rajkumar
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary/ Objectives	<p>This project addresses the problem of corrosion under insulation (CUI) especially the case of risers in the oil and gas pipeline industry. The failure statistics collection of offshore pipeline have been collected for more than 30 years now and illustrated that the riser predominantly fails as a result of corrosion. The consistent wetting and drying in the splash zone combined with defects in the coatings are the usual contributors to the problem. Risers are inspected at some determined frequency and can be done by internal and external methods. In practice a pragmatic approach is usually adopted where the wall thickness at a number of points is measured to determine the fitness purpose of the pipe. However, this approach generally requires full access to the outer surface of the pipe and this might not be possible if the pipe is insulated, has protective coatings or is buried. If the external corrosion cannot be seen, accurate measurements of the remaining wall cannot be made at the correct location on the pipe. Non-Destructive testing of riser should be capable to detect and monitor general corrosion, localized corrosion pitting, and stress corrosion cracking. Many methods are currently available riser inspection but ultrasonic guided wave inspection offers the best practical method continuous monitoring of the riser. In this project, All methods are used the classification of signals related to riser corrosion.</p>
Publications/Products/ Outcomes	Products: Pi-predict ver. 0.0
Contact Institution/Entity Address	Nottingham Faculty of Engineering, University of Nottingham Malaysia Campus, Jalan Broga, 43500 Semenyih, Selangor.
Phone Number	Office: 03-8924 8116 H/p: 017-889 1653
e-Mail	dino.isa@nottingham.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Smart Vehicle System to Protect Drivers and Motor Cyclists on Malaysian Roads
Project Number	01-02-12-SF0109
Project Leader and Team Members	Leader: Dino Isa Amshah Member: Goh Chia Chieh
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>According to the latest statistics compiled by PDRM, in year 2006, 137,825 cases of accidents were reported in Malaysia. At the end May 2007, there were 146,761 cases of accidents showing an increase of 8,936 cases compared to 2006. Among them motor cyclists/pillion riders have the highest accident rate, that is 58.6% and follow by car drivers/passengers, 19.3%.</p> <p>Due to the high rate of road accidents in Malaysia, the financial impact is significant. The estimated cost for annual economic loss is about RM7 billion. The average claims paid by insurers have increased from RM3,846 at 1995 to RM4, 293 at 1998. In 1999, insurers paid RM1.67 billion (average of RM4.6 million a day) on motor claims. For 2007, the estimated cost has jumped to over RM2 billion.</p> <p>Much research and seminars have been carried out to prevent or lower the rate of accidents. Among the more prevalent methods used in these efforts is Artificial intelligence (AI) embedded into the computer systems for high end automobiles. The term “smart car” or “smart vehicle” has been used to describe the automobile with some built in artificial intelligence (AI) functionality.</p> <p>The aim of this research was to create an affordable smart system for mid to low end cars which will enable the driver to not only better protect himself.</p>
Contact Institution/Entity Address Phone Number e-Mail	Nottingham Faculty of Engineering, University of Nottingham Malaysia Campus, Jalan Broga, 43500 Semenyih, Selangor. Office: 03-8924 8116 H/p: 017-889 1653 dino.isa@nottingham.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Hardware Implementation of a Real Time Image Compression System Next Generation Mobile Communications
Project Number	01-01-08-SF0022
Project Leader and Team Members	Leader: Md. Mamun Ibne Reaz Members: Faisal Mohd Yasin, Florence Choong Chiao Mei, Ahmad Faris Ismail, Farhat Anwar and Muhammad Ibn Ibrahimy
Field of Research	Engineering Sciences
Project Summary/ Objectives	<ol style="list-style-type: none"> 1. Study of different image compression algorithm in real-time mobile communication. 2. Development of Modified Set Partitioning in Hierarchical Tree (M-SPIHT) image compression and decompression algorithm next generation mobile communication. 3. Model the whole algorithm using hardware description language VHDL. 4. Synthesis and simulate the model hardware prototyping. 5. Implement the entire system on FPGA as a hardware prototype.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Pengarah, Pusat Pengurusan Penyelidikan & Inovasi, Universiti Kebangsaan Malaysia (UKM), 43600 UKM, Bangi, Selangor.
Phone Number	Office: 03-8921 6309 H/p: 013-381 9838
e-Mail	mamun@vlsi.eng.ukm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Hardware Prototyping of a Multiagent Based Smart Home for Disabled People
Project Number	01-01-08-SF0045
Project Leader and Team Members	Leader: Md. Mamun Ibne Reaz Members: Rosminazuin Ab. Rahim, Muhammad Ibn Ibrahimy, Ahmad Faris Ismail, Faisal Mohd Yasin and Khalid Al-Khateeb
Field of Research	Engineering Sciences
Project Summary/ Objectives	The project objectives were <ol style="list-style-type: none"> 1. To merge the usefulness of Multiagent system in tackling home automation of constantly changing environment disabled persons. 2. To implement a Multiagent system in hardware better performance speed. 3. To implement the entire system on FPGA.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM), Pengarah, Pusat Pengurusan Penyelidikan & Inovasi, Universiti Kebangsaan Malaysia (UKM), 43600 UKM, Bangi, Selangor.
Phone Number	Office: 03-8921 6309 H/p: 013-381 9838
e-Mail	mamun@vlsi.eng.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Intelligent Graphology (lgrapho)
Project Number	01-01-01-SF0004
Project Leader and Team Members	Leader: Azlinah Mohamed Members: Sofianita Mutalib, Shamimi A. Halim, Norzaidah Md Noh, Marina Yusoff, Azlin Ahmad, Shuzlina Abdul Rahman, Norita Md Norwawi, Zaidah Ibrahim and Kalsom Nasir
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/Objectives	eSign PAT is a signature tool in analyzing personality with the aid of a measurement matrix called HoloCatT which integrates intelligent techniques signature classification.
Publications/Products/Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Mutalib, S., Mohamed, A. and Mastor, N., 2005. Personality analysis based on handwriting (graphology) using neural network, <i>International Conference on Intelligent Systems</i> Kuala Lumpur, Malaysia. 2. Shamsuddin, M.R., Mohamed, A., 2008. Online slant identification algorithm curved strokes, <i>7th WSEAS Int. Conf. on software engineering, parallel and distributed systems (SEPADS '08)</i>, University of Cambridge, UK, Feb 20-22, 2008, pg. 113-118 3. Yusof, R., Abdul Rahman, S., Yusoff, M., Mutalib, S., Mohamed, A., 2008. Online slant identification algorithm using vector rules, <i>Computational Science and its application 2008, International Conference</i> Perugia, Italy. – Published in Lecture Notes in Computer Science, LNCS 5072. 4. Shamsuddin, M.R., Jazahanim, K.S., Ibrahim, Z., Abdul Wahab Khan, R.K., Mohamed, A., 2008. Graphology and Cattell's 16PF Traits Matrix (HoloCatT Matrix), <i>International Conference on Convergence and hybrid Inmation Technology (ICCIT08)</i>, IEEE, 11-13 Nov 2008. 5. Shamsuddin, M.R., Mohamed, A., Online Slant Identification Algorithm Curved Strokes, <i>7th WSEAS Int. Conf. on Software Engineering, parallel and distributed systems (SEPADS '08)</i>, University of Cambridge, UK, Feb 20-22, 2008, pg. 113-118 <p>Products: Electronic Signature Personality Analysis Tool (eSign PAT)</p>



Awards/Certificates	<p>Inventions, Innovation & Designs Competition (IID) 2008: Silver medal</p> <p>Inventions, Innovation & Designs Competition (IID) 2009: Silver medal</p> <p>International Exposition of Research and Invention of Institutions of Higher Learning (PECIPTA) 2009: Silver medal</p>
IP Status	Copyright
Contact Institution/Entity Address	<p>Universiti Teknologi MARA (UiTM)</p> <p>Faculty of Computer and Mathematical Sciences,</p> <p>Universiti Teknologi MARA,</p> <p>40450 Shah Alam,</p> <p>Selangor.</p>
Phone Number	<p>Office: 03-5544 3502</p> <p>H/p: 016-338 8840</p>
e-Mail	azlinah@tmsk.uitm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Engineering Affective Quality in e-Commerce Website
Project Number	01-01-01-SF0029
Project Leader and Team Members	Leader: Nor Laila Md Noor Members: Mitsuo Nagamachi and Anitawati Mohd Lokman
Field of Research	Information, Computer and Communication Technology (ICT)
Publications/Products/Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Mohd Lokman, A, Md Noor, N.L., Nagamachi, M. 2007. Dominant pattern of visual design in online clothing websites, <i>3rd International Conference on Web Inmation Systems and Technologies</i>, Barcelona, Spain. March 2007. 2. Mohd Lokman, A, Md Noor, N.L., Nagamachi. 2008. Kansei structure and visualisation of clothing websites cluster. <i>International Symposium on Inmation Technology, 2008. ITSIm 2008</i>. Volume 1, Issue , 26-28 Aug. 2008 pp. 1 - 8. ISBN 978-1-4244-2328-6. 3. Mohd Lokman, A, Md Noor, N.L., Nagamachi. 2007. Kansei Engineering: A Study on Perception of Online Clothing Website. <i>10th International QMOD (QMOD '07)</i>. Helsingborg, Sweden: Linköping University Electronic Press, ISSN 1650-3740. 4. Mohd Lokman, A, Md Noor, N.L., Nagamachi, M. 2007. Engineering Kansei in e-Commerce Web Design. <i>HCI International 2007</i>. Beijing: SPRINGER, ISBN 978-3-540-73738-4. 5. Mohd Lokman, A, Md Noor, N.L., Nagamachi, M. 2008. Applying Kansei Engineering to Determine Emotional Signature of Online Clothing Websites. <i>International Conference on Enterprise Information Systems (ICEIS) 2008</i>. Barcelona, Spain.
Contact Institution/Entity Address	Universiti Teknologi MARA (UiTM) Universiti Teknologi MARA, 40450 Shah Alam, Selangor.
Phone Number	Office: 03-5543 5376 H/p: 012-940 8647
e-Mail	norlaila@tmsk.uitm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Measuring Web Service Quality of Malaysian Companies
Project Number	01-01-01-SF0184
Project Leader and Team Members	Leader: Voon Boo Ho
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary/ Objectives	WebServ Scale is a diagnostic tool measuring user-perceived website service quality. It is essential understanding and improving service quality of websites, user satisfaction and loyalty. The development and validation of this strategic measurement scale were based on customers' and employees' perceptions of the websites of Malaysian companies. The scale items were generated through related marketing literature, Critical Incident Technique and focus groups. After the appropriate content and reliability, Exploratory Factor and Structural Equation Modelling analyses, WebServ Scale was found to be valid and reliable. This 35-item scale is a multi-dimensional construct comprising seven (7) multi-item components: Technical Quality, Content Quality, Organisation Information, Service Information, Tangibles, Address and Assurance.
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Voon, B.H., Jamil, H. & Kueh, K. 2010. WebServ Index: An indicator for visitor-perceived website service quality in Malaysia, <i>Proceedings of IEEE Conference on Science & Social Research 2010</i>, Kuala Lumpur. 2. Voon, B.H., Kueh, K. & Mohd Zafian, M. 2009. Measuring website service quality for Malaysian companies. <i>Social and Management Research Journal</i>, 6(2), 71-82. <p>Products: WebServ Scale</p>
Awards/Certificates	Invention, Innovation and Design (IID) 2009 Universiti Teknologi MARA: Gold Medal
IP Status	Copyright files on WebServ Scale
Contact Institution/Entity Address Phone Number e-Mail	UiTM Universiti Teknologi MARA Sarawak, Jalan Meranek, 94300 Kota Samarahan, Sarawak. Office: 08-267 7723 H/p: 019-439 0228 bhvoon@sarawak.uitm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Radio Network Control (RNC) Future Mobile Telecommunication System
Project Number	01-01-03-SF0225
Project Leader and Team Members	Leader: Mohammad Faizal Ismail Member: Kaharudin Dimyati
Field of Research	Information, Computer and Communication Technology (ICT)
Publications/Products/Outcomes	Products: 1. Heterogeneous Traffic Call Admission Control Technique RNC in UMTS Radio Network 2. Models and Simulator Software Call Admission Control in UMTS
Contact Institution/Entity Address	Universiti Malaya (UM) Dept of Electrical Engineering, Faculty of Engineering, University of Malaya, 50603 Kuala Lumpur.
Phone Number	Office: 03-7967 5336 H/p: 016-382 0972
e-Mail	faizalis@um.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A Mobile Compliant Web-based Comparative Analysis Decision Support System
Project Number	01-01-03-SF0456
Project Leader and Team Members	Leader: Por Lip Yee Members: Liew Chee Sun and Ang Tan Fong
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary/ Objectives	<p>The objectives of the project were</p> <ol style="list-style-type: none"> 1. To design a statistical model for the decision support system. 2. To develop the underlying technology for the decision support system and make it available for multiple domains. 3. To provide an intelligent service to communities. 4. To develop and integrate mobile compliant applications to optimize and demonstrate the proposed system.
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Por , L. Y., Boey, R. F., Ang, T. F. and Liew, C. S., 2008, An Interactive Web-Based Wedding Planner with Comparative Analysis Decision Support System, <i>Journal of WSEAS Transactions on Inmation Science and Applications</i>, Issue 3, Vol. 5, pp. 211-220. ISSN: 1790-0832 2. A Web-based Comparative Analysis Decision Support System: Wedding Arch, In: (N. Mastorakis, S. Kartalopoulos, D. Simian A. Varonides, V. Mladenov, Z. Bojkovic and E. Antonidakis), <i>Computer Science and Technology, Volume 4 of the Proceedings of the 11th WSEAS International Multiconference CSCC</i> (Circuits, Systems, Communications, Computers) Electrical and Computer Engineering Series, A Series of Reference Books and Textbooks., WSEAS Press, www.wseas.org. Pp. 62-66. [ISSN:1790-5117, ISBN: 978-960-8457-92-8], 2007 <p>Products: Wedding Arch III</p>

Awards/Certificates	<ol style="list-style-type: none"> 1. 18th International Invention, Innovation and Technology Exhibition (ITEX), MINDS (Malaysia invention & Design Society), 2007: Silver Medal 2. International Exposition of Research and Inventions of Institutions of Higher Learning (PECIPTA), Ministry of Higher Education Malaysia, 2007: Silver Medal 3. 7th Malaysia Technology Expo (MTE), MARS (Malaysian Association of Research Scientists), 2008: Gold Medal -
IP Status	Malaysia Patent Filed (PI20071886)
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaya (UM) Department of Computer System & Technology, Faculty of Computer Science & Innovation Technology, University of Malaya, 50603, Kuala Lumpur. Office: 03-7967 6410 porlip@um.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Bioinspired Optimization Algorithm the Automatic Generation of Multiple Distinct Behaviors in Simulated Mobile Robots
Project Number	01-01-10-SF0012
Project Leader and Team Members	Leader: Jason Teo Tze Wi Members: Mohd. Hanafi Ahmad Hijazi and Patricia Anthony
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This research has successfully developed an automated method for synthesizing autonomous robot controllers through the hybridization of (i) phototaxis as well as (ii) radio frequency (RF)-localization. The robot controller is optimized with multi-objective artificial evolutionary as the underlying method for the automatic generation of artificial neural networks (ANNs) for controlling single as well as groups of multiple autonomous two-wheeled robots to solve a robotic homing task environment.
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> Chin K.O., Teo J. and Saudi A. 2009. Evolutionary Multi-objective Optimization of Autonomous Mobile Robot in Neural Based Cognition for Behavioral Robustness. <i>Handbook of Research on Machine Learning Applications and Trends: Algorithms, Methods and Techniques</i>, chapter 28, pages 574-598. Edited by E. S. Olivas, J.D. Martín, R. Magdalena, M. Martínez, A.J. Serrano. IGI Global Publications. Teo J., Neri L.D., Nguyen M.H. and Abbass H.A. 2008. Walking with EMO: <i>Multi-Objective Robotics for Evolving Two, Four and Six Legged Locomotion. Multi-Objective Optimization in Computational Intelligence: Theory and Practice</i>, chapter 11, pages 300-332. Edited by Lam Thu Bui and Sameer Alam. IGI Global Publications. Chin K.O. and Teo J. 2009. Artificial Neural Controller Synthesis in Autonomous Mobile Cognition. <i>International Journal of Computer Science</i>, 36(4):240-252. Chin K.O. and Teo J. 2009. Evolution of RF-Signal Cognition for Wheeled Mobile Robots using Pareto Multi-objective Optimization. <i>International Journal of Hybrid Information Technology</i>, 2(1):43-56.

	5. Chin K.O. and Teo J. 2010. Evolution and Analysis of Self-Synthesized Minimalist Neural Controllers for Collective Robotics using Pareto Multi-objective Optimization. <i>2010 IEEE Congress on Evolutionary Computation (CEC 2010)</i> , pages 2172-2178, Barcelona, Spain, July 2010.
Awards/Certificates	<ol style="list-style-type: none"> 1. Seoul International Invention Fair (SIIF 2009), Korea: Gold Medal 2. Invention, Innovation and Technology Expo (ITEX 2009), Malaysia - Silver Medal 3. Malaysian Technology Expo (MTE 2009), Malaysia: Bronze Medal 4. PEREKA 2008, UMS: Silver Medal
IP Status	Invention Disclosure submitted to university Research Management Center
Additional Information	International Linkages: Australian Research Council Center for Complex Systems (ACCS) – Canberra Node
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaysia Sabah (UMS) Evolutionary Computing Laboratory, School of Engineering and IT, Universiti Malaysia Sabah (UMS), Jalan UMS, 88400 Kota Kinabalu, Sabah. Office: 08-832 0000 jtwteo@ums.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Intelligent Agent for Online Auctions: Strategy for Bidders and Sellers
Project Number	01-01-10-SF0036
Project Leader and Team Members	<p>Leader: Patricia Anthony</p> <p>Members: Jason Teo Tze, Ho Chong Mun, Gan Kim Soon, Deborah Lim Phaik Kuan, Edwin Law Ban Hock and Jacob Sow Tian You</p>
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This research project tackled the problem of bidding and selling in online auctions by developing bidding and selling agents that can be utilized by the user when participating in online auction. The strategy of the bidding agent is generated by taking into account four bidding constraints namely the time left, the number of auctions left, the desire of bargain and the level of desperateness. To generate the final bid value, all the functions are combined based on what the agent sees as being important at that particular point in time. Since this strategy is polynomial in nature, an infinite number of strategies can be generated. Hence, we used genetic algorithm to discover the best solutions. The purpose of the seller agent is to recommend a reserve price for the seller when he puts up an item for sale in online auction. The reserve price is generated based on the number of competitors, the number bidders, when the seller wishes to dispose the item and the profit desired by the seller. The final reserve price generated by the seller agent is used as the reserve price for the item that will ensure that the item is sold at a given time and at a reasonable profit specified by the user. The last stage of the project is to develop a predictor agent that can be used to predict the closing price of the auction.</p>

<p>Publications/Products/ Outcomes</p>	<p>Publications:</p> <ol style="list-style-type: none"> 1. Deborah, L., Anthony, P. & Ho, C. M. May, 2008. Agents for Predicting Online Auction Closing Prices. <i>The International Journal of e-Business Management</i>. 1(2), pp 20-38. 2. Anthony, P., Deborah, L. & Ho, C. M. May 19-23, 2007. Predicting online Auction closing price Using Grey System Theory. <i>In Proceeding of Managing Worldwide Operations & Communications with Information Technology</i>. Vancouver, Canada. 709-713. 3. Law, Edwin, Anthony, P., 2007. Analyzing Selling Behaviour with Varying Reserve Price In Multiple English Auctions. <i>Regional Conference on Computational Science and Technologies (RCCST 2007)</i>, Kota Kinabalu, Malaysia, November 2007. 4. Gan K.S., Anthony P. and Teo J. 2007. Evolving Bidding Strategies Using Self-adaptation. <i>Regional Conference on Computational Science and Technologies (RCCST 2007)</i>, pages 56-60, Kota Kinabalu, Malaysia, November 2007. 5. Deborah, L., Anthony, P. & Ho, C. M. November 18-20, 2007. Evaluating the Accuracy of Grey System Theory against Time Series in Predicting Online Auction Closing Price. <i>In Proceedings of 2007 IEEE International Conference on Grey Systems and Intelligent Services</i>. Nanjing, China. 463-470.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Malaysia Sabah (UMS) Pusat Penyelidikan dan Inovasi, Universiti Malaysia Sabah (UMS), Beg Berkunci 2073, 88999, Kota Kinabalu, Sabah.</p> <p>Office: 08-832 0013 / 088-320000 ext 3081 H/p: 012-833 0348 panthony@ums.edu.my / patricia.anthony@gmail.com</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Cooperative Diversity Antenna Arrays Relay Communication Infrastructure in Telemedicine Network
Project Number	01-01-10-SF0070
Project Leader and Team Members	Leader: Liau Chung Fan Members: Nor Rafidah Mohamad, Salina, Zaturrawiah Ali Omar, Ali Chekima and Liau Chung Fan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>Cooperative diversity antenna array (CDAA) relay is a network infrastructure enhancement for current and future telemedicine network which is easily deployable, and low in production cost. Cooperative diversity antenna arrays relay scheme for telemedicine network infrastructure to support audio, video and data transmission between remote areas, ambulance and hospitals. The objectives of the project were</p> <ol style="list-style-type: none"> 1. To determine the hardware and software tools and platform on which the cooperative diversity antenna arrays relay is implemented and adopted into telemedicine network to support communication between remote areas-to-ambulance, ambulance-to-hospitals and remote areas-to hospitals. 2. To identify the relevant performance optimisation factor for an optimal performance of the cooperative diversity antenna arrays in telemedicine network. 3. To define a central management platform to manage multiple cooperative diversity antenna arrays relay.
Contact Institution/Entity Address	Universiti Malaysia Sabah (UMS) Pusat Penyelidikan dan Inovasi, Universiti Malaysia Sabah (UMS), Beg Berkunci 2073, 88999, Kota Kinabalu, Sabah.
Phone Number e-Mail	 cfliau@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Prototype Development of an Evolutionary Intelligence Engine Using Pareto Neuro-ensembles Computer Game AI
Project Number	01-01-10-SF0101
Project Leader and Team Members	Leader: Jason Teo Tze Wi Members: Lau Hui Keng, Zaturrawiah Ali Omar, Mohd Hanafi Ahmad Hijazi and Patricia Anthony
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary/ Objectives	<p>The computer gaming industry is currently estimated at USD21 billion annually and continues to grow at a dramatic rate. One of the main elements that contributes to the quality of a commercial computer game is its artificial intelligence to drive computer-based opponents and/or non-player characters (NPCs). Currently, one of the main shortfalls in the computer gaming industry is its lack of adoption of artificial intelligence (AI).</p> <p>This project has successfully established a working prototype of an evolutionary intelligence engine based on the automatic generation and optimization of Pareto neuro-ensembles that can act as human-competitive AI in computer games. In games, there are often multiple-objectives that need to be optimized at the same time. The proposed multi-objective evolutionary optimization (EMO) approach to generate multiple artificial neural networks that trade-off between these multiple distinct objectives and to act as an ensemble decision-making engine is highly successful in drive the game AI.</p> <p>This project has successfully developed an automated method for generating game artificial intelligence using an evolutionary neuro-ensemble approach.</p>
Publications/Products/ Outcomes	Publications: <ol style="list-style-type: none"> 1. Tan, T.S., Teo J. and Anthony P. 2011. Automating Commercial Video Game Development using Computational Intelligence. <i>American Journal of Economics and Business Administration</i>, 3(1): 186-190.



	<ol style="list-style-type: none"> 2. Tan, T.S., Teo J. and Anthony P. 2010. Evolution Strategies for Evolving Artificial Neural Networks in an Arcade Game. <i>5th Knowledge Management International Conference 2010 (KMICe 2010)</i>, pages 697-700, Kuala Terengganu, Malaysia, May 2010. 3. Tan, T.S., Teo J. and Anthony P. 2010. A Simple Heuristic Search Method for the Automatic Generation of Neural-Based Game AI Architectures in Ms. Pac-Man. <i>2010 International Conference on Information Sciences, Signal Processing and their Applications (ISSPA2010)</i>, pages 753-756, Kuala Lumpur, Malaysia, May 2010. 4. Tan, K.B., Teo J. and Anthony P. 2010. Multi-Objective Evolution Of Neural Go Players. <i>3rd IEEE International Conference on Digital Game & Intelligent Toy Enhanced Learning (DIGTEL 2010)</i>, pages 46-54, Kaoshiung, Taiwan, April 2010. 5. Tan, T.S., Teo J. and Anthony P. 2010. Uniform versus Gaussian Mutators in Automatic Generation of Game AI in Ms. Pac-Man Using Hill-Climbing. <i>2010 International Conference on Information Retrieval and Knowledge Management (CAMP'10)</i>, pages 281-285, Shah Alam, Malaysia, March 2010 – nominated for best paper award.
Awards/Certificates	PEREKA 2009, Universiti Malaysia Sabah: 2 Bronze Medals
IP Status	In the process of preparing invention disclosure for RMC.
Additional Information	International Linkages: Australian Research Council Center for Complex Systems (ACCS) – Canberra Node
Contact Institution/Entity Address	Universiti Malaysia Sabah (UMS) Evolutionary Computing Laboratory, School of Engineering and IT, Universiti Malaysia Sabah (UMS), Jalan UMS, 88400 Kota Kinabalu, Sabah.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of an Intelligent Web-based Tender Evaluation System
Project Number	01-01-12-SF0012
Project Leader and Team Members	Leader: Noor Maizura Mohamad Noor Members: Md Yazid Mohd Saman, Mustafa Man and Muhammad Suzuri Hitam
Field of Research	Information, Computer and Communication Technology (ICT)
Publications/Products/Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Armidayu Idura Abdullah, N. M. Mohamad Noor, Mustafa Man, Web-based prequalification framework tender management system in construction projects is submitted to The 1st Post Graduate Annual Seminar of Computer Science Proceeding, September 9-10, 2007, Universiti Malaysia Terengganu, Malaysia. 2. Fadhilah Ahmad, M Yazid M Saman, N. M. Mohamad Noor and Wan Rosmanira Ismail (2007). Design of model-driven decision support system tendering process. National Conference on Software Engineering and Computer Systems. Pahang, Malaysia. 3. Najwa Hanis A Samat, N. M. Mohamad Noor, Mustafa Man, Intelligent decision support system tender evaluation is submitted to The 1st Post Graduate Annual Seminar of Computer Science Proceeding, September 9-10, 2007, Universiti Malaysia Terengganu, Malaysia. 4. Fadhilah Ahmad, M Yazid M Saman and N. M. Mohamad Noor (2007). Decision support systems frameworks and an improved model JKR tendering. National Conference on Software Engineering and Computer Systems. Pahang Malaysia. 5. Siti Suhaidah Mat Ali, N. M. Mohamad Noor, Mustafa Man, TMCPS: Mobile web based tracking and monitoring construction project system is submitted to The 1st Post Graduate Annual Seminar of Computer Science Proceeding, September 9-10, 2007, Universiti Malaysia Terengganu, Malaysia. <p>Products: The 2e-tender.com</p>



Awards/Certificates	Bronze Medal Award, DSS Tendering Process: Integrating Statistical Single-Criteria Model with MCDM Models, 7th Malaysia Technology Expo (MTE 2008), Putra World Trade Centre (PWTC), 21-23 February 2008.
Additional Information	Industrial Linkages: Jabatan Kerja Raya
Contact Institution/Entity Address	Universiti Malaysia Terengganu (UMT) Computer Science Department, Faculty of Science and Technology, Universiti Malaysia Terengganu, 21030 Kuala Terengganu, Terengganu.
Phone Number	Office: 09-668 3355 H/p: 019-912 2311
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of an Automatic Text Categorization Using Fuzzy Thesaurus Technique
Project Number	01-01-12-SF0013
Project Leader and Team Members	Leader: Zailani Abdullah Members: Mohd Pouzi Hamzah, Md Yazid Mohd Saman and Muhammad Suzuri Hitam
Field of Research	Information, Computer and Communication Technology (ICT)
Publications/Products/Outcomes	Publications: 1. Zailani Abdullah and Muhammad Suzuri Hitam "Features extraction algorithm from SGML classification", Journal of Theoretical and Applied Information Technology 2007.
Contact Institution/Entity Address	Universiti Malaysia Terengganu (UMT) Pusat Pengurusan Penyelidikan, Universiti Malaysia Terengganu (UMT), Mengabang Telipot, 21030 Kuala Terengganu, Terengganu.
Phone Number e-Mail	Office: 09-668 3536 zailania@kustem.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of an Online Distribution of Artificial Reefs East Cost of Peninsular Malaysia by Using Spatial Data Approach
Project Number	01-01-12-SF0017
Project Leader and Team Members	Leader: Mustafa Man Members: Md Yazid Mohd Saman, Khalid Samo and Noor Maizura Mohamad Noor
Field of Research	Information, Computer and Communication Technology (ICT)
Publications/Products/Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Mustafa Man, Md. Yazid Md. Saman, Noor Maizura M. Noor, W. Aezwani W.A. Bakar, Khalid Samo. 2007. ARPOs virtual database: a web-based gis spatial data mapping system artificial reefs. Prosiding UMT 6th Annual Seminar on Sustainability Science and Management (ESHTME). pg 50.2-4 May 2007. 2. Mustafa Man, Md. Yazid Md. Saman, Noor Maizura M. Noor, W. Aezwani W.A. Bakar, Khalid Samo. 2006. An Architecture web-based GIS system artificial reefs. Proceeding Third Real-Time Technology and Application Symposium (RENTAS-IEEE). pg 20. 5 - 6 December 2006. 3. Mustafa Man, Md Yazid Mohd Saman, N. M. Mohamad Noor ,W. Aezwani W. A. Bakar and Khalid Samo, 2007. ARPos Virtual Database: A Web-based GIS spatial data mapping system artificial reefs. Proceeding 6th Kustem Annual Seminar 2007 (ESHTME 2007) p. 80. 2- 4 May 2007. 4. Mustafa Man, Md. Yazid Md. Saman, W. Aezwani W.A. Bakar, Rosli Hussin, 2007. MyRealTouch; Mykad Intelligent “Touch n Go” device diesel subsidies purchase control system (DPCTnGO). Proceeding e-Asia Conference 2007 (NCECD) 6 - 8 February 2007. <p>Products: ARPOS (Artificial Reefs Positioning System)</p>
Awards/Certificates	Bronze Medal Award – ITEX 2008 Silver Medal Award – 2008

IP Status	Copyright
Contact Institution/Entity Address	Universiti Malaysia Terengganu (UMT) Jabatan Sains Komputer, Fakulti Sains dan Teknologi (FST), Universiti Malaysia Terengganu, 21030 Kuala Terengganu, Terengganu.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and Development of an Intelligent Augmented Reality Road Signs Recognition System with Finger Tracking Feature as an Input Device
Project Number	01-01-09-SF0010
Project Leader and Team Members	Leader: Ng Giap Weng Members: D'oria Islamiah and Wan Norizan Wan Hashim
Field of Research	Information, Computer and Communication Technology (ICT)
Publications/Products/Outcomes	Publications: <ol style="list-style-type: none"> 1. Ubong Lydia Jau, Chee Siong Teh and Giap Weng Ng (2008). A comparison of RGB and HSI colour segmentation in real – time video images: A preliminary study on Road Sign Detection. The 3rd International Symposium on Inmation Technology 2008 (ITSim2008), Kuala Lumpur, Malaysia. (Paper Accepted) 2. Ng, G.W. and Allen, C.C.H. (2008). Augmented Reality: The potential of future educational technology. joint colloquium on “Cognitive and Computational Methods”, Universiti Malaysia Sarawak. 3. Ng, G.W. (2009). Augmented reality in education. Buletin INSIGHT – vol. 12, pp. 12-13. UNIMAS. 4. Ng, G.W. (2008). Augmented Reality: The potential future technology learning applications. UNIMAS. Ng, G.W. (03 July 2008). Augmented Reality: The Future of Education Technology. Asia Research News.
Awards/Certificates	National and International awards
IP Status	Patent application will be filed
Contact Institution/Entity Address	Universiti Malaysia Sarawak (UNIMAS) Timbalan Naib Canselor (Penyelidikan dan Inovasi), Universiti Malaysia Sarawak (UNIMAS), 94300 Kota Samarahan, Sarawak.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and Development of a Novel Hybrid Kansei Engineering Intelligent System
Project Number	01-01-09-SF0013
Project Leader and Team Members	Leader: Teh Chee Siong Members: Mohd Kamal, Chen Chwen Jen and Lim Chee Peng
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary/ Objectives	One of the major effects of globalization on consumer market is that consumers are able to gain access to vast variety of products across the globe more easily than before thanks to the rapid development of the Internet. This has made consumers to be more selective and demanding than ever. In meeting such demands, product designers will have to use various means to increase consumer satisfaction by designing products that appeal to the intended target group. This project aims to design and develop a novel hybrid Kansei Engineering (KE) intelligent system that enables the assimilation of humans' perceptive and associative abilities into the design decision-making process. A prototype of Three-dimensional (3D) Eyeglasses Design Selection Support System has been developed. It is primarily based upon the Kansei Engineering with the integration of desktop virtual reality system.
Publications/Products/ Outcomes	Products: A Three-dimensional (3D) Eyeglasses Design Selection Support System
Awards/Certificates	Research product was selected to be displayed at the Malaysia Innovative Carnival, Sarawak Zone on 23-24 October 2010.
Additional Information	Industrial Linkages: Had approached a local eye glasses company
Contact Institution/Entity Address	Universiti Malaysia Sarawak (UNIMAS) Department of Cognitive Science, Faculty of Cognitive Sciences and Human Development, Universiti Malaysia Sarawak (UNIMAS), 94300 Kota Samarahan, Sarawak.
Phone Number	Office: 08-258 1572 H/p: 012-895 6593
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Multimodal User Interfaces Collaborative Virtual Environments (CVE): A Case Study of MUSE (Multi User Single Environment) in Museum
Project Number	01-01-09-SF0019
Project Leader and Team Members	Leader: Mohamad Hardyman Barawi Members: Shaziti Aman and Teh Chee Siong
Field of Research	Information, Computer and Communication Technology (ICT)
Publications/Products/Outcomes	Publications: 1. M.K. Othman, Noranzatusy Syamami Nazri, Mohd Hardyman Barawi & The Chee Siong (2008). Public Spaces Learning: A preliminary report on multi user single environment (MUSE) in museum (Paper presented at International Conference on the Inclusive Museum 2008, Netherlands, Jun 2008)
Contact Institution/Entity Address	Universiti Malaysia Sarawak (UNIMAS) Timbalan Naib Canselor (Penyelidikan dan Inovasi), Universiti Malaysia Sarawak (UNIMAS) 94300 Kota Samarahan, Sarawak.
Phone Number	Office: 08-258 1553 H/p: 013-266 6575
e-Mail	bmhardyman@fcs.unimas.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and Development of Spoken Language Dialogue System: Efficacy of Usability Evaluation Techniques
Project Number	01-01-09-SF0028
Project Leader and Team Members	Leader: Ng Giap Weng Members: Alvin Yeo Wee, Wan Norizan Wan Hashim, D'oria Islamiah and Tang Enya Kong
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary/ Objectives	<p>Spoken Language Dialogue Systems (SLDSs) have become an increasingly important interface between human and computers as they provide the most natural way of communication. This research aims to explore the design and development of SLDS within the context of Malaysian users. Specifically the project would determine the efficacy of usability assessment tools (UATs) employed in the design of SLDS.</p> <p>The research objectives of this project were</p> <ol style="list-style-type: none"> 1. To investigate the spoken language and interaction design, and its employment in the development of SLADs. 2. To determine the efficacy of usability evaluation techniques applied in the SLADs.
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Semuni, M.H. Rosli D.I., Yeo, A., Giap, W.N. 2008. Design & development of spoken language dialogue system: efficacy of usability evaluation techniques. <i>The First International Cyberspace Conference on Ergonomics (CybErg 2008)</i>, UNIMAS, Malaysia.
Contact Institution/Entity Address	Universiti Malaysia Sarawak (UNIMAS) Timbalan Naib Canselor (Penyelidikan dan Inovasi), Universiti Malaysia Sarawak (UNIMAS), 94300 Kota Samarahan, Sarawak.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Multimodal Integration of Sketch and Melanau Daro-matu Speech in Spatial Queries
Project Number	01-01-09-SF0029
Project Leader and Team Members	Leader: Alvin Yeo Wee Members: Dayang Sariah Abang, Tang Enya Kong and Suhaila
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Speech and sketch are two modes which comes naturally to humans. Multimodal applications to work, the fusion or integration of these two modes is a key problem. Existing techniques such as time-based integration of the two modes is not robust. Use of spatial-based integration has been demonstrated to be slighter better performance than the time-based approach. However, these research is currently conducted in English. The approaches efficacy in other languages is not known. It is hypothesised that characteristics of different languages need to be considered to determine which integration need to be used. We have decided to use a minority language (i.e. Melanau) in the study. By focussing on minority language, it will help to preserve the language (given a corpus of Melanau will be created containing texts of the language).
Publications/Products/Outcomes	Publications: <ol style="list-style-type: none"> 1. “Multilingual multimodal integration of sketch and speech: a generic speech representation model spatial description” to International Conference on Asian Language Processing (IALP 2009), Dec 7-9, 2009, Singapore 2. Juan, S. F., Sae, S., & Jali, S. K. 2008. An overview of localizing abiword Sarawak ethnic languages. <i>9th Biennial Conference Borneo Research Council 2008</i>. Kota Kinabalu 3. Jali, S. K., Annuar, N., Mohamad, N. Z, Ting, S. H. & Hassan, 2009 S. Dilemmas of the English-Melanau Translators in Sarawak Language Technologies Project. <i>12th International Translation Conference</i>, 18th-20th August 2009, USM, Pulau Pinang.

	4. "Sociolinguistic input in English-Melanau translation", <i>12th International Translation Conference "Kelestarian Bidang Penterjemahan"</i> , 18-20 August 2009, ParkRoyal Hotel, Pulau Pinang, Malaysia.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaysia Sarawak (UNIMAS) Timbalan Naib Canselor (Penyelidikan dan Inovasi), Universiti Malaysia Sarawak (UNIMAS), 94300 Kota Samarahan, Sarawak. Office: 08-258 3659 alvin@fit.unimas.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Methodologies Translation into MinorityL: English-iban
Project Number	01-01-09-SF0030
Project Leader and Team Members	Leader: Edwin Mit Members: Alvin Yeo Wee, Suhaila Sae, Ting Su Hie and Tang Enya Kong
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary/ Objectives	<p>Indigenous languages such as Iban are slowly dying out as English and the Malay language is given greater emphasis. In addition, with the rural to urban migration of many of these minority ethnic groups, many of the next generation do not speak the mother tongue. One of the ways to help stem this “extinction” of languages is to provide more content in these indigenous language. This research was to develop a technique that can be used to conduct translation from English to Iban language through an intermediate, namely the Malay language. This is due to the similarity in terms of linguistics between the Iban and Malay language. This research also aims to employ the synchronous structured string tree (S-SSTC) correspondence approach (where English-Malay parallel corpus and the SSTCs already exists).</p> <p>In addition, the research also aimed to identify elements that need to be taken into consideration in order to extend the proposed approach to conduct translation from English to other minority languages. An important outcome would also be the Iban corpus upon which other applications can employ.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Sae, S., Yeo, A.W., George, C. 2008 Iban Morphological Analyser: An Overview, Poster presented in <i>Second MALINDO International Workshop, MMU Cyberjaya</i> on 13-14 June 2008 2. Sae, S. Yeo, A.W., Mit, E. Development of an Iban Corpus: Methodology Employed and Challenges Faced, 2008. <i>Paper presented during Borneo Research Council Conference at Universiti Malaysia Sabah, Kota Kinabalu, Sabah</i> on 29-31st July 2008

	3. Yeo, A., Saeed, S., Mit E., Flora, S., Khartini, Ting, S.H., and Wilfred, J. Preservation of Sarawak Ethnic languages: The Sarawak Language Technology (SaLT) Initiative, <i>The 13th Annual Internationalization and Localization Conference, Marino Institute of Education, Dublin, Ireland, 02-03 October 2008.</i>
Awards/Certificates	International Invention Innovation Technology Exhibition 2010, Kuala Lumpur: Silver Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Afordable Long Range Wireless Connectivity Rural Communities
Project Number	01-01-09-SF0035
Project Leader and Team Members	Leader: Khairuddin Ab. Hamid Members: Lau Sei Ping, Goh Kok Luong, Alvin Yeo Wee, Tan Chong Eng and Johari Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Connecting rural communities has always been a problem due to lack in communication infrastructure. There is not enough incentive to the communication service providers to provide commercial communication services to rural area. This research proposes an affordable system with self-maintainable communication services with the objective to narrow the digital divide between the rural and urban communities. Wireless LAN has been very common and well established in urban areas such as cities and towns. The heavy usage of wireless LANs has driven the cost of ownership to an affordable level where it can be deployed by anyone, at anytime and anywhere. With proper design and applications, Wireless LANs is a good candidate for long range wireless connectivity where it can be further extended to reach the un-reached in the rural areas.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Tan, C.E., Lau, S.P. & Hamid, K.A., 2009. Self sustainable wireless connectivity model rural communities, <i>proceedings of the 2nd eBario Knowledge Fair</i> , Bario, November 2009. 2. Tan, C.E., Lau, S.P. & Hamid, K.A., 2009. Power architecture design electronics appliances in rural environment. <i>Proceedings of the 2nd eBario Knowledge Fair</i> , Bario, November 2009.
Contact Institution/Entity Address	Universiti Malaysia Sarawak (UNIMAS) Timbalan Naib Canselor (Penyelidikan dan Inovasi), Universiti Malaysia Sarawak (UNIMAS), 94300 Kota Samarahan, Sarawak.
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TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	An Optimised and Weighted Genetic Algorithm Approach PAPR Reduction in Large Sub-carriers OFDM Systems Adopting Peak Reduction Carriers
Project Number	01-01-09-SF0037
Project Leader and Team Members	Leader: Tan Chong Eng Members: Wang Yin Chai, Khairuddin Ab. Hamid, Johari Abdullah and Lau Sei Ping
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The OFDM based Broadband system is famous for its high spectral efficiency where almost double amount of the orthogonal sub-carriers can be squeezed into the same allocated spectrum band. By having such a huge amount of sub-carriers overlapping among each other, the resultant OFDM symbol can have significantly high peak power (the Peak-to-Average Power Ratio, PAPR) owing to the additive effect of many sub-carriers of the same phase offset. Such high peak signal power incurred can introduce higher requirement on the linearity of the power amplifier at the transmitter and hence massively increases the cost of the overall broadband deployment. The Peak Reduction Carriers (PRCs) is among many promising initiatives to reduce the high PAPR of OFDM symbols prior to transmission. Similar to other PAPR reduction techniques, PRCs has very high computational complexity, hence required higher performance and more expensive Digital Signal Processors (DSP) to process the PAPR reduction scheme in real time. The main objective of this research is to further enhance the previous research works done. A more specific and weighted GA approach can be further investigated and designed to achieve a higher efficiency in PAPR reduction with lowest possible computational complexity.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Wong, W.S. & Tan, C.E., 2008. A CIR-based Routing Scheme applicable to OFDM broadband ad hoc Wireless Networks, <i>Proceedings of the 4th IEEE International Conference on Wireless Communications, Networking and Mobile Computing</i>, China, October 2008. 2. Wong, W.S. & Tan, C.E., 2008. CIR-based Best-Route Prediction and Adaptive Modulation Routing in OFDM ad hoc Wireless Networks, <i>Proceedings of the 2008 International Conference on Advanced Technologies Communication, Hanoi</i>, October 2008.



Contact Institution/Entity Address	Universiti Malaysia Sarawak (UNIMAS) Timbalan Naib Canselor (Penyelidikan dan Inovasi), Universiti Malaysia Sarawak (UNIMAS), 94300 Kota Samarahan, Sarawak.
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e-Mail	cetan@fit.unimas.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A CSI-based Throughput and QoS Enhancement Scheme TCP Over Cooperative Broadband Wireless Networks
Project Number	01-01-09-SF0039
Project Leader and Team Members	Leader: Tan Chong Eng Members: Khairuddin Ab. Hamid, Goh Kok Luong, Lau Sei Ping and Biju Issac
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary/ Objectives	<p>The conventional Transmission Control Protocol (TCP) has a retransmission timer that will automatically reset if it does not receive any acknowledgements (ACKs) from the receiver within a specific time period. When an ACK is not received, TCP assumes that the packet is lost and it will initiate a resend of the packet again to the receiver. While doing so, TCP also assumes that the network congestion occurs and hence applying rate control mechanism by slowing down its transmission rate to the network. This phenomena is particular obvious in a wireless network environment where the channel is prone to have significantly higher error rate than the conventional wired networks. Therefore, an enhancement scheme is needed to meet the nature requirements of the wireless networks.</p> <p>Previous research have been focused on proposing either a completely new or hybrid TCP protocols. The main limitation of these protocols is that they are not fully compatible with the conventional TCP protocol that is still widely used in the Internet. The adoption of these new protocols will require major upgrade of the new TCP protocol all the nodes in the Internet in order to achieve full protocol compatibility, which is unlikely to happen and impractical to be implemented. The main objective of this research is to ensure successful adoption of the conventional TCP protocol ad hoc cooperative based broadband wireless networks with an aim to minimize the problems faced in the wireless networks.</p>



<p>Publications/Products/ Outcomes</p>	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Lim, B.H. & Tan, C.E., 2009. Simplified link reliability enhancement schemes wireless networks, <i>Proceedings of the 4th International Conference Internet Technology and Secured Transactions</i>, London, 2009. 2. Tan, E.K. & Tan, C.E., 2008. Routing permacne improvement using dynamic threshold based on measured SNR OFDM based Ad hoc Cooperative Wireless Networks, <i>proceedings of the International Symposium on Inmation Technology, KL, 2008</i>. 3. Lim, B.H. & Tan, C.E., 2008. A low level frame prioritize scheme VoIP QoS improvement over wireless links, <i>proceedings of the International Symposium on Information Technology, KL, 2008</i>.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Malaysia Sarawak (UNIMAS) Timbalan Naib Canselor (Penyelidikan dan Inovasi), Universiti Malaysia Sarawak (UNIMAS), 94300 Kota Samarahan, Sarawak. Office: 08-258 3776 H/p: 019-829 1678 cetan@fit.unimas.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Real-time Thread Concurrency Controls Cup/Fpga Based Micro-kernel
Project Number	01-02-03-SF0018
Project Leader and Team Members	Leader: Razali Jidin Members: Farrukh Nagi, Salman Yussof and Ong Hang See
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Fast, simple, resource efficient, and processor family independent mechanisms achieving recursive mutex semantics have been implemented within the Field Programmable Logic Arrays (FPGA) fabrics. This new core provides multiple recursive mutex threads executing on multiple processors. The threads can access the mutexes using typical memory access instructions, therefore it is processor independent operations. It incorporates blocking queues and wake-up mechanism without the need to use processor memory. Resource efficiency has been achieved with a single controller and a common queue multiple mutexes. The soft-core library approach similar to peripheral enables selection of cores on System-on-Chip (SoC). SoC is dominant in embedded computer system and related domains.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Jidin, R. 2009. Mapping of industrial process control applications to the CPU+FPGA Architectures. <i>2nd International Conference on Control, Instrumentation and Mechatronics Engineering</i>, CIM09, Malacca 2. Jidin, R. Harmin, Y.S. and Zainol, M.A. 2008 Migration of multithreading services into hardware: thread manager, <i>ICMU08, proceedings of the 4th International Conference on Inmation Technology and Multimedia</i> at UNITEN (ICIMU' 2008), Malaysia 3. Harmin, Y.S. Jidin, R. and Mohamed Moubark, A. 2008 Enabling multithreading executions on the xilinx microkernel with a hardware scheduler, <i>International Conference on Electronics Design ICED08</i>, Park Royal Penang



	<p>4. Harmin, Y.S. Jidin, R. and Mohamed Moubark, A. 2008, Preliminary studies of multithreaded programs on CPU/FPGA devices, SCORED08, UNITEN</p> <p>Products: Fast and Compact Footprint Recursive Mutexes IP core (IP soft core in the m of Very High Speed Hardware Descriptive Language (VHDL)) that can be instantiated on the Field Programmable Gate Array (FPGA)</p>
Awards/Certificates	<p>1. International Invention, Innovation & Technology Exposition 2008 (ITEX 2008), Kuala Lumpur Convention Centre (KLCC), Malaysia, 9-11 May 2008: Gold Medal Award - Invention of "Fast and Compact Footprint Recursive Mutexes"</p> <p>2. International Trade Fair – Ideas, Inventions – New Products 2008 (IENA 2008), 60th anniversary, Messe Nuremberg, Germany, 30-Oct-2008 to 2-Nov-2008: Gold Medal Award - Invention of "Fast and Compact Footprint Recursive Mutexes"</p>
IP Status	Copyright (registered in 2009)
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8928 7208 H/p: 019-323 2372 razali@uniten.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Application of Electrical Impedance Tomography Imaging in Bio-medical and Materials Technology
Project Number	01-02-03-SF0024
Project Leader and Team Members	Leader: Farrukh Nagi Members: Md Zaini Jamaludin, Uwe Dippel, Syed Khaleel Ahmed, Abdul Talip Zulkarnain and Abu Bakar Musa
Field of Research	Medical and Health Sciences
Project Summary	Electrical Impedance Tomography (EIT) is a non-invasive Imaging technique that has applications in the crack detection, medical field and industrial processes. For instance, EIT has been used to image lung functions. The objective of the resarch is to build hardware and software for Electrical impedance tomography imaging system for medical purpose.
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Phone Number e-Mail	Office: 03-8928 7226 Farrukh@uniten.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and Development of an Intelligent Automatic Signature Verification System
Project Number	01-02-03-SF0071
Project Leader and Team Members	Leader: Sharifah Mumtazah Syed Ahmad Member: Khairuddin Hashim
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary/ Objectives	The project objectives was to design and develop an Intelligent Automatic Signature Verification (ASV) system which is capable to forecast the dynamic information of the signing process from the static visual signature images, where this dynamic information will then be used to enhance the accuracy of the offline ASV system. The project also planned to design and develop an ASV system which is optimised in terms of minimizing its error rate which takes into consideration skilled and random forgeries.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Syed Ahmad, S.M. 2009. Defining and managing instabilities in the signing patterns of signature biometrics user population, <i>International Conference on Robotics, Vision, Inmation and Signal Processing</i> , November (ROVISP 2007), 2007, Penang, Malaysia. Products: Automatic Signature Verification System
Awards/Certificates	1. Malaysia Technology Expo 2008: Silver Medal 2. International Invention, Innovation &Technology Exposition 2008 (ITEX 2009): Bronze Medal
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number	Office: 03-8921 2386 H/p: 013-392 9522
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Parallel Genetic Algorithm (GA) Routing on Message Passing Interface (MPI) Cluster
Project Number	01-02-03-SF0077
Project Leader and Team Members	Leader: Salman Yussof Members: Asmidar Abu Bakar, Mohd Ezanee Rusli, Azimah Abdul Ghapar and Marina Md. Din
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	A parallel genetic algorithm, GA algorithm solving the shortest path routing problem. The developed algorithm can be used in future network routers which implement multi-processor technology. Since it uses GA as the main algorithm to find the shortest path, it has several advantages such as able to generate multiple alternative paths which can quickly be used in the case of link or equipment failures, scalability and insensitivity to variations in network topologies.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Razali, R.A, Yussof, S., See, O.H., Md Din, M., Abdul Ghapar, A., 2008. Overview of Parallel Genetic Algorithm and its Applications, <i>4th International Conference on Information Technology and Multimedia at UNITEN (ICIMU 2008)</i>, 17 – 19 November 2008. 2. Razali, R.A, Yussof, S., See, O.H., Md Din, M., Abdul Ghapar, A., 2008. Overview of Parallel Genetic Algorithm and its New Implementation, <i>4th International Conference on Information Technology and Multimedia at UNITEN (ICIMU 2008)</i>, 17 – 19 November 2008. 3. Yussof, S., Razali, R.A, , See, O.H., Md Din, M., Abdul Ghapar, A., 2009. A Parallel Genetic Algorithm for Shortest Path Routing Problem, <i>International Conference on Future Computer and Communication (ICFCC 2009)</i>, pp. 268 – 273, Kuala Lumpur, Malaysia, 3 – 5 April 2009.



	<ol style="list-style-type: none"> 4. Yussof, S., Razali, R.A., See, O.H., Md Din, M., Abdul Ghapar, A., Md Din, M., A Coarse-grained Parallel Genetic Algorithm with Migration for Shortest Path Routing Problem, 2009. <i>International Symposium on Advances of High Performance Computing and Networking (AHPCN-09) in conjunction with the 11th IEEE International Conference on High Performance Computing and Communications (HPCC-09)</i>, pp. 615 – 621, Seoul, Korea, 25 – 27 June 2009. 5. Yussof, S., Razali, R.A., Ong, H.S. An Investigation of Using Parallel Genetic Algorithm for Solving the Shortest Path Routing Problem, <i>Journal of Computer Science</i>, <i>accepted for publication</i>. <p>Products: A parallel GA algorithm solving the shortest path routing problem.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Tenaga Nasional (UNITEN) College of Information Technology, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8921 2365 H/p: 019-353 5976 salman@uniten.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Signal Processing Tools for Determining the Quality of Agriculture Produce
Project Number	01-02-03-SF0094
Project Leader and Team Members	Leader: Zainul Abidin Md Shariff Members: Syed Khaleel Ahmed, Masuri Othman, Marayati Marsadek, Aidil Azwin Zainul and Zaipatimah Ali
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Automated online grading system (Agri-Grading System) using Signal Processing, Artificial Intelligence and Communication System Tools by sending the image to a server (via MMS) and receiving the result (grade) on mobile phone via SMS. The image is processed using the image processing algorithm running on the server together with the use of support vector machine and fuzzy logic algorithm in order to determine the produce type and grade respectively.
Publications/Products/Outcomes	Publications: <ol style="list-style-type: none"> 1. Shape-based sorting of agriculture produce using support vector machines in a MATLAB / SIMULINK Environment. <i>The 5th International Colloquium on Signal Processing & Its Applications 2009 (CSPA 2009)</i>. 6-8 March 2009 Kuala Lumpur. 2. Design and Development of a Consumer-Based Fully Automated Fruit Grading Service. <i>The 2009 International Symposium on Communications and Information Technologies (ISCIT 2009)</i>. 28-30 September 2009 3. Agriculture Produce Sorting and Grading using Support Vector Machines and Fuzzy Logic. <i>IEEE International Conference on Signal Processing and Applications (ICSIPA 2009)</i>. 18-19 November 2009. Kuala Lumpur, Malaysia. 4. Fuzzy classification of agriculture produce: application to banana sorting by size. ICIMU Nov 2008. Universiti Tenaga Nasional. 5. Image processing of an agriculture produce: determination of size and ripeness of a banana. <i>Proceedings of International Symposium On Information Technology 2008. ITSIM '08</i>. 26-29 August 2008. KLCC. Malaysia.



Awards/Certificates	The 20th International Invention, Innovation & Technology Exhibition (ITEX) 2009: Bronze Medal
Contact Institution/Entity Address Phone Number e-Mail	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8928 7219 H/p: 019-317 4470 Zainul@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Intelligent Energy Management in Wireless Sensor Network
Project Number	01-02-03-SF0096
Project Leader and Team Members	Leader: Sharifah Azwa Shaaya Members: Norashidah Md Din, Nagaletchumi Balasubraman, Yanti Erana Jalil and Ayuniza Ahmad
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary/ Objectives	The product is an energy management wireless sensor network application which is based on the current IEEE 802.15.4 standard intended wireless personal area network (WPAN). The energy management application improved and further optimised the overall energy consumption of the wireless sensors and significantly increased sensor network's lifetime. The delay of the network is also minimised even in high number of sensors in the network.
Publications/Products/ Outcomes	Publications: <ol style="list-style-type: none"> 1. Performance Study on Energy Consumption and QoS of Wireless Sensor Network under different MAC Layer Protocols: IEEE802.15.4 and IEEE802.11. 2. Energy Efficient IEEE 802.15.4 Medium Access Protocol for Wireless Sensor Network Products: Energy Saver protocol based on IEEE 802.15.4 WSN Application (EE IEEE 802.15.4 is Energy Efficient IEEE 802.15.4
Awards/Certificates	The 21st International Invention, Innovation & Technology Exhibition (ITEX) 2010: Gold Medal
IP Status	Malaysia Patent Pending PI2010000403
Contact Institution/Entity Address Phone Number e-Mail	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8921 6277 shazwa@uniten.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	An Intelligent System to Support the Implementation of Outcomes Based Education Tertiary Engineering Education in Malaysia
Project Number	01-02-03-SF0101
Project Leader and Team Members	Leader: Miszaina Osman
Field of Research	Applied Sciences and Technologies
Project Summary	This software is an integration with the existing online system used in UNITEN. Using this OBE system, lecturers can key in all their courses info online, and obtained the Program Outcomes (PO) achievement every semester. The Head of Department would be able to view the status and final summary of the courses. However, this system was not fully developed yet and work is still progressing to improve the system according to the new requirements from EAC.
Publications/Products/Outcomes	Products: An OBE software/ system
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number	Office: 03-8928 7229 H/p: 019-236 1964
e-Mail	miszaina@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A New Authentication Method Voice Over IP Session Initiation Protocol in Internet Protocol Version 6
Project Number	01-02-03-SF0102
Project Leader and Team Members	Leader: Hazlinda Hakimie
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary/ Objectives	A secured VoIP over IPv4 with PKI (public key infrastructure) encryption capabilities was permed successfully. Test bed an IPv6 environment was successfully integrated. SIP server combined with LDAP was successful. However LDAP failed to search user. User data was not saved in the required database but was instead saved in the directory itself.
Publications/Products/ Outcomes	Products: VoIP SIP test bed which includes development of softphone and PKI server IPv4.
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number e-Mail	Office: 03-8921 2266 hazlinda@uniten.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Implementation of a Multi Platform Wireless Mobile Ad Hoc Network (MANET) Experimental Test Bed a Security Enhanced Ad Hoc On-Demand Distance Vector (AODV) Routing Protocol
Project Number	01-02-03-SF0106
Project Leader and Team Members	Leader: Azimah Abdul Ghapar Members: Salman Yussof, Marina Md Din, Hothefa Shakir Jassim, Mohd Ezanee Rusli and Asmidar Abu Bakar
Field of Research	Information, Computer and Communication Technology (ICT)
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Hothefa Shaker Jassim, Salman Yussof, Azimah Abdul Ghapar, Mohd Ezanee Rusli, Marina Md Din, "Towards Designing a Secure AODV Routing Protocol in MANET using Trust Mechanism", 4th International Conference on Information Technology and Multimedia at UNITEN (ICIMU 2008), 17 – 19 November 2008 2. Hothefa Shaker, Roslan Ismail, Salman Yussof, Azimah Abdul Ghapar, "Establishing Trust in Mobile Ad hoc Networks based on Extended Subjective Logic", Malaysian Science and Technology Congress 2008 (MSTC 2008), 16 – 17 December 2008.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Tenaga Nasional (UNITEN) College of Information Technology, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8921 2328 azimah@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Wideband Code Division Multiple Access (WCDMA) Teletraffic Improvement by Distributed Artificial Intelligent Processors
Project Number	01-02-03-SF0108
Project Leader and Team Members	Leader: Tiong Sieh Kiong
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary/ Objectives	The product is new artificial intelligence based microcontroller system. The developed system expands and enables the existing small scale microcontrollers with limited resource to meet the complex soft computing needs. The product incorporates Genetic Algorithm (GA) in parallel distributed architecture in the microprocessor, which reduce the complexity of each microcontroller to solve large complex problem and increase problem solving speed. The product is implemented in scalable modular architecture that enables an easy future expansion.
Publications/Products/ Outcomes	Products: An Embedded Genetic Algorithm Processor
Awards/Certificates	<ol style="list-style-type: none"> 1. The Malaysia Technology Expo 2009 (MTE 2009): Gold Medal 2. The Malaysia Technology Expo 2009 (MTE 2009): The Best Award 3. Invention, Innovation and Technology, Brussels 2009 (INNOVA 2009): Gold Medal
IP Status	Malaysia Patent Pending PI20090590
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number e-Mail	Office: 03-8921 2282 Siehkiong@uniten.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Multi Objective Optimisation Routing Algorithm Wireless Sensor Networks
Project Number	01-02-03-SF0109
Project Leader and Team Members	Leader: Mohd Suhaimi Sauti
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The project is basically to produce a routing algorithm or protocol which can be used within a wireless sensor network environment to achieve certain objectives. An efficient routing algorithm will reduce the energy consumption of its battery thus prolong the network life. The project has successfully develop an algorithm that serves multiple objectives while maintaining network connectivity, minimizing the energy consumption as well as controlling load distribution.
Publications/Products/Outcomes	Products: Routing Algorithm Wireless Sensor Network
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number e-Mail	Office: 03-8921 2020 ext 3231 suhaimi@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Study on the Security Breaches of Unencumbered Cryptographic Methods Through Observation of Resource Usage
Project Number	01-02-03-SF0119
Project Leader and Team Members	Leader: Uwe Dippel
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary/ Objectives	The method is applicable any sort of side-channel attack, where used resources are observed by the intruder. The prototype demonstrates how it can be run on a number of platforms, without any need to install it, and calculates the correlation of the resource usages. Since no installation is needed and the system is run off a live-CD, it can be run easily on different machines, different platforms, as well as systems with and without countermeasures against this type of attacks. It offers a simple means comparing architectures, as well as potential countermeasures, with respect to their effectiveness.
Publications/Products/ Outcomes	Products: A method and prototype of a measuring system side-channel attacks on OpenSSL based AES cryptographic systems
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Information Technology, Km 7 Jalan Kajang-Puchong, 43009 Kajang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Internet Protocol to Optical Traffic Controller Using Fuzzy Logic Ethernet Passive Optical Network
Project Number	01-02-03-SF0124
Project Leader and Team Members	Leader: Norashidah Md Din
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Two algorithms were developed an Ethernet Passive Optical Network (EPON) environment to enhance Quality of Service by improving fairness and bandwidth utilisation. The bandwidth allocator/traffic controller supports triple play, i.e. voice, video and data services using Fuzzy Logic and the Russian Doll bandwidth allocation model (RDM) respectively.
Publications/Products/Outcomes	Products: <ol style="list-style-type: none"> 1. An intelligent fuzzy logic dynamic bandwidth allocation (IFLDBA) algorithm upstream EPON 2. Hierarchical dynamic bandwidth allocation algorithm with Russian doll allocation EPON
Awards/Certificates	<ol style="list-style-type: none"> 1. International Invention, Innovation and Technology Exhibition (ITEX 2010): Gold Medal 2. The Malaysia Technology Expo 2010 (MTE 2010): Gold Medal
IP Status	Malaysia Patent Pending: PI 2010000310 & PI 2010001573
Additional Information	Industrial Linkages: Sigtech Sdn Bhd
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number	Office: 03-8928 7293 H/p: 012-283 7172
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	High Resolution Three Dimensional Computational Fluid Dynamics Solver Based on Normalised Variable Mulation
Project Number	01-02-03-SF0130
Project Leader and Team Members	Leader: Mohd Zamri Yusoff
Field of Research	Engineering Sciences
Project Summary/ Objectives	The product is a 3D Computational Fluid Dynamics (CFD) solver which allows simulation of fluid flows under high speed compressible condition. The CFD solver is more accurate as it employs the newly developed NVF technique. The solver has been applied to various test cases involving complex 2D and 3D steady and transient test cases.
Publications/Products/ Outcomes	Products: High resolution 3D CFD solver based on normalised variable mulation on unstructured tetrahedral grid.
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Stacked Ultra Wide Band Antenna: Development and Applications in Wireless Personal Area Network (WPAN) Devices
Project Number	01-02-03-SF0147
Project Leader and Team Members	Leader: Chandan Kumar Chakrabarty
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were:</p> <ol style="list-style-type: none"> 1. To simulate the electromagnetic fields of the stack ultra wideband antenna on different substrate material 2. To model the antenna interconnects discontinuity enhancing impedance matching over ultra wide bandwidth 3. To investigate the effects of dielectric substrate materials and discontinuities over ultra wide bandwidth.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8921 2340 H/p: 017-239 6572 chandan@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	An Artificial Intelligent-based Smart Antenna System WiMAX Communication
Project Number	01-02-03-SF0151
Project Leader and Team Members	Leader: Tiong Sieh Kiong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>The project objectives were</p> <ol style="list-style-type: none"> 1. Development of a new artificial intelligent-based adaptive beam algorithm to steer and control smart antenna system. 2. Development of hardware circuitry of Genetic Algorithm processors and MIMO antenna system 3. Development of a WiMAX transceiver system with Genetic Algorithm processors and MIMO antenna system 4. Investigation of SINR and capacity of the WiMAX that employing artificial intelligent-based smart antenna system.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8921 2282 Siehkiong@uniten.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Content and Semantics-based Image Retrieval System for Medical Applications
Project Number	01-02-01-SF0014
Project Leader and Team Members	<p>Leader: Mohammad Faizal Ahmad Fauzi</p> <p>Members: Mohd Haris Lye Abdullah, Wan Mimi Diyana Wan Zaki, Tong Hau Lee, Logeswaran Rajasvaran, Mohd Haris Lye Abdullah and Wan Siti Halimatul Munirah Wan Ahmad</p>
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>A Matlab-based medical image retrieval system has been developed, using new and modified algorithms, and has reported successful and promising results. Both the content- and semantics-based image retrieval system (CBIR and SBIR respectively) has been evaluated for medical applications, and it was found that CBIR is more suitable for medical applications. SBIR has a long way to go before they can be used reliably for this purpose. A hybrid medical image retrieval system consisting of both CBIR and SBIR has been developed. The following algorithms are available and can be used for other related projects: several intensity, texture and shape-based feature extraction techniques; several segmentation algorithms for CT head images; algorithms for automatic annotation of CT head images; an algorithm for local image retrieval; a working template for image retrieval GUI.</p>
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Zaki, W.M.D.W., Fauzi, M.F.A., Besar, R. and Ahmad, W.S.H.M.W. 2010. Retrieval of Intracranial Haemorrhages in Computed Tomography Brain Images using Binary Coherent Vector. <i>Journal of Electronic Imaging</i> 19(4): December, 2010, pp.DOI:10.1117/1.3518138. 2. Zaki, W.M.D.W., Ahmad Fauzi, M.F., Besar, R. and Ahmad, W.S.H.M.W. 2010. Multi-level Segmentation Method for Serial Computed Tomography Head Images. <i>Multimedia Tools and</i>, May, 2010, pp.DOI: 10.1007/s11042-010-0524-0.

	<p>3. Tong, H.L., Ahmad Fauzi, M.F. and Komiya, R. 2009. Segmentation of CT Brain Images Using Unsupervised Clusterings. <i>Journal of Visualization</i>, April, 2009, pp.131-138.</p> <p>Proceedings/Conferences/Seminars:</p> <p>1. Tong, H.L., Ahmad Fauzi, M.F. and Haw, S.C. 2011. Intracranial Hemorrhage Annotation for CT Brain Images. <i>International Conference on Advanced Science, Engineering and Information Technology 2011 (ICASEIT2011)</i>, Jan 2011, January, 2011, pp.689-693.</p> <p>2. Tong, H.L. Ahmad Fauzi, M.F. and Haw, S.C. 2010. Ventricles segmentation and matching for content-based medical image retrieval. <i>International Conference on Information Sciences, Signal Processing and their Applications (ISSPA2010)</i>, May 2010, May, 2010, pp.733 – 736.</p> <p>3. Hau Lee Tong, Mohammad Faizal Ahmad Fauzi and Komiya Ryoichi. 2010. Two-stage segmentation for abnormalities and ventricles extraction. <i>International Workshop on Advanced Image Technology 2010 (IWAIT2010)</i>, 2010.</p>
Additional Information	Industrial Linkages: Hospital Putrajaya; Hospital Serdang.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Multimedia University (MMU) Faculty of Engineering, Universiti Multimedia, Jalan Multimedia, 63100 Cyberjaya, Selangor. Office: 03-8312 5330 H/p: 013-340 1700 faizal1@mmu.edu.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and Performance Analysis of ofdm Based Radio-over-fiber System
Project Number	01-02-01-SF0015
Project Leader and Team Members	Leader: Mohamad Yusoff Alias Members: WongHin Yong, Zulfadzli Yusoff, Mohd Ridzuan Mokhtar and Hafizal Mohamad
Field of Research	Engineering Sciences
Project Summary	This study determined the optimised type of channel coding in conjunction with OFDM in ROF systems. The response and advantages of OFDM over the dispersion effects in optical fibre were investigated.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohamad Yusoff Alias. 2008. LDPC Assisted Minimum Bit Error Rate Multiuser Detector in SDMA-OFDM. <i>Mosharaka International Conference on Communications, Networking and Information Technology (MIC-CNIT)</i>, 5-7 Dec 2008, Amman. 2. Siamak Dawazdah Emami, Mohamad-Yusoff Alias and Hairul-Azhar Abdul-Rashid. 2008, A Modeling of Orthogonal Frequency Division Multiplexing in Radio over Fiber Transmission. <i>Mosharaka International Conference on Communications, Networking and Information Technology (MIC-CNIT)</i>, 5-7 Dec 2008, Amman.
Awards/Certificates	Recognition as a Center of Excellence
Contact Institution/Entity Address Phone Number e-Mail	Multimedia University (MMU) Universiti Multimedia, Jalan Multimedia, 63100 Cyberjaya, Selangor. Office: 03-8312 5421/ 5570 yusoff@mmu.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Dynamic Job Grouping-based Scheduling for Grid Application
Project Number	01-02-01-SF0017
Project Leader and Team Members	Leader: Nithiapidary Muthuvelu Members: Nur Azyyati, Ho Sin Ban, Reethu John Arockia Richa and Chailan.
Field of Research	Environmental Sciences
Project Summary/ Objectives	In this research, the process flow and job management in the existing grid brokers (Gridbus, Gridway, Nimrod-G) and cluster systems (PBS, Condor-G, SGE) were studied and analysed. The overheads and disadvantages involved in managing the individual, lightweight jobs in a Grid environment were also studied. It is concluded that a job grouping process on lightweight jobs will reduce the overall application processing time of a grid application. A complete scheduler system framework was established based on the factors found and the framework was simulated using a GridSim toolkit to prove that a job grouping method highly reduces the overheads involved in processing a grid application. Following on from that, a real system was implemented using a Gridbus Broker toolkit.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Nithiapidary Muthuvelu, Ian Chai and C.Eswaran. 2008. An Adaptive And Parameterized Job Grouping Algorithm for Scheduling Grid Jobs. <i>10th International Conference on Advanced Communication Technology (ICACT)</i> , 17-20 Feb 2008, Phoenix Park.
Awards/Certificates	Recognition as a Center of Excellence
Additional Information	Linkages: GRIDS Laboratory, University of Melbourne (framework simulation); Gridbus (broker training and real system implementation); MIMOS (setting up the grid resource (MMUGrid - http://grid.mmu.edu.my/wordpress/) and allowing this to participate in National Grid).
Contact Institution/Entity Address Phone Number e-Mail	Multimedia University (MMU) Universiti Multimedia, Jalan Multimedia, 63100 Cyberjaya, Selangor. Office: 03-8312 5429 H/p: 012-374 6970 nithiapidary@mmu.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Multi-wavelength Brillouin-erbium Holey Fiber Laser
Project Number	01-02-01-SF0019
Project Leader and Team Members	Leader: Zulfadzli Yusoff Members: Hairul Azhar Abdul Rashid, Mohammed Haydar Al-Mansoori and Pankaj Kumar Choudhury
Field of Research	Information and Communication Services
Project Summary	The Brillouin effects has been characterised in holey fibre, in terms of threshold, frequency shift and line width. An efficient multi-wavelength Brillouin-erbium holey fibre laser has been demonstrated.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Sabrina Mohd Shapee, Rosidah Alias, Azmi Ibrahim, Zulkifli Ambak, Mohd Zulfadli Mohamed Yusoff, Muhammad Redzuan Saad. 2010. Microstructure for Printed Multilayer LTCC Tape of Different Paste Rheology. Journal of Material Sciences Forum (Vol 654-656). Pp 2378-2381. 2. Ambak, Z.; Saad, M.R.; Alias, R.; Ibrahim, A.; Mohd Shapee, S.; Zulfadli, M.; Yusof, M.; Yahya, M.R. 2010. Design of Interdigital Band Pass Filter for WLAN applications using LTCC technology. Applied Electromagnetics (APACE), 2010 IEEE Asia-Pacific Conference. 9-11 Nov. 2010. Port Dickson.
Contact Institution/Entity Address Phone Number e-Mail	Multimedia University (MMU) Universiti Multimedia, Jalan Multimedia, 63100 Cyberjaya, Selangor. Office: 03-8312 5296 zulfadzli.yusoff@mmu.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of an Automated Decision Support System for Diabetic Retinopathy Disease
Project Number	01-02-01-SF0025
Project Leader and Team Members	Leader: C. Eswaran Members: Sithi Vinayakam Muniandy, Subhas Hati, Ibrahim Abdurrazaq and Ahmad Fauzi Md Sharif
Field of Research	Social Sciences
Project Summary/ Objectives	This study has built high-quality multi-ethnic fundus image database for testing, training and evaluation. Novel pre-processing algorithms has been developed for image enhancement of fundus images. Efficient segmentation methods have been developed to improve the detection of vessels, optic discs, and other features. Feature extractions was based on colour and greyscale statistics, fractal/ wavelet methods for diabetic retinopathy classification has been performed. An expert system was designed and implemented to provide reliable and robust results for diabetic retinopathy The developed system has to be fine-tuned by testing it in hospitals with different categories of DR patients before commercialisation
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Reza, A.W., Eswaran, C., and Hati, S. 2007. Blood Vessel Detection using RGB Components for Early Diagnosis of Diabetic Retinopathy. <i>International Conference on Robotic, Vision, Information and Signal Processing (ROVISP 2007)</i> , 28 Nov - 30 Nov 2007, Penang, Malaysia.
Additional Information	Linkages: University of Malaya Hospital (collecting image database, getting clinical information for diagnosis and classification of diabetic retinopathy disease).
Contact Institution/Entity Address	Multimedia University (MMU) Universiti Multimedia Jalan Multimedia, 63100 Cyberjaya, Selangor.
Phone Number e-Mail	Office: 03-8312 5831/ 5000 eswaran@mmu.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Automated Ontology Mapping and Merging for Learning Object Reusability
Project Number	01-02-01-SF0031
Project Leader and Team Members	Leader: Kiu Ching Chieh Member: Chien-Sing Lee
Field of Research	Applied Sciences and Technologies
Project Summary	This research studied the automated ontology mapping and merging through two clustering techniques: FCA (Formal Concept Analysis), SOM (Self-Organising Map) and K-Means. Lexical databases were incorporated for dynamic discovery of ontological semantics for ontology mapping. A robust ontology mapping and merging framework was developed for huge ontology merging. A prototype framework has been produced for automated ontological interoperability.
IP Status	Copyright
Contact Institution/Entity Address	Multimedia University (MMU) Universiti Multimedia (MMU) Jalan Multimedia, 63100 Cyberjaya, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design of an Efficient and Provable Secure Identity-based Identification Scheme in the Standard Model
Project Number	01-02-01-SF0032
Project Leader and Team Members	Leader: Heng Swee Huay Members: Goi Bok Min, Chin Ji Jian and Tan Syh Yuan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This study has proposed an efficient provable secure identity-based identification scheme. The scheme was implemented in a suitable platform, and a complete java implementation package has been developed. The results obtained formed the basis for future work which may be commercialised. In order to achieve this, more detailed scrutiny on the proposed scheme is required before they can be integrated into real-life applications.
Publications/Products/ Outcomes	International Journal Paper: 1 International Conference Paper: 9 Citations in International Publications: 9 Design/Prototype: 1
Awards/Certificates	Recognition as a Center of Excellence
Additional Information	Linkages: Ibaraki University, Japan; Kyungpook National University, Korea; Loughborough University, UK; DSO National Laboratories, Singapore; New York University, USA; Institute for Infocomm Research, Singapore.
Contact Institution/Entity Address Phone Number e-Mail	Multimedia University (MMU) Jalan Ayer Keroh Lama, 75450 Melaka. Office: 06-252 3485 shheng@mmu.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Multi-modal Human Computer Speech Interface
Project Number	01-02-01-SF0037
Project Leader and Team Members	Leader: Chong Tze Yuang Members: David Ngo Chek Ling, PangYing Han, GohKah Ong Michael and Andrew Teoh Beng Jin
Field of Research	Biological Sciences
Project Summary	This study investigated and developed an effective speech emotion recognition system. A text independent speaker identification system has been developed.
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Phone Number e-Mail	

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Temporal Video Compression
Project Number	01-02-01-SF0044
Project Leader and Team Members	Leader: Lim Wee Keong Members: Tan Yi Fei, Teng Hse Tzia and Tan Wooi Nee
Field of Research	Information, Computer and Communication Technology
Project Summary	A new algorithm has been developed in this research for video compression, using mathematical techniques. The best algorithms for high compression ratio were determined without sacrificing the image quality.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nithyaletchumy Devi, T., Lim, W.K., Tan, W.N., Tan, Y.F., Teng, H.T. and Chang, Y.F. 2009. Temporal video compression using mode factor and polynomial fitting on wavelet coefficients. <i>VISAPP 2009</i>, 5–8 Feb 2009, Lisbon. 2. Nithyaletchumy Devi, T., Tan, W.N., Tan, Y.F., Lim, W.K., Teng, H.T. and Chang, Y.F. 2008. Video compression using temporal polynomial fitting on wavelet coefficients. <i>Symposium Kebangsaan Sains Matematik Ke-16</i>, 3-5 Jun 2008, Kota Bahr.
Contact Institution/Entity Address	Multimedia University (MMU) Faculty of Engineering Universiti Multimedia, Persiaran Multimedia, 63100 Cyberjaya.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Context-aware and Dynamically Evaluative Authoring/Knowledge Management Tool in Service-oriented Learning Environments
Project Number	01-02-01-SF0045
Project Leader and Team Members	Leader: Chien-Sing Lee Members: Simon Lau Boungh Yew and Yashwant Prasad Singh
Field of Research	Medical and Health Sciences
Project Summary/Objectives	A context reference model was designed. A context-aware authoring/knowledge management engine with association rule was capable of generating user logs. Different pedagogies were used for different context models and platforms.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Lee, C.S. Improving learning design practices through Strategic Integrated Evaluation. <i>International Journal of Continuing Engineering Education and Lifelong Learning</i> 28(1): 139-153. 2. S. C. Haw and C. S. Lee, "Twig X-Guide: An Efficient Twig Pattern Matching System Extending DataGuide Indexing and Region Encoding Labeling", <i>Journal of Information Science and Engineering</i>, Academia Sinica, Taiwan, 25(2), 2009, pp. 603-617. [SCI IF: 0.315]. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Lau, S.B.Y., Pham-Nguyen, C., Lee, C.S. and Garlatti, S. 2008. Semantic Web Service Adaptation Model for a Pervasive Learning Scenario. <i>IEEE Conference on Innovative Technologies in Intelligent Systems and Industrial Applications</i>, 12-13 Jul 2008, Cyberjaya. 2. Halim, R.M., and Lee, C.S. 2008. A Conceptual Framework for Competency-based Web Intelligent Learning. <i>International Symposium on Information Technology (ITSIM)</i>, 26-29 Aug 2008, Cyberjaya. 3. Lau, S.B.Y. and Lee, C.S. 2007. Context-aware reference model: Architecture and implications for adaptation of learning activities. <i>Mobility '07</i>, 10-12 Sep 2007, Singapore.
IP Status	Copyright
Contact Institution/Entity Address Phone Number	Multimedia University (MMU) Universiti Multimedia, Jalan Multimedia, 63100 Cyberjaya. Office: 03-8312 5425 H/p: 013-365 2018
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TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development and Optimisation of Smart Antenna Solutions for Wireless Mesh Networks
Project Number	01-02-01-SF0046
Project Leader and Team Members	Leader: Chuah Teong Chee Member: Chuah Teong Chee
Field of Research	Information and Communication Services
Project Summary	A complete system solution has been developed that realises the potential of smart antenna in wireless mesh networks. This incorporated 'virtual smart antenna' by using distributed nodes in a mesh network, achieved improved performance and is promising for use in wireless mesh networks. Performance evaluation-packet loss probability, throughput capacity, range improvement were conducted. Performance optimisation, an alternate MAC scheme, was introduced into the proposed system to enhance its performance.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design of an Efficient and Provable Secure Public Key Encryption with Keyword Search Scheme
Project Number	01-02-01-SF0048
Project Leader and Team Members	Leader: Yau Wei Chuen Members: Heng Swee Huay and Goi Bok Min
Field of Research	Medical and Health Sciences
Project Summary	An efficient and provable secure public key encryption with a keyword search scheme has been proposed. A complete java implementation package has been developed, covering the proposed scheme and some existing schemes in the literature. A prototype of searchable encrypted email system has been developed.
Awards/Certificates	Recognition as a Center of Excellence
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Reconfigurable Gain Equalizer for Optical Amplifiers Using Fibre Bragg Grating with Dynamic Stress Distribution
Project Number	01-02-01-SF0058
Project Leader and Team Members	Leader: Mohd Ridzuan Mokhtar Members: Faidz Abd Rahman, Zulfadzli Yusoff, Wong Hin Yong and Hairul Azhar Abdul
Field of Research	Medical and Health Sciences
Project Summary	Simulations of fibre Bragg gratings with various parameters and profiles have been performed for designing and modelling the gain equaliser. Techniques for dynamically reconfiguring the response of fibre Bragg gratings based on beam bending and macro-bending have been proposed and experimented. Additionally, an experimental circulating loop transmission system has been set up and demonstrated.
Awards/Certificates	Recognition as a Center of Excellence
Contact Institution/Entity Address Phone Number e-Mail	Multimedia University (MMU) Universiti Multimedia, Jalan Multimedia, 63100 Cyberjaya. Office: 03-8312 5424 ridz@mmu.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A Two-tier Fast Video Encryption Algorithm
Project Number	01-02-01-SF0060
Project Leader and Team Members	Leader: Goi Bok Min Members: Chang Yoong Choon and Heng Swee Huay
Field of Research	Economics, Business and Management
Project Summary	Several achievements have resulted from this project. A detailed report has been produced on the performance of current video encryption scheme, and a survey has been provided on the various watermarking schemes that are suitable for video streams. A new fast video encryption scheme has been proposed, and provided along with a detailed report on the performance of the new video encryption scheme, and a watermarking scheme suited to video, implemented in addition to encryption scheme.
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e-Mail	bmgoi@mmu.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Wireless Local Area Network (WLAN) Testbed for Quality of Service (QoS) Provisioning
Project Number	01-02-01-SF0061
Project Leader and Team Members	Leader: Bryan Ng
Field of Research	Chemical Sciences
Project Summary	The SNT algorithm was proposed and tested. Test results indicated that the algorithm provides protection and isolation to QoS with increasing WLAN load. The implementation corroborated our initial expectation. Key performance indicators such as throughput, delay distribution and frame drops were within statistical confidence intervals (95%).
Awards/Certificates	Recognition as a Center of Excellence
Contact Institution/Entity Address	Multimedia University (MMU) Universiti Multimedia, Jalan Multimedia, 63100 Cyberjaya.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Design and Fabrication of Uhf Rfid Transponder Chip Employing Silterra 0.18 Micron Technology
Project Number	01-02-01-SF0063
Project Leader and Team Members	Leader: Faisal Mohd Yasin Members: Mamun Ibne Reaz, Muhammad Ibn Ibrahimy and Florence Choong
Field of Research	Medical and Health Sciences
Project Summary	A design framework is presented, to develop low-cost circuits for an UHF RFID transponder. Dynamic threshold transistors from Silterra CMOS 0.18u process were utilised to fabricate several core circuits and demonstrate the feasibility of this framework.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Teh, Y.K., Mohd-Yasin, F., Choong, F., Reaz, M.B. and Kordesch, A. 2009. Design and Analysis of UHF Micro-Power CMOS DTMOST Rectifiers. <i>IEEE Transactions on Circuits and Systems-II</i> 56(2): 122-126. 2. Mohd-Yasin, F., Khaw, A., Choong, F. and Reaz, M.B. 2008. Battle Between HF and UHF RFID. <i>Microwave Journal</i> 51(5): 152-166. 3. Teh, Y.K., Mohd-Yasin, F., Choong, F. and Reaz, M.B. 2008. Design of Adaptive Supply Voltage for Subthreshold Logic Based on Sub-1V Bandgap Reference Circuit. <i>Microelectronics Journal</i> 39(1): Jan 2008 , ISSN: 0026-2692. 4. Mohd-Yasin, F., Teh, Y.K., Reaz, M.B. and Kordesch, A. 2007. Developing Designs for RFID Transponder Using BDTMOS. <i>Microwaves & RF</i> 46(4): 70-80. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mustapha, M., Mohd-Yasin, F., Khaw, M.K. and Reaz, M.B. 2008. Low power ROM Employing Dynamic Threshold-Voltage MOSFET (DTMOS) Technique. <i>Proceedings of the 2008 IEEE International Conference on Semiconductor Electronics (ICSE 2008)</i>, 25-27 Nov 2008, Johor Bahru.

Awards/Certificates	Excellent Student Paper Award, IEEE ASICON 2009.
IP Status	Copyright
Additional Information	Linkages: New Jersey Institute of Technology (involved in giving the research directions for exploiting the DTMOS-based circuits); Silterra's Device Modelling group (conducted joint research to study the experimental devices, joint publications).
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A Study on the Usability and Design Factors of Using Multimedia in an E-learning Environment: its Impact on the Student Learning Process in Malaysian Institutions of Higher Learning
Project Number	01-02-01-SF0064
Project Leader and Team Members	Leader: Neo Mai Members: Yap Wei Li and Neo Tse Kian
Field of Research	Mathematical Sciences
Project Summary	The project indicated that learning using interactive modules designed with proper usability and theoretical foundations can effect highly engaged students in the classrooms. The study was also able to identify and design usability factors that will allow educators to develop their multimedia-based web learning modules.
Proceedings/Conferences/ Seminars:/Products/ Outcomes	Products: A Smart Backpack System
IP Status	Copyright
Additional Information	Linkages: INTI-UC (project team member doing her PhD in the area).
Contact Institution/Entity Address	Multimedia University (MMU) Universiti Multimedia, Jalan Multimedia, 63100 Cyberjaya.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Query Processing in Native XML Databases: A Hybrid Approach
Project Number	01-02-01-SF0066
Project Leader and Team Members	Leader: Haw Su Cheng Member: Chien Sing Lee
Field of Research	Information Systems
Project Summary	In this study, current query processing techniques has been investigated and proposed a hybrid query processing technique comprising both indexing and labelling technologies. A conceptual framework for XML query processing was designed. Several algorithms have been proposed to support three main types of queries: Path query; Twig pattern query; and Mixed query.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. S.C. Haw and C.S. Lee, Evolution of Structural Path Indexing Techniques in XML Databases: A Survey and Open Discussion, International Conference on Advanced Communication Technology, IEEE, Korea, 2008, pp 2054-2059. 2. S.C. Haw and C.S. Lee, INLAB2: Fast XML Native Storage and Query Retrieval, International Conference on Intelligent System & Knowledge Engineering, IEEE, China, 2008, pp. 44-493. 3. Haw, S.C. and Lee C.S. 2008. Effective XML Data Storage and Retrieval System. <i>Journal of Donghua University</i>.
Contact Institution/Entity Address	Multimedia University (MMU) Universiti Multimedia, Jalan Multimedia, 63100 Cyberjaya.
Phone Number	Office: 03-8312 5233 H/p: 013-395 2558
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Heritage Preservation in Virtual Environment Using Realistic Lighting Computation
Project Number	01-02-01-SF0067
Project Leader and Team Members	Leader: Ahmad Rafi Mohamed Eshaq Members: Mohamad Izani Zainal Abidin, Aishah Abdul Razak, Mohd Nazri Zainuddin, Avijit Paul and Siti Noraishah Musa
Field of Research	Information & Communication Technology (ICT)
Project Summary	<p>This research suggested solutions for an accurate lighting display with higher (extensive) data input in virtual environment (VE). It also incorporated effective low-polygon image solutions with global illumination (GI) lighting and lighting techniques for the re-construction of virtual heritage. Ray tracing was used to light the virtual scene and later was baked as textures to sustain realism. In contrast with the normal lighting solution (i.e. typical three-point lighting's), the ambient occlusion technique managed to create a subtle 'look and feel' of the overall scene, and was preserved using texture baking. The use of high dynamic range images (HDRI) allowed the time-based lighting solutions to be visualized using the same ray tracing setting with different exposures. The positive research outcomes suggested that the group should prepare for the next level of commercialisation. As a result, in October 2009, a project named e-Warisan Senibina was awarded by the e-Content Fund, adopting a similar concept. Solutions involving an accurate lighting display and a few other extensions of viewing and visualisation options will be made available to the general public via the internet in Q1 2011.</p>
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Rafi, A., Avijit, P. Noraishah, S., Nazri, M., Izani, M. and Aishah, R. 2009. Techniques on heritage preservation using lighting computation in virtual environment. <i>Proceedings of the 13th International Conference of CAAD Futures 09</i> , 17-19 Jun 2009, Montreal.

	Research/commercial grants: <ol style="list-style-type: none"> 1. International level: A joint research project between University of Strathclyde, UK and Multimedia University, Malaysia. Project title: <i>Three-dimensional computer modelling as an aid to urban design and cultural heritage development</i>. Awarding body: PMI 2 Connect – Research Co-operation Award (British Council). 2. National level: Content Fund. A project submitted by the research group via MMU Creativista Sdn Bhd. Project title: <i>e-Warisan SENIBINA</i>. Awarding body: MOSTI.
Awards/Certificates	Recognition as a Center of Excellence
Additional Information	Linkages: Centre of Built Environment of the Malay World-KALAM, Universiti Teknologi Malaysia (access to information on architectural heritage); CAVAD, Singapore.
Contact Institution/Entity Address Phone Number e-Mail	Multimedia University (MMU) Cyberjaya Campus: Jalan Multimedia, 63100 Cyberjaya, Selangor. Office: 03-8312 5555/5000/5018 Mobile: 013-6136821 ahmadrafi.eshaq@mmu.edu.my/ ahmadrafi01@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A Novel Adaptive Genetic Algorithm Design for the Multi-objective Optimisation of High-level Synthesis
Project Number	01-02-01-SF0068
Project Leader and Team Members	Leader: Florence Choong Chiao Mei Members: Somnuk Phon-Amnuaisuk, Mohamad Yusoff Alias and Pang Wai Leong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This research proposed an integrated solution to the High-Level Synthesis (HLS) problems of scheduling, allocation and binding based on an adaptive Genetic Algorithm. Platforms were established for various purposes such as Field Programmable Gate Array (FPGA) mapping, hardware prototyping, evolvable hardware (evolutionary computing), and hardware software code sign.
Contact Institution/Entity Address	Multimedia University (MMU) Cyberjaya Campus: Jalan Multimedia, 63100 Cyberjaya, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Low Resolution Contact-less Hand Based Multimodal Biometric System
Project Number	01-02-01-SF0070
Project Leader and Team Members	Leader: Goh Kah Ong Michael Members: Tee Connie and Andrew Teoh Beng Jin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This research focused on developing a touch/contact-less hand based biometric recognition system using low resolution input sensor, hardware and software components for the touch-less biometric input sensor. The solution is able to capture the hand profile (palm print) for recognition. Additionally this study developed the pre-processing module that locates the crucial region from the hand profile, and a feature extraction module that extracts the unique biometric feature from the located crucial region. A classification module that performs pattern matching for recognition was developed and integrated.
Publications/Products/Outcomes	Journals: 1. Michael, G.K.O., Connie, T. and Andrew, B.J.T. 2008. Touch-less palm print biometrics: Novel Design and implementation. <i>Image and Vision Computing</i> 26(12): 1551-1560. Proceedings/Conferences/Seminars: 1. Michael, G.K.O., Connie, T. and Andrew, B.J.T. 2008. Touch-less Palm Print Biometric System. <i>3rd International Conference on Computer Vision Theory and Applications</i> , 22-25 Jan 2008, Madeira.
Awards/Certificates	International award
Additional Information	Linkages: Hanoi University of Technology, Vietnam (application to extend this project).
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Perception and Encoding of Audio Objects and Their Applications in Brain-computer Interface
Project Number	01-02-01-SF0071
Project Leader and Team Members	Leader: Somnuk Phon-Amnuaisuk Members: Lee Kian Chin, Florence Choong Chiao Mei and C. Eswaran
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This project aimed to build up the capacity of research in a new knowledge representation paradigm. In the proposed approach, the grain size of the knowledge is not at the proposition level, but at the features of the Electroencephalogram (EEG) level. Common EEG features are derived from frequency, energy together with their temporal and spatial characteristics. The study also set out to propose a new representation framework and identify mappings between perceived patterns and the brain information processing activities, and to implement an application featuring brain computer interface (BCI).</p>
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none">1. Köppen, Mario (ed.) et al., Advances in neuro-information processing. 15th international conference, ICONIP 2008, Auckland, New Zealand, November 25–28, 2008. Revised selected papers, Part I. Berlin: Springer (ISBN 978-3-642-02489-4/pbk). Lecture Notes in Computer Science 5506, 232-239 (2009).2. Köppen, Mario (ed.) et al., Advances in neuro-information processing. 15th international conference, ICONIP 2008, Auckland, New Zealand, November 25–28, 2008. Revised selected papers, Part I. Berlin: Springer (ISBN 978-3-642-02489-4/pbk). Lecture Notes in Computer Science 5506, 153-160 (2009).

	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Somnuk Phon-Amnuaisuk. 2008. Event-Related Desynchronisation of Spontaneous Motor Actions. <i>The 15th International Conference on Neural Information Processing of the Asia-Pacific Neural Network Assembly (ICONIP 2008)</i>, 25-28 Nov 2008, Auckland, New Zealand. 2. Somnuk Phon-Amnuaisuk. 2008. Classify Event-Related Motor Potentials of Cued Motor Actions. <i>15th International Conference on Neural Information Processing of the Asia-Pacific Neural Network Assembly</i>. 2008. Berlin, Heidelberg.
IP Status	Copyright
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Security Enhancement of IEEE 802.16 Wireless Broadband Standard
Project Number	01-02-01-SF0076
Project Leader and Team Members	Leader: Mohamad Yusoff Alias Member: Goi Bok Min
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This research has figured out the vulnerability in terms of Denial of Service (DoS) attacks on WiMAX systems. It was simulated using the available WiMAX equipments on the DoS vulnerability
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> John Hong Kok Han, Mohamad Yusoff Alias and Goi Bok Min. 2011. Simulating Denial of Service Attack Using WiMAX Experimental Setup. <i>International Journal of Network and Mobile Technologies</i> 2(1): 30-34. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> John Hong Kok Han, Mohamad Yusoff Alias and Goi Bok Min. 2009. Potential Denial of Service Attacks in IEEE802.16e-2005 Networks. <i>9th International Symposium on Communication and Information Technology 2009 (ISCIT 2009)</i>, 28-30 Sep, Incheon. John Hong Kok Han, Mohamad Yusoff Alias and Goi Bok Min. 2009. Simulating Denial of Service Attack Using WiMAX Experimental Setup. <i>International Conference on Recent and Emerging Advanced Technologies in Engineering (iCREATE 2009)</i>, 23-24 Nov, Kuala Lumpur.
Additional Information	Linkages: CyberSecurity (comments given during progress presentation reports); University Tunku Abdul Rahman (UTAR).
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design of the Cancelable Touchless Fingerprint Verification System
Project Number	01-02-01-SF0088
Project Leader and Team Members	Leader: Hiew Bee Yan Members: Hiew Bee Yan, Ong Thian Song, Yap Chee Een, Ooi Shih Yin, Pang Ying Han and Chong Siew Chin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	A final design of the Cancellable Touchless Fingerprint Verification System was developed; the proposed algorithm is efficient in term of performance and security.
Publications/Products/Outcomes	Journals: 1. Hiew, B.Y., Andrew, T.B. J. and Ooi, S.Y. 2010. A Secure Digital Camera based Fingerprint Verification System. <i>Journal of Visual Communication and Image Representation</i> 21(3): 219-231. 2. Hiew, B.Y., Andrew, T.B. J., Ooi, S.Y., and Abdul Aziz, F.F. 2010. A Secure Touch-less based Fingerprint Verification System. <i>Journal of WSCG</i> 18(1-3):1-8
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and Performance Analysis of Architecture and Contention Resolution in Optical Packet Switching Network
Project Number	01-02-01-SF0089
Project Leader and Team Members	Leader: Tan Saw Chin Members: Ewe Hong Tat and Abbou Fouad Mohammed
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>In this project, we focused on the packets contention problem in a slotted optical packet switched network. We propose a new architecture for the switch node and the corresponding novel packet contention resolution scheme. The new architecture node and novel contention resolution scheme are investigated and analysed for performance evaluation. Thus, an analytical model that analyses the novel contention resolution scheme in the new node architecture was then developed for performance evaluation and the accuracy of the analysis model was then verified through simulation. Therefore, the objectives which have been achieved are the development of a new architecture for the optical packet switch, a novel contention resolution scheme for the new architecture, and an analytical model and develop a simulation model. Performance analysis has been conducted of the new architecture node and the corresponding novel contention scheme.</p>
Publications/Products/Outcomes	Journals: <ol style="list-style-type: none">1. Ahmed Galib Reza, S.C.Tan, and F.M. Abbou. 2010. Performance Evaluation of Two-Stage Shared FDL Optical Packet Switch using Contention Resolution Scheme with Packet Releasing Priority. <i>Journal of Telecommunications. VOLUME 2, ISSUE 2, MAY 2010.</i>

	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Reza, A.G.; Tan Saw Chin; Abbou, F.M. 2010. Performance Analysis of Selective Minimum Delay Value (SMDV) Algorithm for Packet Contention Resolution of Optical Packet Switch. <i>2nd International Conference on Computer Research and Development</i>, 7-10 May 2010, Kuala Lumpur . 2. Reza, A.G. Tan Saw Chin Abbou, F.M.. 2010. Hybrid Buffering Architecture using Feed-Forward and Feedback share Fiber Delay Lines. <i>International Photonic Conference (ICP 2010)</i>, 5 Jul 2010, Langkawi. 3. Reza, A.G.; Tan Saw Chin; Abbou, F.M. 2010. A Selective Minimum Delay Value (SMDV) Algorithm for Packet Contention Resolution in Optical Packet Switching. <i>IEEE 24th International Conference on Advanced Information Networking and Applications Workshops</i>, 20-23 April 2010, Perth, WA.
IP Status	Copyright
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Modelling and Intervening Under Uncertainty for Conceptual Change: A Bayesian Decision-theoretic Approach
Project Number	01-02-01-SF0091
Project Leader and Team Members	Leader: Ting Choo Yee Member: Somnuk Phon-Amnuaisuk
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	A Bayesian learner model for cognitive conflict and conceptual change was created in this study. This proposed learner model was integrated into an INQPRO learning environment and the performance and conceptual changes were evaluated. The accuracy of the learner model in providing adaptive pedagogical interventions that foster conceptual change was identified.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ting, C.Y. and Phon-Amnuaisuk, S. 2009. Factors influencing the performance of Dynamic Decision Network for INQPRO. Properties of Bayesian Student Model for INQPRO. <i>Applied Intelligence</i>. Computers & Education 52(4), 762-780 <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ting, C.Y. and Chong, Y.K. 2009. Modelling Conceptual Change Using Bayesian Networks. <i>6th International Conference on Information Technology in Asia</i>, 6-9 Jul 2009, Kuching. 2. Ting, C.Y. and Phon-Amnuaisuk, S. 2009. Constructing A Bayesian Learner Model for INQPRO. <i>6th International Conference on Information Technology in Asia</i>, 6-9 Jul 2009, Kuching.
Awards/Certificates	National award
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A Bayesian Classification Approach for Threats Identification in Network Intrusion Detection Domain
Project Number	01-02-01-SF0093
Project Leader and Team Members	Leader: Khor Kok Chin Members: Ting Choo Yee and Somnuk Phon-Amnuaisuk
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	An optimal feature set was obtained from the collected network intrusion detection data by making use of different feature selection algorithms to achieve higher intrusion detection rates. A new approach was proposed for classifying intrusive activities by employing multiple Bayesian classifiers by evaluating the predictive accuracy of the proposed multiple Bayesian classifiers approach.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Khor, K.C. Ting, C.Y. and Phon-Amnuaisuk, S. 2009. From Feature Selection to Building of Bayesian Classifiers: A Network Intrusion Detection Perspective. <i>American Journal of Applied Sciences</i> 6(11), 1949-1960. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Khor, K.C. Ting, C.Y. and Phon-Amnuaisuk, S. 2010. Forming an Optimal Feature Set for Classifying Network Intrusions Involving Multiple Feature Selection Methods. <i>International Conference on Information Retrieval and Knowledge Management (CAMP'10)</i>, 16-18 March 2010, Shah Alam. 2. Khor, K.C. Ting, C.Y. and Phon-Amnuaisuk, S. 2009. A Feature Selection Approach for Network Intrusion Detection. <i>International Conference on Information Management and Engineering (ICIME'09)</i>, 3-5 April 2009, Kuala Lumpur. 3. Khor, K.C. Ting, C.Y. and Phon-Amnuaisuk, S. 2010. Comparing Single and Multiple Bayesian Classifiers Approaches for Network Intrusion Detection. <i>2nd International Conference on Computer Engineering and Applications (ICCEA 2010)</i>, 19-21 March 2010, Bali.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	ICT in Support of Crisis Response in Malaysia: an Application of Knowledge Management Systems
Project Number	01-02-01-SF0110
Project Leader and Team Members	Leader: Murali Raman Members: Mudiakaran Kuppasamy, M. Saravanan and Magiswary Dorasamy
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This study showed that KM can support crisis response efforts; a KM prototype was implemented to support crisis management, and the effectiveness of the prototype in light of Phase 2 of the project were evaluated.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Raman, M., Ryan, T., Jennex, M.E. and Olfman, L., 2010. Wiki Technology and Emergency Response: An Action Research Study. <i>International Journal of Information Systems for Crisis Response and Management</i> 2(1): 49-69. 2. Raman, M. and Jennex, M. 2010. Emergency Preparedness and Knowledge Management Systems. <i>Journal of Information Technology Case and Application Volume 24</i>, Number 3, 261-272, DOI: 10.1007/s11213-011-9193-9. 3. Raman, M. 2010. Wiki technology as a “Free” Collaborative Tool within an Organizational Setting. <i>EDPACS The EDP Audit, Control and Security</i> 42(3): 1-11. 4. Magiswary, D., Murali, R., Saravanan, M. and Maniam, K. 2010. ICT and disaster preparedness in Malaysia: An Exploratory Study. <i>WSEAS Transactions on Information Science and Applications</i>. Issue 5, Volume 7, May 2010. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Dorsasmy, M., Raman, M. 2011. Information Systems to Support Disaster Planning and Response: Problem Diagnosis and Research Gap Analysis. <i>8th International ISCRAM Conference</i>, May 2011, Lisbon.

Additional Information	Linkages: San Diego State University UiTM (ICT for Public Service Sector related issues); Malaysian Association of Social Workers (MASW).
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Bridging the Digital Divide in Rural Agriculture & Fishing Communities in Malaysia
Project Number	01-02-10-SF0010
Project Leader and Team Members	Leader: Mahendhiran Nair Members: Ramachandran, R., Heejin Lee, Mahendhiran Nair, Patricia Goon and Lee Poh Aun
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The familiarity of a rural population with ICT was ascertained, with a focus on personal computers, mobile phones and the internet, and the extent to which the population perceived the usefulness of ICT in their day-to-day activities was determined. This research identified ways in which to address the digital gap and to identify the most suitable person for the task.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Nair, M. & Shariffadeen, T.M.A. 2009. Managing Innovation in the Network Economy. Lessons for Countries in the Asia-Pacific region. Digital Review of Asia Pacific. 2009-2010. Pp. 25-42. 2. Nair, M. 2009. Language proficiency and affinity to the information society: challenges and opportunities for rural society. ICT Strategic Review 2009/2010: Innovation, the way forward, PIKOM and MOSTI, Malaysia, Chapter 10, pp. 141-160. 3. Nair, M., Samudram, M. & Vaithilingam, S. 2008. Malaysian money demand function revisited: the ARDL approach. Journal of Asia-Pacific Business. Vol. 9, No. 2, pp. 193-209.
IP Status	Copyright
Additional Information	Linkages: Yonsei University, South Korea; Monash University, Australia; MIMOS.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Novel Applications of Document Comparison and Visualisation Technology
Project Number	01-02-05-SF0003
Project Leader and Team Members	Leader: Wong Kuok Shoong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The main goal of the proposed research was to develop and extend technologies for automatically visualizing groups of documents. The research proposed in this document aims to upgrade the existing prototype to a fully functional product with a high commercial value.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Chu, B., Woon, W.L. and Wong K.D. 2008. A Graphical and Convenient Tool for Document Comparison and Visualization. <i>ICCCE 2008</i>, 29 Jul 2008, Kuala Lumpur. 2. See, C.K., Woon, W.L. and Wong, K.D. 2007. Simple Forward Method for Document Matching. <i>MoMM</i>, Dec 2007, Jakarta. 3. Chu, B., Woon, W.L. and Wong, K.D. 2008. Customized Semantic Term Weighting Scheme for Text Categorization. <i>ICCCE 2008</i>, May 2008, Kuala Lumpur. 4. Woon, W.L. and Wong, K.D. 2008. String Alignment for Automated Document Versioning. <i>Knowledge and Information Systems</i>. Volume 18 Issue 3, March 2009. New York, USA.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Developing a System Architecture for Implementing Complex Community-based Road Safety Programs
Project Number	01-02-05-SF0004
Project Leader and Team Members	Leader: Leong Choon Heng
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The system architecture has been developed and tested in the area of Petaling Jaya, Kelana Jaya and Subang Jaya. The web-based platform has also been presented at international and national conferences. The next phase is to implement it throughout the country. This research has also created a web platform and is in the midst of enlisting stakeholders' support to finance a wider execution of the community road safety program.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. A paper on community road safety has been presented in the 3rd International Road Safety Conference in Perth, Australia, at the end of November 2007.
IP Status	Copyright
Additional Information	Linkages: Road Safety Department.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Continuum Model for Wireless Network Teletraffic Analysis
Project Number	01-02-05-SF0007
Project Leader and Team Members	Leader: Wong Kuok Shoong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project aimed to create, define and develop continuum models suitable for teletraffic analysis of wireless networks (both for single-layer and multi-layer networks). Besides that, by employing known methods, it attempted to investigate the solvability of the PDEs. The accuracy of continuum models was compared with other approaches that researchers have used to simplify computation time, such as sparse matrix solving techniques. The savings in computation time that can be obtained by using the continuum model was quantified. Lastly, other interesting and relevant properties of the continuum model, related to its use in teletraffic analysis of wireless systems were investigated.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Wong, K.S., Rajeswari & Ng. 2007. Teletraffic Analysis of Integrated Cellular/WLAN Networks. <i>MoMM 2007</i>, Dec 2007, Jakarta. 2. Wong, K.S. & Woon. 2007. Simultaneous Mobility: A New Analytical Approach. <i>IEEE VTC 2007</i>, Apr 2007, Dublin. 3. Wong, K.S., Rajeswari, Gin, Woon & Chong. 2007. Feasibility of a PDE-Based Teletraffic Model for Cellular Networks. <i>ICIAS 2007</i>, Nov 2007, Kuala Lumpur. 4. Gin, Wong, K.S. & Chong. 2007. Faster simulation of teletraffic behavior of wireless networks. <i>CUTSE 2007</i>, Nov 2007, Miri.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Web Data Mediation Over Semantic Web Framework
Project Number	01-02-05-SF0013
Project Leader and Team Members	Leader: Nor Adnan Yahaya
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The important components and aspects that characterise the web data mediation problem were determined. Key component technologies of Semantic Web that are crucial to the development of the intended mediation system were also identified. Flexible design of the mediation system that is based on service-oriented architecture and agent technology was produced.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Yahaya, N.A., Buang, R. and Hassan, N.H. 2008. Design and Implementation of a Dynamic Metadata Editor, IJCSNS, March 2008 Using Semantic Web Languages in Representing Test Cases. <i>ICIMU 2008</i>, Nov 2008, Kuala Lumpur, Malaysia. 2. Data Mediation over Semantic Web Framework. <i>CITA07</i>, Jul 2007.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Inter-vehicular Communications: Harnessing the Power of Wireless Communications for Future Vehicular Services
Project Number	01-02-05-SF0015
Project Leader and Team Members	Leader: Cath Tee
Field of Research	Engineering Sciences
Project Summary	The application-derived requirements for inter-vehicular communications were determined. New network protocols and other communications algorithms were created for ad hoc networking for commercial applications. New security protocols for inter-vehicular communications were invented. A new protocol JARR was invented and is currently undergoing patent registration. Once done, steps will be taken to commercialise it.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Presentation of Paper VCNA 2009, IEEE, Taiwan. 2. 1 DfMA IEEE paper presented October 20, 2008, Penang.
Awards/Certificates	Recognition as a Center of Excellence
IP Status	Copyright
Additional Information	Linkages: Nanyang Technology University; Norwegian Technology & Science University.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Web-based Tool to Support Collaborative Software Development in a Distributed Environment
Project Number	01-02-05-SF0016
Project Leader and Team Members	Leader: Sellappan Palaniappan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This study has developed a collaborative software that enables software developers from remote/distributed locations to collaborate and work together on software projects.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Web-based Case Tool for Collaborative Software Modelling, International Journal of Software Engineering, August 2008. 2. Web-Based Case Tool for Automated Rendering of UML Models, International Journal of Computer Science and Network Security, August. 2008. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. P. Sellappan, Ling & Louis. 2008. A Novel SVG Application in UML System Modelling. <i>SVG Open</i>, 26-28 Aug 2008, Nuremberg.
Additional Information	Linkages: University of Malaya.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Intelligent Health Care Decision Support System Using Online Analytical Processing (OLAP) and Data Mining Techniques
Project Number	01-02-05-SF0017
Project Leader and Team Members	Leader: Sellappan Palaniappan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This study has developed a DSS using the integrated model (OLAP and Data Mining). The DSS based on the integrated/hybrid approach was superior to one that used only OLAP or Data Mining. It has discovered hidden patterns/relationships in the data which can be used for interactive analysis. Besides that, it also provides improved information visualisation. The DSS is only for analysis of Diabetes case data, and the data mining was confined to the decision tree technique.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Chua Sook Ling & Sellapan Palaniappan. 2009. Clinical Decision Support System Using OLAP Mining. <i>MNCC Transactions on ICT</i> 1(1): 2. Chua Sook Ling & Sellapan Palaniappan. 2008. Clinical Decision Support Using OLAP With Data Mining. <i>International Journal of Computer Science and Network Security</i>. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Sellappan Palaniappan, Rafiah Awang. Web-based Heart Disease Decision Support System Using Data Mining Classification Modeling Techniques. <i>The Ninth International Conference on Information Integration and Web-based Applications Services</i>, 3-5 December 2007, Jakarta, Indonesia. Volume 229 of <i>books@ocg.at</i>, pages 157-167, Austrian Computer Society, 2007.

	<ol style="list-style-type: none"> 2. P. Sellappan, S.L. Chua. 2008. Hybrid Clinical Decision Support Using OLAP With Data Mining. <i>4th Malaysian Software Engineering Conference (MySEC'08)</i>, 16-17 Dec 2008, Kuala Terengganu. 3. Palaniappan, S. and Awang, R. 2007. Heart Disease Decision Support System Using Data Mining Classification Modelling Techniques. <i>Informatics 2007 Conference</i>, 27-28 Nov 2007, Petaling Jaya
Awards/Certificates	Recognition as a Center of Excellence
IP Status	Copyright
Additional Information	Linkages: University of Malaya; University Technology PETRONAS; Malaysian Cancer Society.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Next-generation Malaysian Tourism Information System (next-MTIS)
Project Number	01-02-05-SF0032
Project Leader and Team Members	Leader: Nor Adnan Yahaya
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	A prototype called myTourism was completed and the use of web aggregation was achieved. An aggregation component was developed by using Kapow Mashup Server technology. More than 10 Malaysian tourism-related websites were chosen for web extraction and aggregation. The process of delivering the requested information according to the receiver's context, was partially achieved. A robot has developed to translate the data from the source language to a chosen target language. Semantic searching was achieved but using only a naive approached.
Additional Information	Linkages: Kapow Technologies (developer and vendor for Kapow Mashup Server software, the main tool used in this project).
Contact Institution/Entity Address	Malaysia University of Science and Technology (MUST) Presiden / Ketua Eksekutif, Malaysia University of Science and Technology (MUST), GL 33, Ground Floor, Blok C, Dataran Usahawan Kelana, 17, Jalan SS 7/26 Kelana Jaya, 47301 Petaling Jaya, Selangor.
Phone Number	Office: 03-7880 1777 H/p: 019-213 7803
e-Mail	noradnan@must.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Interactive Surgical Planning and Analysis System
Project Number	01-03-02-SF0028
Project Leader and Team Members	Leader: Wan Abdul Rahman Jauhari Wan Harun Members: Mohd Fadly Razikin, Izhar Abd Aziz, Noor Mafuza Mahmor, Safura Adeela Sukiman, Ab Rani Samsudin and Zainul Ahmad Rajion
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The project involved a study on capturing x-ray and CT scan images of craniofacials in CAD system and the manipulation of these images for landmark identification and cephalometric measurements. These tasks are currently done manually by surgeons and orthodontists through visual inspection and taking measurements using traditional approaches. A prototype system was developed that can display 2D images of patients obtained from x-rays and CT scans. Identification and marking of various landmarks on the image and cephalometric measurements were achieved through the system's customised user interface. The user can also generate traces of landmarks for surgical planning purposes. Trial runs were conducted together with orthodontists and maxillofacial surgeons at HUSM to test the effectiveness and accuracy of the system.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Wan Abdul Rahman Wan Harun, Victor Devadass and Izhar Abdul Aziz. 2006. Digital Approach in Reconstruction of Craniofacial Defect. <i>World Congress on Medical Physics and Biomedical Engineering 2006</i>, Aug 27 - Sep 1, 2006 COEX Seoul, Korea. 2. Wan Abdul Rahman Wan Harun, Zainul Ahmad Rajion, Izhar Abdul Aziz and Abdul Rani Samsudin. 2006. 3D Modelling and Evaluation of the Morphology of Hyoid Bone. <i>World Congress on Medical Physics and Biomedical Engineering 2006</i>, Shah Alam, Malaysia.



	<ol style="list-style-type: none"> Wan Abdul Rahman Wan Harun, Zainul A. Rajion, Izhar Aziz, A. and Rani Samsuddin, A. 2006. A 3D Evaluation of the Morphology of Hyoid Bone. <i>Workshop on Craniofacial Image Analysis</i>, 5 Oct 2006, Copenhagen. Wan Abdul Rahman, Zainul A. Rajion, Izhar Aziz and Rani Samsuddin, A. 2005. 3D CT-Imaging for Craniofacial Analysis Based on Anatomical Regions. <i>27th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2005</i>, Sep 2005, Shanghai. Zainul A. Rajion and Wan Abdul Rahman Wan Harun. 2005. Coordinate Systems Integration for Development of Malaysian Craniofacial Database. <i>27th Annual International Conference of the IEEE Engineering in Medicine and Biology Society, EMBC 2005</i>, Sep 2005, Shanghai. Wan Harun, W.A.R., Rajion, Z.A., Aziz, I.A. and Samsudin, A.R. 2006. A 3-D Approach For Landmark Analysis In The Development Of Craniofacial Database. <i>5th European Symposium on Biomedical Engineering</i>, 7-9 Jul 2006, Patras.
Awards/Certificates	<ol style="list-style-type: none"> ITEX 2006: Gold Medal, Innovation Award (Multimedia) Malaysian Technology Expo 2006: Bronze Medal Conference on Computer Guided Implantology and 3D Medical Modeling 2005: First Prize, International MIMICS Innovation Award
IP Status	Copyright
Additional Information	Linkages: University Hospital, Maastricht; Materialise, Belgium.
Contact Institution/Entity Address Phone Number e-Mail	SIRIM Berhad SIRIM BERHAD, No. 1, Persiaran Dato' Menteri, Seksyen 2, Peti Surat 7035, 40911, Shah Alam, Selangor. Office: 03-8992 6140 H/p: 019-316 7751 wrahman@sirim.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Web Based Integrated Management System for Implementation of QMS and ISMS
Project Number	01-03-02-SF0029
Project Leader and Team Members	Leader: Zalinda Baharum Members: Rozana Hashim, Raja Zurina and Suhana Fadlisha Arif Fad
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	An Integrated Management System methodology for the implementation of QMS and IMS was developed. A web based application was developed to implement the methodology. Trial runs to obtain feedback on the developed system was done with some identified industry partners to test the effectiveness and accuracy of the developed system. The system can be further improved based on the feedbacks received. To exploit the full commercialisation potential of the system, additional modules could be incorporated as identified through reviews with SIRIM QAS International (SQASI) consultants, such as a module for re-assessment of previous audit history.
Additional Information	Linkages: SIRIM QAS International (vast experiences in dealing with the standards being implemented).
Contact Institution/Entity Address	SIRIM SIRIM BERHAD, No. 1, Persiaran Dato' Menteri, Seksyen 2, Peti Surat 7035, 40911, Shah Alam, Selangor.
Phone Number	Office: 03-8992 6103
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Hardware Implementation of a Real Time Image Compression System for Next Generation Mobile Communications
Project Number	01-01-08-SF0022
Project Leader and Team Members	Leader: Md. Mamun Bin Ibne Reaz Members: Faisal Mohd Yasin, Florence Choong Chiao Mei, Ahmad Faris Ismail, Farhat Anwar and Muhammad Ibn Ibrahimy
Field of Research	Engineering Sciences
Project Summary	Five key objectives were set out at the beginning of this study. Firstly the research set out to complete a study of different image compression algorithms for mobile communication in real-time. Then a Modified Set Partitioning in Hierarchical Tree (M-SPIHT) image compression and decompression algorithm would be developed for next generation mobile communication, and the the whole algorithm would be modeled using the hardware description language VHDL. The model could then be synthesised and modeled for hardware prototyping, and the entire system implemented on FPGA as a hardware prototype.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mamun Reaz, Md Shabiul Islam, M.S. Sulaiman, "A Single Clock Cycle MIPS RISC Processor Design using VHDL", <i>Proceedings of the IEEE International Conference on Semiconductor Electronics</i>, Penang, Malaysia, pp. 199-203, December 2002. 2. Mamun Reaz, Md Shabiul Islam, M.S. Sulaiman, "Pipeline Floating Point ALU Design using VHDL", <i>Proceedings of the IEEE International Conference on Semiconductor Electronics</i>, Penang, Malaysia, pp. 204-208, December 2002. 3. Mamun Reaz, M.S. Sulaiman, M Alauddin M Ali, "VHDL Modeling of Neural Network Based Stock Market Forecasting System", <i>Proceedings of the 4th International Conference on Recent Advances in Soft Computing</i>, Nottingham, UK, pp. 441-447, December 2002.

Additional Information	Linkages: Multimedia University (research collaboration).
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM) Department of Electrical, Electronic and Systems Engineering, Universiti Kebangsaan Malaysia (UKM), 43600 UKM, Bangi, Selangor. Office: 03-8921 6311 H/p: 013-381 9838 mamun@vlsi.eng.ukm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Hardware Prototyping of Fetal Heart Rate Monitoring System Using Artificial Intelligence
Project Number	01-01-08-SF0029
Project Leader and Team Members	Leader: Muhammad Ibn Ibrahimy Members: Md. Mamun Ibne Reaz, Ahmad Faris Ismail, Rosminazuin Ab. Rahi, Edmond Zahedi and Mohd.Alauddin
Field of Research	Engineering Sciences
Project Summary	A portable electronic instrument was constructed for maternal and foetal heart rate monitoring. This research was conducted to improve the accuracy of existing techniques for the automatic analysis of the signals. The system was implemented in hardware using FPGA with the above features for incorporation in the portable system.
Publications/Products/Outcomes	<p>Linkage Journals:</p> <ol style="list-style-type: none"> 1. M. I. Ibrahimy, F. Akhter and H. R. Siddiquei, "Performance Analysis of OFDM-PSK System for Optimization of Fiber Optic Dispersion," European Journal of Scientific Research, vol. 48, no. 4, pp. 593-605, 2011. 2. M. R. Ahsan, M. I. Ibrahimy, O. O. Khalifa, "Advances in Electromyogram Signal Classification to Improve the Quality of Life for the Disabled and Aged People," Journal of Computer Science, vol. 6, issue 7, pp. 706-715, 2010. 3. M. I. Ibrahimy, M. A. Hasan, M. H. Ullah, "Design of an Automated Rail Transit System Controller: Malaysia Perspective" Australian Journal of Basic and Applied Sciences, vol. 3, issue 4, pp. 3500-3509, 2009. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. M. I. Ibrahimy, M.A. Hasan, S.M.A. Motakabber, "An Emergency Medical Care Network System for Fetal ECG Monitoring," Proceedings of the 6th International Symposium on Electronic Design, Test and Applications, 17-19 January, 2011, New Zealand.

Additional Information	Linkages: Universiti Kebangsaan Malaysia (research collaboration).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Islam Antarabangsa Malaysia (UIAM) Universiti Islam Antarabangsa Malaysia, P.O. Box 10, 50728, Kuala Lumpur. Office: 03-6196 4504 H/p: 012-300 1790 ibrahimy@iiu.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Hardware Prototyping of a Multiagent Based Smart Home for Disabled People
Project Number	01-01-08-SF0045
Project Leader and Team Members	Leader: Md. Mamun Ibne Reaz Members: Rosminazuin Ab. Rah, Muhammad Ibn Ibrahimy, Ahmad Faris Ismail and Faisal Mohd Yasin
Field of Research	Engineering Sciences
Project Summary	The usefulness of a Multiagent system in tackling home automation was analysed for disabled persons in a constantly changing environment. A Multiagent system was implemented in hardware for a better performance speed and to enable the testing of the entire system on FPGA.
Additional Information	Linkages: Multimedia University (research collaboration).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Islam Antarabangsa Malaysia (UIAM) Universiti Islam Antarabangsa Malaysia, P.O. Box 10, 50728, Kuala Lumpur. Office: 03-8921 6309 H/p: 013-381 9838 mamun@vlsi.eng.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Externalisation of Epistemic Community Tacit Knowledge for Batik Design Educational e-Gallery
Project Number	01-01-01-SF0068
Project Leader and Team Members	Leader: Nor Laila Md Noor Members: Ahmad Abdul Rahim, Ariza Nordin and Suriyati.
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The project focused on determining the semantic networks of batik design concepts and to construct the knowledge model of batik design into an educational e-Gallery. It is also planned to develop an educational e-Gallery for batik design. The National Museum of Malaysia benefited the digitisation efforts by providing Knowledge Artifacts (Images and Documentaries) for preservation and exhibition, allowing a field trip and observation for knowledge sharing.
IP Status	Copyright
Additional Information	Linkages: The National Museum of Malaysia; Digi; Micro enterprises and SMEs working producing batik on the East Coast.
Contact Institution/Entity Address	Universiti Teknologi MARA (UiTM) Universiti Teknologi MARA, Institut Pengurusan Penyelidikan (RMI), Universiti Teknologi Mara (UiTM), 40450 Shah Alam, Selangor.
Phone Number	Office: 03-5543 5376 H/p: 012-940 8647
e-Mail	norlaila@tmsk.uitm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Economic Operation of Power System Using Evolutionary Programming Optimisation Technique
Project Number	01-01-01-SF0094
Project Leader and Team Members	Leader: Titik Khawa Abdul Rahman Member: Bibi Norasiqn Sheikh Rahi
Field of Research	Engineering Sciences
Project Summary	A new technique was developed based on evolutionary programming optimisation to solve unit commitment and hydro thermal coordination ,in order to minimise the production cost but without compromising system security. The function of the economic operation of the hydrothermal unit commitment was considered. Improvements were made for efficient evolutionary programming and an optimisation technique was employed in solving the hydrothermal unit commitment problem without compromising the faster convergence and reduction in computation time.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Rahimullah, B.N.S. and Abdul Rahman, T.K. 2006. The application of evolutionary computation technique for short-term unit commitment problem. <i>1st International Power and Energy Conference, (PECon 2006)</i>, 28 and 29 November 2006, Putra Jaya, Malaysia. 2. Rahimullah, B.N.S. and Abdul Rahman, T.K. 2006. Short-term hydrothermal generation scheduling using evolutionary computing technique. <i>4th Student Conference on Research and Development</i>, 27-28 June, Shah Alam, Malaysia.
Contact Institution/Entity Address	Universiti Teknologi MARA (UiTM) Universiti Teknologi MARA, Institut Pengurusan Penyelidikan (RMI), Universiti Teknologi Mara (UiTM), 40450 Shah Alam, Selangor.
Phone Number	Office: 03-5543 5105 H/p: 016-222 5164
e-Mail	takitik@streamyx.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Generation of Semantic Document Model for Quran Using Ontology Domain
Project Number	01-01-01-SF0103
Project Leader and Team Members	Leader: Mohd Yunus Mohd Yusof Members: Shahrul Azman Mohd Nor and Hayati Abd Rahman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project focused on three main objectives. The objectives are to study the domain knowledge representation of Quran corpus; to construct the syntactical process for English sentences or phrases using natural language processing like part-of-speech tagging and parsing; and to study and develop the terminological knowledge base for Quran. This project has been successfully implemented and all objectives have been achieved.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Experiments Using Term Selection Methods On Literary Text, MALINDO 2008, International Conference. 2. Measuring the Representativeness of Index Terms in Literary Texts: An Experiment on the Quran, ITSIM International Conference, 2008.
Additional Information	International Linkages: IKIM and UKM (potential research organisations).
Contact Institution/Entity Address	Universiti Teknologi MARA (UiTM) Institut Pengurusan Penyelidikan (RMI), Universiti Teknologi Mara (UiTM), 40450 Shah Alam, Selangor.
e-Mail	mymy@tmsk.uitm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Trait-based Face Expression Modeling
Project Number	01-01-01-SF0136
Project Leader and Team Members	Leader: Fakhrul Hazman Yusoff Member: Siti Salwa Salleh
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has achieved its three main objectives. The model is able to measure temporal pattern of the head movement using the proposed tool, identify cluster based on trait for facial expression of disgust and create animated head of expression.
Additional Information	International Linkages: UPM (offers motion captured and other 3D reacted devices)
Contact Institution/Entity Address	Universiti Teknologi MARA (UiTM) Institut Pengurusan Penyelidikan (RMI), Universiti Teknologi Mara (UiTM), 02600 Arau, Perlis.
Phone Number	Office: 04-986 1001 H/p: 019-262 4255
e-Mail	fakhrul@perlis.uitm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Developing and Using a Computer-adaptive Assessment Software for Learning Secondary School Mathematics
Project Number	01-01-01-SF0169
Project Leader and Team Members	Leader: Paul Lau Ngee Kiong Members: Hasbee Usop, Lau Sie Hoe and Hong Kian Sam
Field of Research	Mathematical Sciences
Project Summary	The original objectives of this project were to develop a computer-adaptive assessment software for learning mathematics; to investigate the impact of the computer-adaptive assessment software in improving students' mathematics learning; to determine students' perceptions on the usability of the computer-adaptive assessment software; and to identify the contextual factors that can impact the effectiveness of the computer-adaptive assessment software.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Lau, S.H., Hong, K.S., Lau, N.K., & Hasbee Usop (2009). Improving Educational Assessment: A computer-adaptive multiple choice assessment using NRET as the scoring method. <i>Journal of US-China Education Review</i>, ISSN 1548-6613, USA. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Lau, S.H., Hong, K.S., Lau, N.K., & Hasbee Usop (2008). Improving Educational Assessment: A computer-adaptive multiple choice assessment using NRET as the scoring rubric. <i>International Conference on the Education of Learner Diversity</i>, 31 Aug , Universiti Kebangsaan Malaysia. 2. Lau, S.H., Hong, K.S., Lau, N.K., & Hasbee Usop (2008). <i>Web-based computer-adaptive multi-choice assessment (CAAS) using the new NRET scoring method</i>. Paper presented at the 13th Asian Technology Conference in Mathematics (ATCM 2008), 15-19 December, Bangkok, Thailand.



IP Status	Copyright
Additional Information	Linkages: UNIMAS (Collaborative project); 40 secondary schools in Sarawak (software successfully implemented).
Contact Institution/Entity Address	Universiti Teknologi MARA (UiTM) Institut Pengurusan Penyelidikan (RMI), Universiti Teknologi Mara (UiTM), Jalan Meranek, 94300 Kota Samarahan, Sarawak.
Phone Number	Office: 08-267 7610 H/p: 019-828 2689
e-Mail	plnk@sarawak.uitm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Fundamental Study of Optical Waveguide Coupling for Development of a Novel Optical Access-Card System
Project Number	01-01-01-SF0197
Project Leader and Team Members	Leader: Mohd Kamil Abd Rahman Members: Abang Annuar Ehsan, Nor Syafiqah Mohamed and Nor Aina Che Manaf
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>Designing and developing asymmetric coupling of multimode optical polymer waveguide was the main focus. The determination in manipulating specific output intensity from each output port from 1xN-port waveguide coupler can be verified by using optical propagation software simulation and modelling. The possibility of coupling output intensity from 1 to 100%, from each output port from a 1xN asymmetric waveguide coupler will provide 6 to 7 orders of magnitude more possible combinations of output intensities. These useful combinations of output intensities could be applied in realising an excellent number of access codes in an optical security system. The work encompassed the design, modelling or simulation, fabrication and development of 1X2-port and 1X4-port asymmetric multimode optical waveguide couplers. Initial progress in the research has been achieved particularly on the design and fabrication of a 3dB 1X2-port symmetric multimode polymer optical coupler which can then be integrated into an electronic system. Further work has been planned for other asymmetric ratios of 1x2-port and 1X4-port asymmetrical couplers. Various numbers of asymmetric couplers are required for a comprehensive study in determining the exact formulation and design of a particular ratio of the coupler. Furthermore, the electronic circuit components have to be built and tested.</p>
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Abang Annuar Ehsan, Sahbudin Shaari, and Mohd Kamil Abd. Rahman. 2011. Acrylic and Metal Based Y-Branch Plastic Optical Fiber Splitter with Optical NOA63 Polymer Waveguide Taper Region. <i>Optical Review</i> 18(1): 80–85.



Publications/Products/ Outcomes	<ol style="list-style-type: none"> Abang Annuar Ehsan, Sahbudin Shaari, and Mohd Kamil Abd. Rahman. 2011. Fabrication of 1x2 Asymmetric Plastic Optical Fiber Coupler for Portable Optical Access-Card System. <i>Optical Review</i> 18(1): 86–92. Mohd Hanapiah Mohd Yusoff, Haslan Abu Hassan, Md. Roslan Hashim, and Mohd Kamil Abd-Rahman. 2011. Hybrid photonic crystal 1.31/1.55 μm wavelength division multiplexer based on coupled line defect channels. <i>Optics Communication</i> 284: 1223 – 1227. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> M. Kamil Abd-Rahman, N. Syafiqah Mohamed-Kassim, A. Annuar Ehsan, and M. H. M. Yusoff. (2011). Multimode Asymmetrical Optical Power Splitter Utilizing Hollow Structured-waveguide. <i>Progress in Electromagnetics Research Symposium (PIERS)</i>, 20-23 Mar, Marrakech. Abang Annuar Ehsan and Mohd. Kamil Abd. Rahman. (2010). Acrylic-based Y-Branch Plastic Optical Fiber Attenuator. <i>International Conference on Photonics (ICP)</i>, 5-7 Jul, Langkawi. Abang Annuar Ehsan and Mohd. Kamil Abd. Rahman. (2010). Optimization of Device Model for Metalbased 1x2 Y-Branch Plastic Optical Fiber Coupler. <i>International Conference on Photonics (ICP)</i>, 5-7 Jul, Langkawi.
Awards/Certificates	<ol style="list-style-type: none"> International Invention, Innovation & Technology (ITEX) 2009: Gold Medal Malaysian Technology Expo 2008: Bronze Medal PECIPTA 2007: Bronze Medal Innovation, Invention and Design Exhibition (IID) 2007: Silver Medal
IP Status	<ol style="list-style-type: none"> Malaysian Patent filed (PI 20071163) (Portable Optical Security Card System) Malaysian Patent filed (PI 20094950) (Device for Combining and Splitting Optical Signals and Method for Fabricating the same)

Additional Information	Linkages: UKM (Collaboration, an industrial partner has yet to be identified though a few had shown interest during ITEX09 and PECIPTA07 exhibitions).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi MARA (UiTM) Faculty of Applied Science, Universiti Teknologi Mara (UiTM), 40450 Shah Alam, Selangor. Office: 03-5521 1333 H/p: 019-356 1740 drkamil@salam.uitm.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Intelligent Decision Support System for Employee's Performance Prediction
Project Number	01-01-01-SF0236
Project Leader and Team Members	Leader: Hamidah Jantan Members: Mazidah Puteh, Norazmah Mat Yusoff, Zulaiha Ali Othman and Abdul Razak Hamdan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Human Resource Management (HRM) system is an integrated and interrelated approach to managing human resources and HRM activities which involve a lot of unstructured processes such as staffing, training, motivation and maintenance. Human decision making processes are subject to limitation whereby people may forget the crucial details of a problem. Fair and consistent evaluation is a very important task in any type of organisation and it also a major task for HRM people. In this project, Intelligent Decision Support System (IDSS) using Artificial Intelligent technologies or techniques can complement the work of human professionals. An IDSS application for an evaluation system able to make many routine decisions in assessment easier and can be reallocated to less experienced evaluators. This system is also able to encourage the use of explicit criteria for evaluating academic staff performance and increases the assessment consistency. Hence, this perceived fairness will assist junior appraisers or evaluators to evaluate their staff consistently.
Publications/Products/Outcomes	<p>Books:</p> <ol style="list-style-type: none"> 1. Jantan, H., Hamdan, A. R., & Othman, Z.A. (2009). Classification Techniques for Talent Forecasting in Human Resource Management. In: EDITORS (Ed). <i>Advanced Data Mining and Application: Lecture Notes in Artificial Intelligence (LNAI)</i>, (pp. 845). Springer. <p>Journals:</p> <ol style="list-style-type: none"> 1. Jantan, H., Hamdan, A. R., & Othman, Z.A. (2009). Managing Talent in Human Resource: A Knowledge Discovery in Database (KDD) Approach. <i>Social And Management Research Journal</i> 6(1): 1675-7017.

Publications/Products/ Outcomes

Proceedings/Conferences/Seminars:

1. Jantan, H., Hamdan, A. R., & Othman, Z.A. (2008) Future Performance Prediction in Human Resource Decision Support System (HR DSS). *4th International Conference on Information Technology and Multimedia (ICIMU)*, 17-19 Nov, Bangi.
2. Jantan, H., Hamdan, A. R., & Othman, Z.A. (2008). Data Mining Techniques for Performance Prediction in Human Resource Application. *1st Seminar on Data Mining and Optimization (DMO '08)*, 3-4 Dec, Bangi.
3. Jantan, H., Hamdan, A. R., & Othman, Z.A. (2008). Human Resource Decision Support System: A Suggested Framework. *4th Malaysian Software Engineering Conference (MySEC'08)*, 16-17 Dec, Terengganu
5. Jantan, H., Hamdan, A. R., & Othman, Z.A. (2009). Classification for Talent Mangement using Decision Tree Induction Techniques. *2nd Data Mining and Optimization Seminar (DMO'09)*, 27-28 Oct, Bangi.
6. Jantan, H., Hamdan, A. R., & Othman, Z.A. (2009). Knowledge Discovery Techniques for Talent Forecasting in Human Resource Application. *International Conference on Computer Information System Engineering (ICCISE)*, 25-27 Feb, Penang.
7. Jantan, H., Hamdan, A. R., & Othman, Z.A. (2009). Towards Applying Data Mining Techniques for Talent Management. *International Conference on Knowledge Discovery (ICKD2009)*, 6-8 Jun, Manila.
8. Jantan, H., Hamdan, A. R., & Othman, Z.A. (2010). Applying Data Mining Classification Techniques for Employee's Performance Prediction. *5th Knowledge Management International Conference (KMICe10)*, 25-27 May, Kuala Terengganu.

Products:

1. IDSS for employee's performance prediction prototype system

Additional Information

International Linkages: Universiti Kebangsaan Malaysia (Collaboration with two lecturers).



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Community Based e-museum for Heritage Preservation: Developing the Traditional Malay Textile Knowledge Model
Project Number	01-01-01-SF0246
Project Leader and Team Members	Leader: Wan Adilah Wan Adnan Members: Nor Laila Md Noor, Suriyati Razali and Natrah Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to harmonise the Malaysian museum artifacts classification and International Council of Museum (ICOM) standard; to determine the relationships between museum artifacts and concepts for Traditional Malay Textile heritage knowledge and model construction; to build the Traditional Malay Textile heritage knowledge model for a community based e-museum; and to develop a community based e-museum for Traditional Malay Textile knowledge model installation.
Contact Institution/Entity Address	Universiti Teknologi MARA (UiTM), Institut Pengurusan Penyelidikan (RMI), Universiti Teknologi Mara (UiTM), 40450 Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Expert System for Flexible Pavement Design and Construction
Project Number	01-01-02-SF0008
Project Leader and Team Members	Leader: Amiruddin Ismail Members: Nur Izzi Md. Yusoff, Othman A. Karim and Riza Atiq Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project is about the development of an expert system in the area of pavement design and construction. This project has achieved its' objectives by providing flexible pavement design from selected design standards, road alignment design by incorporating the Geographic Information System (GIS) and optimum technique in road construction and costing to the system.
Publications/Products/Outcomes	Publications: 1. Deprizon, Amiruddin. & Atiq, R. 2009. Development of Knowledge-Based Expert System for Flexible Pavement Design. <i>Journal of Applied Sciences</i> 9(13): 2372-2380.
Awards/Certificates	National award
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) 43600 UKM Bangi, Selangor. Office: 03-8921 6203 H/p: 017-378 2486 abim@eng.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	An Agent Based Rough Set Data Mining Tool
Project Number	01-01-02-SF0009
Project Leader and Team Members	Leader: Azuraliza Abu Bakar Members: Abdul Razak Hamdan and Zulaiha Ali Othman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Five main objectives of this project have been successfully achieved. The agent based tool which has been developed is able to identify the computational issue in rough set data modelling. In addition, this project has successfully developed a rule based agent for data classifier, an agent based model to reduce computation in rough set technique, an agent based rough classifier model and has evaluated the agent based data mining tool
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Azuraliza Abu Bakar, Zulaiha Ali Othman, Abdul Razak Hamdan, Ruhaizan Ismail and Rozianiwati Yusof. 2011. Agent Based Rough Set Classifier. <i>Applied Soft Computing</i> 11: 2239–2245. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Azuraliza Abu Bakar, Zulaiha Ali Othman, Abdul Razak Hamdan, Rozianiwati Yusof, Ruhaizan Ismail. 2008. Agent Based Data Classification Approach for Data Mining. <i>Proceedings of International Symposium on Information Technology (ITSIM'08)</i>. Pp 970-975. Kuala Lumpur. 2. Azuraliza Abu Bakar, Zulaiha Ali Othman, Abdul Razak Hamdan, Rozianiwati Yusof and Ruhaizan Ismail. 2008. An Agent Based Rough Classifier for Data Mining. <i>The International Conference on Intelligent Systems Design and Applications (ISDA08)</i>, 26-28 Nov, Kaohsiung.
Awards/Certificates	Malaysia Technology Exhibition 2010: Bronze Medal
IP Status	Patentspending(TM2010001722(16),TM2010001723(41), TM2010001724(42)); Agent Based Rough Set Data Mining Tool – RoughAgent.



Additional Information	Linkages: Center for Artificial Intelligence Technology, FTSM, UKM (sharing of research interest and expertise); Institute of Biology System (INBIOSIS) (possibility of using the software for their data mining application); Ministry of Health (to build a predictive model for Dengue Outbreak Classification).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Department of System Science and Management, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor. Office: 03-8921 6183 H/p: 012 459 1224 aab@ftsm.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of an Intelligent Computer Vision System for Automatic Sorting of Recyclable Metal and Paper Objects from Solid Waste
Project Number	01-01-02-SF0011
Project Leader and Team Members	Leader: Hassan Basri
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project focused on the design and construction of a sorting prototype for recycled metal and paper waste, and construction of a self-standing system for commercialisation purposes. It has been accomplished through the successful development of a prototype, operation of computer vision and extraction systems and well functioning and reliable Artificial Intelligent (AI) based software. Although the prototype unit is ready to be commercialised, the lack of a self-standing controller needs further improvement.
Awards/Certificates	International award
IP Status	Patent obtained
Additional Information	Industrial Linkages: Visits to recycling plants provided input from potential customers of the system.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Department of Civil and Structure Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor. Office: 03-8921 6100 / 6212 drhb@eng.ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	VLSI Implementation of Digital Baseband for Ultra-wide-band (UWB) Communication Systems
Project Number	01-01-02-SF0019
Project Leader and Team Members	Leader: Masuri Othman Members: Tun Zainal Azni Zulkifli and Edmond Zahedi
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The original objective of this project was to design, fabricate and test the VLSI digital baseband chips for WB wireless communication. The objectives have been achieved through the accomplishment of the design of FFT chip for OFDM module in the UWB communications and proven to be functional in FPGA chip.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Aymen M. Karim, Masuri Othman and Edmond Zahedi. 2006. Packet Synchronization Structure with Peak Detection Algorithm for MB-OFDM UWB. <i>ICSE2006</i>, 29 Nov – 1 Dec, 2006, Kuala Lumpur. 2. Lakshmanan and Masuri Othman. 2007. ASIC Implementation of MAC with Overflow and Saturation Correction. <i>ICEE2007</i>, Bandung. 3. Mohamed Azaga, and Masuri Othman, Bandwidth Expansion of Source. <i>International Conference on Electrical Engineering and Informatics (ICEEI2007)</i>, 17-19 Jun 2007, Bandung. 4. Mahmud BenHamid and Masuri Othman. 2007. VLSI Implementation of a 64-Point Radix-22 Multiplier less FFT Processor for OFDM. <i>World Engineering Congress (WEC2007)</i>, 5-9 Aug 2007, Pinang. 5. Mohamed A. Eshtawie and Masuri Othman. 2007. Low area low power high speed fixed point digital circuit adder. <i>World Engineering Congress WEC 2007</i>.
Additional Information	<p>Industrial Linkages:</p> <p>Work with a small IC Design house called Kryptic Devices</p>

Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Electrical, Electronics and Systems, Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number e-Mail	Office: 03-8921 6311 masuri@vlsi.eng.ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Formal Verification of Security Properties of Authentication Protocols
Project Number	01-01-02-SF0020
Project Leader and Team Members	Leader: Zarina Shukur Members: Zulkarnain Md. Ali and Ainita Ban
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has achieved its objectives in which authentication protocols and security properties of the protocols have been successfully formulated by using three different types of logics. In addition, the security properties of the protocols have been proved using the related automated theorem.
Awards/Certificates	Regconition as a Center of Excellence
Additional Information	International Linkages: Collaborate with International Institute of Software Technology of United Nation University (UNU-IIST). Industrial Linkages: Regconition as a Center of Excellence
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Computer Science, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number e-Mail	Office: 03-8921 6720 zs@ftsm.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Multimodal Mobile Interpreter
Project Number	01-01-02-SF0028
Project Leader and Team Members	Leader: Tengku Mohd Tengku Sembok Members: Mandava Rajeswari, Dhanesh Ramachandram, Zaharin Yusoff, Ranaivo-Malançon Bali and Tang Enya Kong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	In this project, four important objectives have been successfully achieved. Interface as an interaction channel between the mobile devices and backend system has been defined. Furthermore, a speech recognition tool has been adapted to recognise a spoken message, and a Malay-English translator and semantic interpretation tools such as dictionary look-up and information search have been incorporated into the system
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Schwab, D., Lim, L. T., and Lafourcade, M. 2007. Conceptual Vectors, a Complementary Tool to Lexical Networks. In Proceedings of The 4th International Workshop on Natural Language Processing and Cognitive Science (NLPCS 2007), Funchal. 2. Gan, K. H., Phang, K. K., Tang, E. K., and Tan, S. S. 2008. MINEXml: Bridging Unstructured Query with Structured Resources via Mediated Query. In Proceedings of the 31th International ACM SIGIR Conference, 2008, Singapore.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number	Office: 03-9051 3421
e-Mail	tmtsembok@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Natural Language Understanding Engine for English Essay Comprehension
Project Number	01-01-02-SF0029
Project Leader and Team Members	Leader: Tengku Mohd Tengku Sembok Members: Rabbiah Abdul Kadir and Halimah Badioze Zaman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project focused on three main objectives and all the objectives have been successfully achieved. A knowledge representation and reasoning system for essay comprehension in English has been well defined, while a parser to translate essays into the knowledge representation and reasoning system has been developed. Furthermore, the automatic question answering system as an engine for the teaching of English has been also developed.
IP Status	Copyright
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor. Office: 03-9051 3421 tmtsembok@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Semantic Role Assignment Tool for the Automation of Database Design
Project Number	01-01-02-SF0042
Project Leader and Team Members	Leader: Nazlia Omar Members: Mohd Juzaidin Ab Aziz and Shahrul Azman Mohd Noa
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The aim of this project has been achieved, in which heuristics and rules to assign semantic roles based on syntactic inputs of natural language documents has been developed. In addition, a tool to assign the semantic roles has been designed and implemented.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Nazlia Omar, Noor Aishah and Yazrina Yahya (2007), "The Use of Semantic Heuristics in the Automation of ER Modelling ", International Conference on Electrical Engineering and Informatics (ICEEI 2007), Institut Teknologi Bandung, June 17-19 200, pp.430-434. 2. Nazlia Omar and Siti Salwa Hasbullah (2008), "SRL TOOL: Heuristics-Based Semantic Role Labeling Through Natural Language Processing", International Symposium on IT 2008 (ITSim 2008), Volume 3, 26 - 28 Aug. 2008 pp.1213-1119
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Computer Science, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number	Office: 03-8921 6733 H/p: 012-348 5204
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Location-based Service for Public Transportation System
Project Number	01-01-02-SF0044
Project Leader and Team Members	Leader: Norleyza Jailani Members: Marini Abu Bakar, Mohamad Shanudin Zakaria and Salha Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Two important focuses of this project have been successfully achieved. The architecture and infrastructure of a back-end system which provides the location-based services for public transportation systems have been developed. Furthermore, the system has been implemented in the process of designing and developing the location-based application in providing information on RapidKL public transportation system for mobile users.
IP Status	<p>Journals:</p> <ol style="list-style-type: none"> Norleyza Jailani, Mohd Norfaizi Mihsany, Marini Abu Bakar, Noor Faezah Mohd Yatim and Salha Abdullah. 2008. Integrated Public Transport Monitoring and Information System Using Location Based Services Applications. <i>Communications of SIWW</i> 4: 95-100. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> Mohd Norfaizi Mihsany, Norleyza Jailani, Marini Abu Bakar, Mohamed Shanudin Zakaria and Salha Abdullah. 2007. Location Based Services System Architecture For Bus Tracking Using APRS Technology (in Malay). <i>Persidangan Kebangsaan Sains Pengaturcaraan (ATUR07)</i>, 5 Dis 2007, Sepang. Haslinda Harun, Norleyza Jailani, Noor Faezah Mohd Yatim, Marini Abu Bakar, Mohd Shanudin Zakaria and Salha Abdullah. 2007. Study on Map Visualisation Techniques for Location Based Services Application in Mobile Devices. <i>Persidangan Kebangsaan Sains Pengaturcaraan (ATUR07)</i>,

	<ol style="list-style-type: none"> 3. Lee Yee Phong, Norleyza Jailani, Marini Abu Bakar, Salha Abdullah and Mohd Shanudin Zakaria. 2008. Improving Public Transportation Services with Mobile Application. <i>International Conference of Knowledge Based Development (Global Knowledge Forum)</i>, 22-24 Jun 2008, Madinah. 4. Lee Yee Phong, Norleyza Jailani and Marini Abu Bakar. 2009. Mobile Application for Public Transportation Services. <i>5th National Conference on Programming Science (ATUR09)</i>, 10 Dec 2009, Putrajaya. 6. Haslinda Harun, Norleyza Jailani, Marini Abu Bakar, Mohamad Shanudin Zakaria and Salha Abdullah. 2009. A Generic Framework for Developing Map-based mobile Application. <i>International Conference on Electrical Engineering and Informatics (ICEEI 2009)</i>, 5-7 Aug 2009, Bangi.
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM) Centre of Computer Science Studies, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor Office: 03-8921 6751 norly@sun1.ftsm.ukm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Web Based User Interface Evaluation System
Project Number	01-01-02-SF0089
Project Leader and Team Members	Leader: Azizah Jaafar Members: Hasiah Mohamed Omar and Nor Azan Mat Zin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has successfully achieved its objectives. The capability of “ <i>Rentasan Kognitif Pemerhatian Menyeluruh</i> ” methodology and the usability evaluation tool called “ <i>Jalan Rentasan Kognitif</i> ” for the web based user interfaces have been modified and extended. In addition, a web based evaluation system has been designed, developed and used to evaluate the tool which is based on usability factors for web.
Awards/Certificates	Recognition as a Center of Excellence
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Information Science, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number	Office: 03-8921 6786 H/p: 012-387 5790
e-Mail	aj@ftsm.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Fuzzy Logic Control for Simultaneous Carbon and Nitrogen Removal in a High Capacity Treatment System of a Partially Packed Biological Aerated Filter
Project Number	01-01-02-SF0091
Project Leader and Team Members	Leader: Fatimah Suja' Members: Siti Rozaimah Sheikh Abdu, Noor Ezlin Ahmad, Hassan Basri and Shahrom Md Zain
Field of Research	Applied Sciences and Technologies
Project Summary	This project has successfully studied the performance of a partially packed biological aerated filter (BAF) for simultaneous treatment of carbon and nitrogen in a high-load wastewater. The performance of the partially packed bed reactor has been successfully assessed at C/N ratios of 10, 15 and 20. Subsequently, an online monitoring system using a fuzzy logic neural network for determining the nitrogen removal route and controlling important parameters during BAF operation has been developed.
Additional Information	International Linkages: Duissburg Essen University (a joint effort in paper writing).
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Civil and Structure Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number e-Mail	Office: 03-8921 6217 fati@vlsi.eng.ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Error Analysis Marking Tool for Marking ESL Writing at IHLs
Project Number	01-01-02-SF0092
Project Leader and Team Members	Leader: Saadiyah Darus Members: Nazlia Omar, Tengku Nor Rizan Tg Mohd Maasum, Mohd Juzaidin Ab Aziz and Siti Hamin Stapa
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has successfully identified the types of errors found in undergraduate students' essays in English at Malaysian Institutes of Higher Learning (IHLs), based on the selected error classification scheme, and has successfully developed a tool for detecting errors in ESL writing.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Nazlia Omar, Nur Asma Mohd Razali and Saadiyah Darus. 2009. Automated Grammar Checking of Tenses for ESL Writing. <i>Rough Sets and Knowledge Technology. Lecture Notes in Computer Science</i> 5589: 475-482. 2. Nur Asma Mohd Razali, Nazlia Omar and Saadiyah Darus. 2009. Pengesanan Ralat Nahu Esei Bahasa Inggeris Melalui Pemprosesan Bahasa Tabii. <i>Journal of Information Technology and Multimedia</i> 7: 83-98. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nazlia Omar, Nur Asma Mohd Razali and Saadiyah Darus. 2008. Automated Essay Marking Tool for ESL Writing Based on Heuristics. <i>International Conference of Education, Research and Innovation (ICERI 2008)</i>, 17-19 Nov 2008, Madrid. 2. Nur Asma Mohd Razali, Nazlia Omar and Saadiyah Darus. 2008. Heuristics and Rule-based Approach for Automated Marking Tool for ESL writing. <i>International Symposium of Information Technology (ITSIM)</i>, 26-28 August, Kuala Lumpur.

	<ol style="list-style-type: none"> 3. Saadiyah Darus, Tg Nor Rizan Tg Mohd Maasum, Siti Hamin Stapa, Nazlia Omar and Mohd Juzaidin Ab Aziz. 2007. Developing an error analysis marking tool for ESL learners. <i>WSEAS International Conference on Applied Computer Science</i>, 21-23 Nov 2007, Venice. 4. Nur Asma Mohd Razali, Nazlia Omar, Saadiyah Darus, Tg Nor Rizan Tg Mohd Maasum, Mohd Juzaidin Abd Aziz. 2007. Pendekatan heuristik dan peraturan untuk pemeriksaan nahu secara automatik bagi penulisan esei bahasa Inggeris sebagai bahasa kedua. <i>Persidangan ATUR 2007</i>, 5 Dec 2007, Kuala Lumpur. <p>Products: Automated Tool for Detecting Errors in Tenses (ATDEiT™)</p>
Awards/Certificates	<ol style="list-style-type: none"> 1. Faculty of Social Sciences and Humanities research poster competition 2008: Silver medal
IP Status	<p>Certificate of Registration of Trademark: ATDEiT™ No. 09009035 (Class 9) on 11 February 2011 and No. 09009036 (Class 16) on 9 February 2011</p>
Additional Information	<p>Linkages: Visiting professor, Professor Roland Denis Sussex from the University of Queensland, 2008.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM) School of Language Studies and Linguistics, Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor. Office: 03-8921 6570 H/p: 019-263 2560 adi@ukm.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Virtual Reality Visualisation Laboratory to Build Virtual Worlds for Learning
Project Number	01-01-02-SF0094
Project Leader and Team Members	Leader: Halimah Badioze Zaman Members: Azlina Ahmad, Aidanismah Yahya, Tengku Mohd Tengku and Shahrul Azman Mohd Nor
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>In this project, the Virtual Laboratory has been designed and developed to build a virtual world for teaching Chemistry HIL-(VlabChem). Furthermore, an ID model for the creation of Chemistry Virtual Laboratory using 3D Graphics and designed Animation has been successfully designed, a multimedia Virtual laboratory to teach Chemistry (Salt, Acid and Base) successfully developed, the modules of the Virtual Laboratory to teach Chemistry (salt, acid and base) HILVO has been integrated and the Virtual Laboratory HILVO has been successfully tested and evaluated. The product produced during this project has been filed for trademark. Technology transfer was done through various strategies: presentation of the products and findings of research pertaining to the project at national and International seminars, congresses, conferences and workshops; teaching both undergraduate as well as post graduate students; supervision of theses based on the project to both undergraduate as well as post graduate students; consultant to software development companies and the Ministry of Education (MOE); publishing results of the project in both national and international journals, technical reports and in national as well as international proceedings; and demonstrations of the products at Research and Innovation exhibitions at both the national and international level (e.g. Pecipta and ITEx).</p>

Awards/Certificates	<p>Recognition as a Center of Excellence</p> <p>Silver Medal for Research and Inventions (at ITEX) - Multimedia in Education for Literacy (MEL)for Downs Syndrome Children, ITEX (MINDS), 2004, International.</p> <p>Silver Medal for International Research and Inventions in Multimedia to motivate literacy -MEL, International Des Invention Exhibition at Geneva, Switzerland., 2005, International.</p> <p>Silver medal for International Research and Inventions in Multimedia to instil moral values -CITRA, International Des Invention Exhibition at Geneva, Switzerland., 2005, International.</p> <p>Silver medal for International Research and Inventions in Multimedia Maths for Smart Schools (ME), International Des Invention Exhibition at Geneva, Switzerland., 2005, International.</p>
IP Status	Patent application will be filed
Additional Information	<p>Linkages:</p> <p>UPM; iTM; UM; Newcastle University (UK); Cambridge University (UK); Beaumind Soft Sdn. Bhd. (made linkages to the main local universities through this project via the MyRen Visual Informatics research area).</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM) Department of Information Science, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor</p> <p>Office: 03-8921 6349 H/p: 012-295 6561 h bz@ftsm.ukm.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Semantic Knowledge Extraction from Annotated Images
Project Number	01-01-02-SF0097
Project Leader and Team Members	Leader: Shahrul Azman Mohd Noah Members: Lailatul Qadri Zakaria, Nazlia Omar and Shereena Mohd Arif
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has successfully established a framework and methodology for extraction of knowledge from annotated images, and has developed a tool for that purpose through the creation of an NER method for extracting main entities to form the knowledge and the use of WordNet and ConceptNet for giving extra meaning to the extracted concepts. However, in this context, the knowledge is limited to the meaning of representation only. In addition, a query specification framework for querying the extracted knowledge from images has also been successfully developed.
Additional Information	Industrial Linkages: UMT (informal collaborations); MIMOS (informal collaborations).
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Information Science, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number e-Mail	Office: 03-8921 6719 /6185 samn@ftsm.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of an Advanced Multimedia in Special Education System for Learning Intervention
Project Number	01-01-02-SF0104
Project Leader and Team Members	Leader: Halimah Badioze Zaman Members: Azlina Ahmad, Tengku Mohd Tengku, Shereena Mohd Arif and Aidanismah Yahya
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This project has successfully studied the best Visual Meaning approach for special learners (Dyslexic or Down syndrome), together with the development of an ID model with advanced multimedia (3D graphics and animation, augmented reality and virtual reality) for special learners. In addition, a multimedia virtual laboratory has been developed to teach Chemistry (Salt, Acid and Base), and multimedia modules (D-Matematika, MEL-Sindown and AR book) for children suffering from Dyslexia and Down Syndrome have been successfully integrated and tested. The software produced from this project has been filed for trademark. Technology transfer has been done through various strategies: presentation of the products and findings of research pertaining to the project at national and International seminars, congresses, conferences and workshops; teaching both undergraduate as well as post graduate students; supervision of theses based on the project to both undergraduate as well as post graduate students; consultant to software development companies and the Ministry of Education (MOE); publishing results of the project in both national and international journals and proceedings, technical reports and in national as well as international proceedings; demonstrations of the products at research and innovation exhibitions at both the national and international level (e.g. UKM, ITEX).</p>
Awards/Certificates	Recognition as a Center of Excellence
Additional Information	Linkages: Tamkang University, Taiwan; RMIT, Australia; Beumind soft Sdn. Bhd. (to make available some of the softwares required for the development of augmented and virtual reality for special children).
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Information Science Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number	Office: 03-8921 6349 H/p: 012-295 6561
e-Mail	hbz@ftsm.ukm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Semantic Search Engine for Malaysian Business Directory
Project Number	01-01-02-SF0106
Project Leader and Team Members	Leader: Junaidah Mohamed Kassim Members: Arifah Che Alhadi, Shahrul Azman Mohd, Normawati Abd Rahman and Tengku Mohd Tengku
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has successfully designed and developed a semantic indexer and searcher. This semantic indexer is able to perform the task of semantic tagging of words within documents while the semantic searcher able to carry out information searching and retrieval based on ontological concepts.
Awards/Certificates	Recognition as a Center of Excellence
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number	Office: 03-8921 6669 H/p: 013-397 6966
e-Mail	junaidah@ftsm.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Electronic Marketplace for Efficient Bidding in Wood-based Products Industry
Project Number	01-01-02-SF0114
Project Leader and Team Members	Leader: Muriati Mukhtar Members: Salha Abdullah, Zuraidah Abdullah, Norleyza Jailani and Yazrina Yahya
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	In this project, a marketplace model for an electronic brokering service for wood based products has been produced, and a supporting tool for the brokering marketplace has been successfully developed.
Awards/Certificates	<p>Books:</p> <ol style="list-style-type: none"> 1. Hafsah Abdul Majid, Muriati Mukhtar, Siti Aishah Hanawi, Maslina Darus, 2005, SBMA 1203 Aljabar, Fungsi dan Geometri, SBMA 1203 Aljabar, Fungsi dan Geometri, , 246. 2. Bahari Idrus, Muriati Mukhtar, Kasturi Devi Appanna, 2004, Simulasi Aliran Produk Papan Litar Kuasa Pada Pengangkut, Komputeran Industri: Konsep & Aplikasi, Edisi 1, 61-70 <p>Journal:</p> <ol style="list-style-type: none"> 1. Marini Abu Bakar, Muriati Mukhtar, Jazreena Jabar, 2004, Sistem Pengimejan Latar Belakang, Laporan Teknikal EA0002 <p>Proceeding Paper :</p> <ol style="list-style-type: none"> 1. Muriati Mukhtar, Awaluddin Mohd Shaharoun, Mohd Shariff Nabi Baksh, 2005, Supply Chain Relationship Profiles: A Performance Evaluation 24-31 <p>Products:</p> <ol style="list-style-type: none"> 1. Hybrid E-marketplace framework and portal for wood products industry
Awards/Certificates	ITEX 2009: Silver medal



Additional Information	International Linkages: INTERNEG, Concordia University, Canada (collaboration); INTERNEG (3 month attachment by a research student, and an LOI with UKM on research).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Industrial Computing Program,, School of Information Technology, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor. Office: 03-8921 6732 H/p: 013-254 4006 mm@ftsm.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Non-invasive Bedside System for Endothelial Dysfunction Assessment
Project Number	01-01-02-SF0227
Project Leader and Team Members	Leader: Mohd Syuhaimi Ab. Rahman Members: Abdul Latiff Mohamed and Mohd. Alauddin Mohd
Field of Research	Engineering Sciences
Project Summary	In this project, the research showed that the proposed Photoplethysmography (PPG) technique has a significantly faster response after blockage release than the conventional ultrasound flow-mediated dilation (FMD) in assessing endothelial function. The accuracy of PPG and FMD is within the mean limit of agreement $\pm 2SD$ (standard deviation), equivalent to 93.1%. PPG is a potential and promising tool for assessing endothelial function. A Wireless Multi-Channel PPG System has been developed to simplify the system usage in a clinical setting. Additionally, data acquisition and processing using Laboratory Virtual Instrumentation Engineering Workbench (LabVIEW) and its associated interfaces have been developed.
Publications/Products/Outcomes	<p>Conferences/Proceedings/Seminars:</p> <ol style="list-style-type: none"> 1. Kalaivani C., Zahedi, E., and Mohd Ali, M. A. 2008. An Age Index for Vascular system based on Photoplethysmogram Pulse Contour Analysis. <i>4th Kuala Lumpur International Conference on Biomedical Engineering</i>, 25-28 June 2008, Kuala Lumpur. 2. Jaafar, R., Zahedi, E. and Mohd Ali, M. A. 2006. Development Of A System For Noninvasive Endothelial Dysfunction Assessment Using Photoplethysmography. <i>Postgraduate Seminar Faculty of Engineering</i>, 9-11 May 2006, Bangi. 3. Gan, K. B., Zahedi, E. and Mohd. Ali, M. A. 2006. Fetal Heart Rate Detection Using Photoplethysmography Technique. <i>SPS Fkej</i>, 2006, Bangi.



Publications/Products/ Outcomes	<p>4. Kalaivani, C., Zahedi, E., and Mohd Ali, M. A. 2007. Effects of Physical Exercise on the Photoplethysmogram Waveform. <i>IEEE 5th Student Conference on Research and Development (SCoReD 2007)</i>, 12-11 Dec. 2007 Selangor.</p> <p>5. Jaafar, R., Zahedi, E., Mohd Ali, M. A. and Mohamed A.L. 2006. Non-Invasive Endothelial Dysfunction Assessment Using Photoplethysmography. <i>International Conference on Computer & Communication Engineering</i>, 9-11 May 2006, Kuala Lumpur.</p>
Awards/Certificates	Bronze Medal – MTE 2011
Additional Information	<p>Linkages: Participation of researchers from IMU; CUCMS; UKM Medical Centre; and Sharif University of Technology, Tehran. Close collaboration with a number of hospitals associated with International Medical University, Cyberjaya University College of Medical Sciences and especially that of UKMMC.</p>
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Department of Electrical, Electronic and Systems Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor. Office: 03-8921 6448 H/p: 019-378 5005 syuhaimi@vlsi.eng.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Jawi Optical Character Recognition System
Project Number	01-01-02-SF0231
Project Leader and Team Members	Leader: Mohammad Faizdul Nasrudin Members: Hana Yasmein Ishak, Abdul Razak Hamdan, Khairuddin Omar, Mohd Zakree Ahmad Naz and Mohd Ridzwan Yaakub
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	In this project the first objective, a working software prototype of Jawi Character Recognition system, has been successfully developed. The software won a bronze medal (office product Field of Research) in the 19th International Invention, Innovation & Technology Exhibition (ITEX 2008), May 9-11, 2008, KLCC. The second objective has also been successfully achieved: a prototype OCR software has been successfully developed in C# language using Microsoft Visual Studio 2008.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohammad Faizdul Nasrudin, Khairuddin Omar, Mohamad Shanudin Zakaria and Liong Choong Yeun. 2008. Challenges in Jawi Character Recognition System for Handwritten Manuscripts. <i>24th ASEASUK Conference</i>, 20-22 Jun, Liverpool. 2. Anton Heryanto, Mohammad Faizdul Nasrudin and Khairuddin Omar. 2008. Offline Jawi Handwritten Recognizer Using Hybrid Artificial Neural Networks And Dynamic Programming. <i>International Symposium on Information Technology</i>, 26-29 Aug 2008, Kuala Lumpur. 3. Mohammad Faizdul Nasrudin, Khairuddin Omar, Mohamad Shanudin Zakaria and Liong Choong Yeun. 2008. Handwritten Cursive Jawi Character Recognition: A Survey. <i>International Symposium on Intelligent Recognition Techniques, Applications, Systems & Tools (IRTAST 2008)</i>, 26-28 Aug 2008, Penang.



	4. Remon Redika, Khairuddin Omar and Mohammad Faizul Nasrudin. 2008. Handwritten Jawi Words Recognition Using Hidden Markov Models. <i>International Symposium on Information Technology</i> , 26-29 Aug 2008, Kuala Lumpur.
Awards/Certificates	Microsoft Technology Associate (MTA)
Additional Information	Linkages: Pusat Manuskrip Melayu, Perpustakaan Negara Malaysia; South & Southeast Asia section, British Library; Signal Processing Research Group, Imperial College London; Pusat Manuskrip Melayu, Perpustakaan Negara Malaysia; South & Southeast Asia section, British Library; Signal Processing Research Group, Imperial College London (formal data sharing, informal consultation).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Department of Information Science, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor. Office: 03-8921 6707 H/p: 0122646234 mfn@ftsm.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	An Improvement of Data Mining Process Using Agent
Project Number	01-01-02-SF0242
Project Leader and Team Members	Leader: Zulaiha Ali Othman Members: Khairuddin Omar, Azuraliza Abu Bakar, Mohd Zakree Ahmad Naz and Abdul Razak Hamdan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This research project has successfully identified the important attributes in the data mining process. In addition, the data mining process has been improved using an agent for medical data.
Publications/Products/Outcomes	Products: 1. Agent based Data Mining Tools (AgentDM)
Awards/Certificates	ITEX 2010: Silver Medal
Additional Information	International Linkages: Centre for Artificial Intelligence technology groups; Telecom Malaysia (development of the successful concept of agent data mining which can be applied to large network data which continuously change).
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Centre of Artificial Intelligent Technology, Faculty Information Sains and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Developing a Web-based Metacognitive Learning Strategies Courseware for Effective Learning in Hypermedia Environment
Project Number	01-01-02-SF0246
Project Leader and Team Members	Leader: Saemah Rahman Members: Mohd Arif Ismail, Ruslin Amir, Normahdiah Sheik Said, Siti Fatimah Mohd Yassin, Noriah Mohd. Ismail and Rosnaini Mahmud
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has successfully achieved its objectives. Appropriate metacognitive learning strategies in a hypermedia learning environment have been identified, and a web-based metacognitive learning strategies courseware has also been designed and developed to help students acquire study skills to learn in a hypermedia learning environment.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Saemah Rahman. 2007. Strategi Metakognitif Dalam Pembelajaran Melalui Hiperteks. <i>Pembelajaran Terkini: Perpaduan Indonesia-Malaysia</i>. pp. 125-148. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Saemah Rahman and Siti Fatimah Mohd Yassin. 2007. Aplikasi pemikiran kritis dalam penggunaan sumber maklumat daripada internet untuk menyokong pembelajaran sepanjang hayat. <i>International Conference on lifelong learning</i>. 2. Saemah Rahman and Siti Fatimah Mohd Yassin. 2007. Cabaran pembelajaran dalam persekitaran pembelajaran hypermedia. <i>Seminar Kebangsaan Isu-isu pendidikan Negara ketiga</i>. 3. Saemah Rahman, Siti Fatimah Mohd Yassin, Noriah Mohd Ishak and Ruslin Amir. 2008. The use of metacognitive strategies in accessing and studying hypertext materials online. <i>Teaching and Learning Conference</i>, Rothenberg.

	<p>4. Saemah Rahman, Siti Fatimah Mohd Yassin & Mohd Arif Ismail. 2008. Development of a Web based METAKU learning courseware for effective learning in hipermedia environment. Book of COMPUTER and SIMULATION in MODERN SCIENCE - Volume 11. Selected papers from WSEAS Conference, pp: 370-379 (indexed book).</p> <p>Products:</p> <p>1. METAKU™</p>
Awards/Certificates	<p>Recognition as a Center of Excellence</p> <p>Anugerah Khidmat Cemerlang 2008</p> <p>National award</p>
IP Status	Copyright
Additional Information	Technology Licensing: KADENA Technologies Sdn. Bhd.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM)</p> <p>Department of Educational Foundation,</p> <p>Faculty of Education,</p> <p>Universiti Kebangsaan Malaysia,</p> <p>43600 UKM Bangi,</p> <p>Selangor.</p> <p>Office: 03-8921 6240/6281</p> <p>H/p: 019-259 6518</p> <p>saemahukm@yahoo.com</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Advanced Traveller Information System
Project Number	01-01-02-SF0247
Project Leader and Team Members	Leader: Riza Atiq Abdullah O.K. Rahmat Members: Kasmiran Jumari, Mohd. Alauddin Mohd and Mahamod Ismail
Field of Research	Engineering Sciences
Project Summary	This project has successfully developed an algorithm and software for an Advanced Travellers Information System. However, the study into the effects of sunlight on the surveillance camera and work to solve computer memory overflows are still in progress, specifically focusing on the improvement of some operational problems.
IP Status	Copyright
Additional Information	International Linkages: University of Duisburg-Essen, Germany (research collaboration, mainly on the dissemination of traffic information to road users in a graphical form).
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Evaluation of Exposure Parameters and Image Quality In Full Field Digital Mammography
Project Number	01-01-02-SF0250
Project Leader and Team Members	Leader: Kanaga Kumari Chelliah Members: Abd. Aziz Tajuddin, Suraya Aziz, S. Anandan Samugan and Khairul Osman
Field of Research	Medical and Health Sciences
Project Summary	<p>In this project, all objectives have been successfully achieved. The exposure parameter required to produce an image of diagnostic value in younger and older women (age below and over 50 years), and those with dense breast and the perimenopausal have been determined. In addition, the mean glandular dose of the breast of the exposure parameters and the image quality of Full Field Digital Mammography (FFDM) in comparison to Screen Field Mammography (SFM) has been assessed and evaluated in Malaysian women. At the same time, the optimum image processing algorithms for a diagnostic mammogram has also been identified. Moreover, determination of exposure parameters required to produce an image of diagnostic value was done using the Computed mammography system and two models of full field digital mammography systems, namely Lorad Selenia (Hologic, USA) and Mammomat (Siemens, Germany) and the image quality obtained using computed mammography was also evaluated for diagnostic value.</p>
Awards/Certificates	National award
Additional Information	International Linkages: Medical Faculty UKM (provided the screen film mammography equipment and specialist to evaluate the images); Universiti Malaya (provided the TLD reader to measure external surface dose); National Cancer Society (use of the Computed radiography and Full Field Digital Mammography system to acquire the mammography; the breast radiologist assisted in evaluation of the images for diagnosis).



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development and Application of Machine Learning Techniques to Biological Systems
Project Number	01-01-02-SF0251
Project Leader and Team Members	Leader: Ishak Hashim Members: Zeti Azura Mohamed Hussein and Azuraliza Abu Bakar Liong Choong Yeun
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has successfully constructed a dynamic model of a biological system and the model has been transformed into a suitable form for simulation by computational intelligence algorithms. The mathematical equation modelling of a biological system, i.e. a protein concentration, has been simulated by a hybrid neural network algorithm and a fuzzy clustering algorithm. Furthermore, the method has been successfully tested on real world datasets, with which the prediction of the dynamic behaviour of the system has reached an acceptable level of accuracy.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Osman, M.H., Ibrahim, R., Hashim, I., Yeun, L.C., Bakar, A.A. and Hussein, Z.A.M. 2007. Predicting dynamic behavior of a biological system using ANNs. <i>International Conference on Mathematical Biology</i>, 4-6 Sept 2007, Kuala Lumpur. 2. Sastria, G., Liong, C.Y. and Hashim, I. 2008. Application of fuzzy subtractive clustering for enzymes classification. <i>Applied Computing Conference (ACC'08)</i>, 27-30 May 2008, Istanbul. 3. Mohd Haniff Osman, Liong Choong-Yeun and Ishak Hashim. 2008. Hybrid learning algorithm in neural network system for enzyme classification. <i>3rd International Conference in Mathematical Sciences</i>. 3-6 Mar, Al-Ain, UAE.





	<p>4. Osman, M. H., Ibrahim, R., Hashim, I., Choong-Yeun, L., Abu Bakar, A. and Mohamed Hussein, Z. 2007. A neural network application in predicting dynamic behavior of a biological system. <i>2nd International Conference on Mathematics: Trends and Developments</i>, 27-30 Dec 2007, Egypt.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of a Web-based Ecological Assessment of Childs' Readiness to School
Project Number	01-01-02-SF0258
Project Leader and Team Members	Leader: Rohaty Norhatiah Mohd. Majzub Members: Mohamad Ibrahim, Azizah Jaafar, Norshidah Mohamad, Saemah Rahman, Aliza Alias and Kamisah Osman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	All the three objectives of the study have been fully achieved. The web based ecological assessment of school readiness (WEBEASR) has been developed and tested for usability as well as the profile of the study. At present, more than 10,000 entries has been registered at the WEBEASR online. The WEBEASR has won prizes both internationally (Geneva) and nationally (PWTC ITEC) at ICT competitions and exhibitions. Several initiatives for technology transfer for this project have been initiated: CRIM UKM has been approached to patent the WEBEASR product; findings from this project has been presented in several overseas scientific seminars; the WEBEASR is currently online and all postgraduate students in Preschool Education are required to use the WEBEASR; and The Ministry of Education and Ministry of National Unity has been approached to use the product.
Awards/Certificates	Recognition as a Center of Excellence Silver Medal IPTA Research Exhibition Silver Medal Innovation & Technology Exhibition
IP Status	Copyright
Additional Information	International Linkages: The WeBEASR was introduced to visiting lecturers and professors from the University of Melbourne and the University of Jogjakarta; Consultations were made with Ministry of education and Ministry of the Family and Woman Affairs.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Automated Malay-jawi Documents Transliteration Web Service Using XML-based Protocol
Project Number	01-01-02-SF0306
Project Leader and Team Members	Leader: Mohd. Zamri Murah Members: Khairuddin Omar, Salha Abdullah, Abd. Malik Md. Yusof, Mohammad Faidzul Nasr and Abdul Razak Hamdan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Three main objectives of this project have been successfully achieved. The design and development of an automatic rumi-jawi transliteration engine, an ms-word rumi-jawi plug in and a web-based rumi-jawi transliteration system have been fully accomplished. Collaboration with UKM has been initiated to commercialise the product.
Awards/Certificates	Recognition as a Center of Excellence National award
IP Status	Copyright
Additional Information	Industrial Linkages: DBP; SIRIM; UM; MyNIC.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Edutainment Courseware for Teaching Moral Values
Project Number	01-01-02-SF0324
Project Leader and Team Members	Leader: Nor Azan Mat Zin Members: Aidanismah Yahya, Azizah Jaafar and Munirah Ghazali
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has achieved all its outlined objectives. Two types of framework or model for edutainment were developed, one for animation and one for digital game for the teaching of Jawi literacy; specifically 3 working prototypes were completed. Usability testing of the prototypes showed that they are highly usable for the criteria tested. Currently, the 3 prototypes are in the process of obtaining trademark and copyright.
Publications/Products/Outcomes	<p>Books:</p> <ol style="list-style-type: none"> 1. Nor Azan Mat Zin, Nur Yuhani Mohd Nasir and Munirah Ghazali. 2009. Promoting Socio-Cultural Values Through Storytelling Using Animation and Game-Based Edutainment Software. In Crisan, M. (Ed.) <i>Convergence and Hybrid Information Technologies</i>, (pp. 428). Olajnia: Croatia. <p>Journals:</p> <ol style="list-style-type: none"> 1. Nor Azan Mat Zin and Noor Azli Mohamed Masrop. 2010. User Interface and Interaction Design Based on Motivation Model for Digital Game-based Jawi Learning Software. <i>Design Principles and Practices An International Journal</i> 4(2): Volume 4, Issue 2, pp.293-322. 2. Nor Azan Mat Zin, Azizah Jaafar and Wong Seng Yue. 2009. Digital Game-Based Learning (DGBL) Model and Development Methodology for Teaching History. <i>WSEAS Transactions on Computers</i> 8(2): ISSN: 1109-2750. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nor Azan Mat Zin and Wong Seng Yue. 2009. History Educational Games Design. <i>International Conference on Electrical Engineering and Informatics</i>, 5-7 Aug 2009, Selangor..



	<p>2. Nor Azan, M.Z. and Wong, S.Y. 2008. Game-based Learning (GBL) Model for history Courseware: A preliminary analysis. <i>International Symposium on Information Technology</i>, 26-29 Aug, Kuala Lumpur.</p> <p>3. Nor Azan Mat Zin and Nur Yuhani Mohd Nasir. 2008. Evaluation of Edutainment Animated Folk Tales Software to Motivate Socio-Cultural Awareness. <i>International Conference on Convergence and Hybrid Information Technology (ICCIT08)</i>, 11-13 Nov 2008, Busan, Korea.</p>
Awards/Certificates	<p>1. Malaysia Technology Expo (MTE) 2008: Bronze Medal</p> <p>2. Invention, Innovation and Technology Exhibition (ITEX) 2009: Gold Medal</p>
IP Status	Copyright
Additional Information	<p>International Linkages:</p> <p>University Sains Malaysia (co-researcher)</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Classification-based Method for Representing Simulatable Flow Chart Diagram
Project Number	01-01-02-SF0325
Project Leader and Team Members	Leader: Syahanim Mohd Salleh Members: Zaihosnita Hood and Zarina Shukur
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has successfully developed a classification-based scheme to represent a flow chart diagram with simulation and a flow chart diagramming tool, as well as simulation features using Visual Basic and JAVA programming.
Publications/Products/Outcomes	Publications: File Format of Flow Chart Simulation Software, International Conference on Modeling & Simulation, WASET. 27-29 May 2009, Tokyo, Japan.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) 43600 UKM Bangi, Selangor. Office: 03-8921 6703 H/p: 019-667 7370 syaa@ftsm.ukm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Pembangunan Sistem Penilaian dan Persediaan bagi Pengembangan Potensi Kerjaya Berasaskan Web (S4PK)
Project Number	01-01-02-SF0328
Project Leader and Team Members	Leader: Amla Mohd Salleh Members: Riza Sulaiman, Salleh Amat and Norazah Mohd Nordin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has successfully designed and developed a career planning module to detect career preparation and orientation which can improve the quality of individual career planning. This module also act as a web based assessment and preparation system for evolution of career potential (S4PK). In line with this, the web based assessment and preparation system (S4PK) has been successfully evaluated by employers, students from higher learning institutions, workers, unemployed graduates, youths and school children.
Publications/Products/ Outcomes	Products: 1. xplorasi.edu.my
Awards/Certificates	1. Malaysia Technology Exhibition (MTE) 2009: Gold Medal 2. Regional Research and Educational Competition, in Conjunction with The 4th Regional Seminar on Education 2009: Gold Medal
IP Status	Copyright
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Ketua Pusat Pendidikan Kepelbagaian Pelajar, Fakulti pendidikan, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A Dynamic Automated Scheduler Using Meta-heuristic Approach
Project Number	01-01-02-SF0331
Project Leader and Team Members	Leader: Masri Ayob Members: Zalinda Othman, Mohamad Shanudin Zakaria, Hazilah Mohd Amin and Salwani Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	At this stage, this project has successfully modelled the nurse roster problem, and has developed a dynamic automated scheduler that can automate the generation of nurse rosters as a test case.
Awards/Certificates	Recognition as a Center of Excellence
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Computer Science, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of On-line Psychometric Entrepreneurship Index (OLPEI) Instrument for Malaysian Undergraduates at Higher Learning Institutions
Project Number	01-01-02-SF0336
Project Leader and Team Members	Leader: Nor Aishah Buang Members: Jamal Othman, Zarina Che Embi and Hanafizan Hussain
Field of Research	Economics, Business and Management
Project Summary	All objectives of the project have been fully achieved. The parameters for measuring the entrepreneurship index of the undergraduates have been determined. The entrepreneurship and online entrepreneurship index instrument have been developed. At the moment, this OLPEI is proving workable and helpful to TeDD, MDeC, KOPERTIS Indonesia and Visual Extreme Sdn. Bhd. With this testimony, this OLPEI had been demanded by some institutions such as SME banks, IRIS INIOVATIVE Sdn Bhd etc.
IP Status	Copyright
Additional Information	Linkages: KOPERTIS (Kordinasi Perguruan Tinggi Swasta); Wilayah X10 (Sumatera Barat, Riau, Jambi dan Kepri); Technopreneur Development Department (TeDD) at MDeC (MSC); Visual Extreme Sdn Bhd; E2B Consulting Sdn Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Tomography - Surface Wave for Engineering Assessment of Geotechnical Structures
Project Number	01-01-02-SF0338
Project Leader and Team Members	Leader: Zamri Chik Members: Amiruddin Ismail, Mohd.Raihan Taha and Mohd. Marzuki Mustafa
Field of Research	Engineering Sciences
Project Summary	All research objectives have been completed and achieved. The research project initiated a database for soil dynamic parameters, i.e. shear wave velocity, shear modulus and damping ratio for Malaysian sedimentary residual soils which has been collected from site investigations and in-situ experimental works. As a result, a new software, Geo-SW@T(TM), has been developed which consists of advanced signal processing and a tomographic system of surface wave analysis. The product has already obtained trade mark and copyright status (filing from the registry is as follows: No. 09008357, Class 42, and No. 09008358, Class 9).
Publications/Products/ Outcomes	Journals: 1. Rosyidi., S.A., Taha., M.R., Ismail., A & Chik., Z. 2008. PeNilaiian Kualiti Subgred Turapan menggunakan Kaedah Analisis Spektrum Gelombang Permukaan (Evaluation of Pavement Subgrade Quality using the Spectral Analysis of Surface Wave Method). <i>Journal of Sains Malaysiana</i> 38(2): 21-30
Awards/Certificates	National award
Additional Information	International Linkages: Pusat Penelitian dan Pengembangan Jalan dan Jembatan, Indonesia; University of Muhammadiyah Yogyakarta; Indonesia Gadjah Mada University, Indonesia; Jabatan Kerja Raya (JKR) Malaysia/ IKRAM Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Testbed with Intelligent Simulator on Location Based Services in Cellular Networks
Project Number	01-01-02-SF0344
Project Leader and Team Members	Leader: Mahamod Ismail Members: Othman A. Karim, Mardina Abdullah, Kamarulzaman Mat and Kasmiran Jumari
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	LBS Client has been developed as a prototype for Nokia 6680 model handphones, and been tested for LBS applications such as for finding the nearest LRT station and sharing the user's location via an SMS that can be opened using applications such as Google maps. A simulator was developed as a client with real-time applications and also server based functions. The test bed facility will be integrated with future applications using Application Programming Interface (API). This project serves as a platform for UKM students and researchers to become involved and further enhance LBS.
IP Status	Copyright
Additional Information	Industrial Linkages: Celcom (provided help in data collection via drive test; currently in discussion to implement the test system).
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Electrical, Electronic & Systems Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Geodiversity Repository Based on Digital Object Modelling
Project Number	01-01-02-SF0347
Project Leader and Team Members	Leader: Aziz Deraman Members: Sufian Idris, Mohd. Shafeea Leman, Ibrahim Komoo, Jamaiah Yahaya and Juhana Salim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has been completed with the development of geodiversity repository architecture. Furthermore, a network Digital Object (nDO) data model and repository design have been established. A Geodiversity Repository System (MyGeo-RS) were also established.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> Deraman, A., Yahaya, Jamaiah., Salim, Juhana., Idris, Sufian., Jambari, D.I., & Jaradat, A. 2009. The Development of MyGeo: a Knowledge Management System of Geodiversity Data for Tourism Industries. <i>Communication of the IBIMA</i>, 8(19):142-146. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> Deraman, A., Yahaya, Jamaiah., Salim, Juhana., Idris, Sufian., Jambari, D.I., & Jaradat, A. 2009. The Development of MyGeo: a Knowledge Management System of Geodiversity Data for Tourism Industries. <i>11th International Business Information Management Association Conference</i>, DATES, Cairo.
Additional Information	<p>Linkages:</p> <p>Software Company and Institute for Environment and Development (LESTARI); UKM.</p>
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Computer Science, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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e-Mail	ad@ftsm.ukm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of an Integrated Model and Intelligent Support Tool for Software Certification Process
Project Number	01-01-02-SF0353
Project Leader and Team Members	Leader: Aziz Deraman Members: Abdul Razak Hamdan, Fauziah Baharom and Jamaiah Yahaya
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	A comprehensive and integrated model for software certification (i-SCM) has been designed in this project, based on product and process quality approaches. In addition, an i-SCM supporting tool with i-SCM guidelines and toolkit were also developed.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Aziz Deraman, Jamaiah Haji Yahaya an Abdul Razak Hamdan. 2008. Software Certification: A Continuous Improvement. <i>The International Journal of Knowledge, Culture and Change Management</i> 8(7): 125-133. 2. Jamaiah Haji Yahaya, Aziz Deraman, Fauziah Baharom and Abdul Razak Hamdan. 2009. Software Certification from Process and Product Perspectives. <i>International Journal of Computer Science and Network Security</i> 9(3): 30 March 2009. ISSN: 1738-7906. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Jamaiah Haji Yahaya, Aziz Deraman and Abdul Razak Hamdan. 2007. Software certification: An alternative for continuous improvement. <i>The 9th International Conference on Information Integration and Web-based Applications & Services (iiWAS2007)</i>, 3-5 Dec 2007, Jakarta, Indonesia.

	<ol style="list-style-type: none"> 2. Jamaiah Haji Yahaya, Aziz Deraman & Abdul Razak Hamdan 2008. SCfM_PROD: A Software Product Certification Model. The 3rd International Conference on Information & Communication Technologies: from Theory to Applications - ICTTA'08, Damascus, Syria. ISBN:978-1-4244-1752-0. 3. Jamaiah Haji Yahaya, Aziz Deraman & Abdul Razak Hamdan. 2007. Software certification model and experience of its use. The First Regional Conference of Computational Science and Technology (RCCST 07), Kota Kinabalu, pp. 450-453.
Awards/Certificates	<p>Anugerah Khas Presiden ABIM (2003)</p> <p>Anugerah Pencetus MASTERA Indonesia (2005)</p> <p>Soka University Award of Honour (Education and Culture), Tokyo, Jepun (2006)</p>
IP Status	Copyright
Additional Information	<p>Linkages:</p> <p>National collaboration initiated through technology transfer workshop which includes Universiti Kebangsaan Malaysia, Universiti Utara Malaysia, Universiti Malaysia Terengganu and UKM Medical Centre.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM)</p> <p>Department of Computer Science,</p> <p>Faculty of Information Science and Technology,</p> <p>Universiti Kebangsaan Malaysia,</p> <p>43600 UKM Bangi,</p> <p>Selangor.</p> <p>Office: 03-8921 6185</p> <p>H/p: 012-329 2482</p> <p>ad@ftsm.ukm.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Dynamic Tool for the Assessment of Quality Improvements within a Cell-based Automotive Manufacturing Company
Project Number	01-01-02-SF0355
Project Leader and Team Members	Leader: Mohd Nizam Ab Rahman Members: Norhamidi Muhamad, Jaharah A Ghani, Baba Md Deros, Suriani Ab Rahman and Nor Kamaliana Khamis
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has developed a dynamic tool which can predict, prevent and diagnose problems in production process control. A method for systematic control of production data and analysis was also established. Company process improvement were suggested and problem solving strategies enhanced. Knowledge of automotive processes in cell-based manufacturing company was improved. This study has also determined problems in, and future suggestions for, automotive process development.
Awards/Certificates	National and international award
Additional Information	Linkages: UiTM (team member, focusing on statistical matters); NPC; SMIDEC; Sapura; Meditop.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Mechanical & Materials Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of an Intelligent System for Environmentally Sustainable Construction Practice
Project Number	01-01-02-SF0363
Project Leader and Team Members	Leader: Noor Ezlin Ahmad Basri Members: Fatihah Suja', Noraini Hamzah, Shahrom Md Zain and Hassan Basri
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project successfully developed a knowledge base study by acquiring information from experts on construction activities and river water quality. An expert system prototype was developed using computing software: Visual Basic and GIS. User-friendliness of the prototype was evaluated by collecting comments from the intended end-users. All comments have been taken for improvement. The accuracy of the recommendations from the prototype was assessed by collecting comments from the experts. All comments were taken into consideration for improvement of the prototype.
IP Status	Copyright
Additional Information	Linkages: Department of Environment, Malaysia; Department of Irrigation and Drainage.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Civil & Structural Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number e-Mail	Office: 03-8921 6229 ezlin@vlsi.eng.ukm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Configuration-based Support Tool for Reliability Prediction in Mechanical Components
Project Number	01-01-02-SF0366
Project Leader and Team Members	Leader: Dzuraidah Abd Wahab Members: Aini Hussain, Mohd Zaidi Omar, Shahrum Abdullah and Jaharah A Ghani
Field of Research	Engineering Sciences
Project Summary	The automotive sub-assembly model proposed in the original application was changed to study the front corner module of a proton car as it was felt to be more useful. The research was focused on the prediction of improved reliability based on fatigue data compression, in order to propose a fatigue prediction model. The fatigue prediction model is expected to be useful in calculations of reliability
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> Engku Azrul Hisham, Dzuraidah Abd Wahab and Che Hassan Che Haron. 2008. Pencirian Keboleharapan Sistem Gantungan Belakang Automotif. <i>Advanced Manufacturing Research Group Seminar</i>, 12 Jun 2008, Seremban. Mohd Asri Yusuff and Dzuraidah Abd Wahab. 2008. Penganggaran Keboleharapan bagi buku stereng automotif. <i>Advanced Manufacturing Research Group Seminar</i>, 12 Jun 2008, Seremban.
Additional Information	Linkages: PROTON Berhad (Non Disclosure Agreement)
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Mechanical & Materials Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Design of 13.56 MHz RFID Reader Employing Silterra Technology
Project Number	01-01-02-SF0369
Project Leader and Team Members	Leader: Mohd. Alauddin Mohd. Ali Members: Muhammad Ibn Ibrahimy, Farhat Anwar, Florence Choong Chiao Mei, Norasmahan Muridan, Mamun Ibne Reaz and Faisal Mohd Yasin
Field of Research	Engineering Sciences
Project Summary	The objectives of this project were achieved on time. The design was carried out using both Cadence and Mentor Graphics tools. In the final design, most of the RFID reader submodules were considered. However, only the main parts of the RFID reader were designed to a layout suitable for fabrication of RFID reader using Silterra 0.18u technology. Due to the partial completion of the circuit, another design and fabrication iteration is required to reach the technology transfer/commercialisation stage.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Reaz, M. B. I., Uddin, J., Hussain, S., Mohd-Yasin, F., Nordin, A. N. and Ibrahimy, M. I. 2009. RFID Reader Architectures and Applications. <i>Microwave Journal</i> 52(12):24. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Karim, N.M., Mohd Ali, M.A., Reaz, M.B.I. and Samad, S.A. 2009. Design of an Integrated Demodulator for a 13.56 MHz RFID Reader. <i>IEEE Symposium on Industrial Electronics and Applications (ISIEA)</i>, 4–6 Oct 2009, Kuala Lumpur. 2. Uddin, M. J., Hasan, M. A., Ibrahimy, M. I., Reaz, M. B. I. and Nordin, A. N. 2008. The Advent of Industry Fit RFID Readers. <i>International Conference on Advanced Computer Theory and Engineering (ICACTE)</i>, 20-22 Dec 2008, Phuket. 3. Jasim Uddin, M., Ibrahimy, M. I. and Reaz, M. B. I. 2008. Development of Power Control Module in RFID reader circuit: A Mentor Graphic Simulation Approach. <i>International Conference on Computer and Communication Engineering</i>, 13-15 May 2008, Kuala Lumpur.



Additional Information	Linkages: Emerald Systems (integrated circuit (IC) design software provider and trainer); Siterra Malaysia (fabrication); Selangor Human Resource Development Centre (SHRDC) (packaging).
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Pusat Pengurusan Penyelidikan & Inovasi, Universiti Kebangsaan Malaysia (UKM), 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Optical Coded Division Multiple Access Encoder and Decoder Using Arrayed Wave Guide Gratings
Project Number	01-01-02-SF0371
Project Leader and Team Members	Leader: Sahbudin Shaari Member: Abang Annuar Ehsan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	An Optical Coded Division Multiple Access (OCDMA) encoder and a decoder were designed and fabricated during this project for in order to produce a public access optical network. The new encoder uses optically arrayed waveguide gratings (AWG) as the main components. This project produced a fixed OCDMA AWG-based encoder/decoder, a reconfigurable OCDMA AWG-based encoder/decoder, and a reconfigurable lab packaged OCDMA AWG-based encoder/ decoder.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Hasoon, F.N., Aljunid, S.A., Samad, M.D.A., Abdullah, M.K. and Shaari, S. 2008. Spectral Amplitude coding OCDMA using and substraction technique. <i>Applied Optics</i> 47(8): 1263 -1268 2. Fuad A. Hatim, Feras N. Hasoon and S. Shaari. 2008. Effect of Nonlinear Stimulated Brillouin Scattering on Performance Analysis of an Optical CDMA Transmission System. <i>Journal of Optical Communications</i>, 30 (2009), 104 – 108. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Fuad A. Hatim, Feras N. Hasoon, S.A. Aljunid and S. Shaari. 2008. Optimum Transmit Power for Optical CDMA Transmission Systems Considering nonlinear Stimulated Brillouin Scattering (SBS) Effects. <i>International Conference On Electronic Design (ICED2008)</i>, 26-28 Aug 2008. Putrajaya.



	<p>2. Eltaif, T., Shalaby, H.M.H., Shaari, S., Hamarsheh, M.M.N. 2008. Analysis of successive interference cancellation scheme using OOC code in optical CDMA systems. 10th International Conference on Advanced Communication Technology (ICTACT'08), pp. 2023-2026.</p>
<p>Contact Institution/Entity Address Phone Number e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM) 43600 UKM Bangi, Selangor. Office: 03-8921 6308 H/p: 019-388 9884 sahbudin@eng.ukm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Joint Audio-visual Signal Processing Systems for Malay Speech and Speaker Recognition
Project Number	01-01-02-SF0374
Project Leader and Team Members	Leader: Salina Abdul Samad Members: Zuraidah Mohd Don, Dino Isa Amswan, Andrew Teoh Beng Jin, Aini Hussain and Hafizah Husain
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary	This project successfully designed robust joint audio-visual signal processing algorithms for Malay speech recognition and speaker recognition with Malay corpus. New fusion techniques for audio-visual signal processing were developed with new algorithms. The improvement in performance of Malay speech and speaker recognition using joint audio-visual signals were evaluated and compared with conventional speech processing. User friendly Malay speech recognition and speaker recognition systems have also been developed.
Awards/Certificates	National award and International award
IP Status	Copyright
Additional Information	Linkages: Yonsei university (research collaboration)
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) 43600 UKM, Bangi, Selangor. Office: 03-8921 6331 salina@vlsi.eng.ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Novel MIMO Testbed Development for Broadband Wireless System
Project Number	01-01-02-SF0376
Project Leader and Team Members	Leader: Norbahiah Misran Members: Mahamod Ismail, Baharudin Yatim and Mardina Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Development of a novel broadband antenna for MIMO (Multiple Input Multiple Output) test bed system has been accomplished during this project. A light weight, low cost software with definable test bed was developed through a combination of DSP and FPGA. A novel low complexity optimum algorithm with faster convergence speed has been produced for the test bed system. Finally, hardware module and software integrated into a novel MIMO test bed has been developed.
Awards/Certificates	MTE 2011
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Electrical, Electronic & Systems Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM, Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Image Based Fuzzy Expert System for Paddy Diseases Diagnosis
Project Number	01-01-02-SF0381
Project Leader and Team Members	Leader: Salwani Abdullah Members: Siti Norul Huda, Azuraliza Abu Bakar and Saad Abdullah
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary	This project has successfully defined fuzzy variables and a linguistic for paddy diseases. From this, an image based expert knowledge has been modelled for fuzzy variables and a linguistic for paddy diseases. An image based fuzzy expert system has been developed for paddy disease diagnosis and evaluated. This prototype was converted into mobile application by customising them according to minimum memory size.
Additional Information	Linkages: Informatics and Telematics Institute (ITI), Centre of Research & Technology, Greece; Malaysian Agricultural Research & Development Institute (MARDI).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) 43600 UKM, Bangi, Selangor. Office: 03-8921 6181 salwani@ftsm.ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Malaysian Sex Education Courseware (MSE) for Secondary School Based on 3D Animation Approach
Project Number	01-01-02-SF0387
Project Leader and Team Members	Leader: Azizah Jaafar Members: Aidanismah Yahya and Nor Azan Mat Zin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has reviewed the state-of-the-art in the sex education syllabus taught in schools and related courseware available as part of teaching aids used. A research framework was also developed for the study. A prototype of the animated courseware for sex education, infused with moral value, was designed and developed. The usability test and the impact study of the sex education courseware has been performed.
Awards/Certificates	Gold Medal for Research and Innovation in Multimedia software in Mathematics for Smart Schools – ME2 at UKM 2003 Gold Medal for Research and Innovation in multimedia software in mathematics for smart schools and Automatic Storyboard system- ME2 organised by MOE and MINT at PWTC, 2003 e-medal for International Research and Invention in Multimedia software packages – V-Maths, Math Media, Matematika and SPCB - (ME2) at the 32nd International Des Invention Exhibition at Geneva, Switzerland . 2004
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Information Science, Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM, Bangi, Selangor.
Phone Number	Office: 03-8921 6811 H/p: 012-387 5790
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Consumption Model for ICT Broadband Services
Project Number	01-01-02-SF0414
Project Leader and Team Members	Leader: Nur Riza Mohd. Suradi Members: Zalina Mohd Ali, Faridatulazna Ahmad Shaha, Zainol Mustafa, Wan Norsiah Mohamed, Wan Rosmanira Ismail, Rofizah Mohammad and Mohamad Khazani Abdul
Field of Research	Applied Sciences and Technologies
Project Summary	This project identified and analysed the requirements of customers in terms of bandwidth capacity and service quality, in order to evaluate and index the level of customer satisfaction with the provided services. Models of trends in bandwidth consumption and for predicting the national needs were developed. Customer requirements, in terms of network performance and quality service, have been identified and the customer satisfaction index was obtained. A model for trends in consumption was developed, enabling prediction of national needs. The needs and requirements of the end users were well identified and recorded through surveys, and an indexing of the level of satisfaction was also developed based on the feedback from the surveys, and finally a model of the broadband users' consumption was developed and tested.
Additional Information	Linkages: TM (involved in obtaining data); MCMC (though unable to share existing data and technology for modelling purposes); several major telecommunications companies including TIME, TM, Jaring and MCMC to obtain information and understanding on broadband services provided.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Mathematical Sciences Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM, Bangi, Selangor.
Phone Number	Office: 03-8921 3593 H/p: 013-364 3670
e-Mail	nrms@pkrisc.cc.ukm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of an Online Monitoring and Control System for a Biological Treatment of Waste Water in a Sequencing Batch Reactor Based on Artificial Intelligence Techniques
Project Number	01-01-02-SF0454
Project Leader and Team Members	Leader: Siti Rozaimah Sheikh Abdullah Members: Noorhisham Tan Kofli, Fatimah Suja', Siti Kartom Kamarudin and Mohd. Marzuki Mustafa
Field of Research	Engineering Sciences
Project Summary	This project has successfully designed and constructed a biological wastewater treatment system of biological processing in a sequencing batch reactor in order to remove carbon and nitrogen contents. Thus, an online, real-time monitoring system of pH, ORP, DO and OUR (oxygen uptake rate) parameters of the biological treatment process was developed, in order to relate the current status of the microbial activity to the offline parameters such as COD or BOD and ammonia (nitrates, nitrites contents) removal.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Jabatan Kejuruteraan Kimia dan Proses, Fakulti Kejuruteraan dan Alam Bina, Universiti Kebangsaan Malaysia, 43600 UKM, Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Online 21st Century Thinking Skills Assessment: Towards Humanising Assessment of Human Capital
Project Number	01-01-02-SF0461
Project Leader and Team Members	Leader: Kamisah Osman Members: Mohd Ali Samsudin, Muhamad Ramizal Muhsi, Tamby Subahan Mohd., Siti Fatimah Mohd Yassin and Riza Sulaiman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The scope of 21st century thinking skills that should be acquired by Malaysian adults entering tertiary education was defined in this project. Authentic tests were constructed which specifically measured the 21st century thinking skills, and the unidimensionality, reliability and generalisability of the newly constructed authentic 21st century thinking skills were justified.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) 43600 UKM, Bangi, Selangor. Office: 03-8921 6271 H/p: 019-37 7037 kamisah68@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Advanced Resource Management Solutions for Future All Ip Heterogeneous Mobile Radio
Project Number	01-01-02-SF0471
Project Leader and Team Members	Leader: Mahamod Ismail Members: Mohd. Alauddin Mohd, Kamarulzaman Mat, Tiong Sieh Kiong and Kasmiran Jumari
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	A set of specific resource management strategies and algorithms were devised and assessed. The strategies were also developed to guarantee the end-to-end QoS in the context of an all-IP heterogeneous network. Further to this, a testbed was established to evaluate the developed algorithms. The results and the test bed of this project can be used by service providers and research centres to improve, develop and evaluate their networks.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Electrical, Electronic & Systems Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM, Bangi, Selangor.
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e-Mail	mahamod@eng.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Intelligent Web Tutor
Project Number	01-01-02-SF0490
Project Leader and Team Members	Leader: Nor Azan Mat Zin Members: Junaidah Mohamed Kassim, Salwani Abdullah and Sri Devi Ravana
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of the project have been fully achieved. The project has identified and used 3 main techniques for production of a student model: rule based fuzzy logic and rule based + fuzzy logic. A student model was developed for scores (expressed as percentages) in one small topic in maths. In addition, knowledge representation was achieved using ontology. The knowledge based and student model were successfully integrated to form an adaptive web-based educational system named K-Stailo and this prototype was implemented successfully. The prototype, K-Stailo won silver medal at MTE 2010.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Rahmah, M., Nor Azan, M.Z. and Siti Norul Huda, S.A.. 2010. User model of modality learning style prediciton: comparing simple rule base, fuzzy rules and combination techniques. <i>International Conference on Artificial Intelligence and Neural Networks</i>, 17 Dec 2010. Thailand. 2. Rahmah Mokhtar, Nor Azan Mat Zin and Siti Norul Huda Sheikh Abdullah. 2010. Rule-Based Knowledge Representation for Modality Learning Style in AIWBES. <i>International Conference on Knowledge Management</i>, 22-23 Oct 2010 in Pittsburgh, Pennsylvania, USA 3. Rahmah Mokhtar and Nor Azan Mat Zin. 2009. Teknik petua mudah dan petua kabur untuk pengesanan stail pembelajaran adaptif berasaskan web (SPABW). <i>Seminar Kebangsaan ICT dalam pendidikan</i>, 3-4 Fec 2009, Ipoh.
Awards/Certificates	MTE 2010: Silver medal,



IP Status	Copyright: Intelligent Web Tutor-K-StailoTM
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) 43600 UKM, Bangi, Selangor. Office: 03-8921 6812 H/p: 019-250 2420 azan@ftsm.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of In-line Monitoring Optical Device and Centralised Troubleshooting System for New FTTH Network
Project Number	01-01-02-SF0493
Project Leader and Team Members	Leader: Mohd Syuhaimi Ab. Rahman Members: Sahbudin Shaari and Abang Annuar Ehsan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This project involved the development of a passive optical taper device (PIM) for the FTTH in-line monitoring system. In addition, a CATV tester unit has been developed to efficiently monitoring the process. The second generation PIM has already been developed to enable monitoring of long-haul communication. The second objective has also been achieved: the development of Smart Access Network_Testing, Analysis and Database (SANTAD) for a centralised monitoring system of the FTTH network. The solution is installed in the central office and the status of each mine connected to the system can now be observed at one point. Thirdly, the development of an Access Control system (ACS), a Multi Access Detection System (MADS), and a Customer Access Protection Unit (CAPU) has improved the FTTH survivability features. Finally, a new optical customer access network has been developed, involving upgrading of the conventional optical FTTH system by embedding of all new components to enhance the survivability features. The FTTH network is also combined with ADSL for device monitoring and communication.</p>
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mohammad Syuhaimi Ab-Rahman, Boonchuan Ng and Kasmiran Jumari. 2009. Visual Basic Software Tool for FTTH Network Management System: SANTAD. <i>Optica Applicata</i>, 39(2): 241-250. 2. Mohammad Syuhaimi Ab. Rahman. 2008. Highlighting on Multiplex Restoration Scheme in Optical Cross Add and Drop Multiplexer (OXADM). <i>Journal of Optical Communication</i> vol. 29, no4, pp. 205-208



	<p>3. Mohammad Syuhaimi Ab-Rahman and Boonchuan Ng. 2009. Remotely Control, Centralized Monitoring and Failure Analyzing in PON, International Journal of Computer and Network Security Graphical User Interface capabilities of MATLAB in Centralised failure Detection System (CFDS). <i>International Journal of Microwave and Optical Technology</i> 4(2): 128-136.</p> <p>4. Mohammad Syuhaimi Ab-Rahman, Siti Asma Che Aziz & Kasmiran Jumari. 2009. Protection Switching Against failure in Distribution Region. <i>International Journal of Computer Science and Network Security</i> 9(3): 130-133.</p>
Awards/Certificates	<p>ITEX 200 - Gold medal - Cost Effective Hand Made Polymer Optical Fiber Based Splitters for Small Workd Communication Application.</p> <p>MALAYSIA TECHNOLOGY EXPO 2011 - Bronze Medal - Green WDM-POF Technology For In-Car Interior Infotainment System</p>
Contact Institution/Entity Address Phone Number e-Mail	<p>Universiti Kebangsaan Malaysia (UKM) 43600 UKM, Bangi, Selangor. Office: 03-8921 6448 H/p: 019-378 5005 rahul_devraj@hotmail.com</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	An Expert System for Integrated Quality Management System for Construction Projects
Project Number	01-01-02-SF0500
Project Leader and Team Members	Leader: Amiruddin Ismail Member: Anuar, Zamri Chik
Field of Research	Engineering Sciences
Project Summary	An integrated quality management system has been developed during this project. In addition to this, an integration standard has also been developed between quality system, environmental management and project management. An integration procedure between value engineering and risk management with the quality management in the construction field was also established. An expert system for the integration of the above was designed.
Publications/Products/Outcomes	Journals: <ol style="list-style-type: none"> 1. Amiruddin Ismail, Khalim A. Rashid and Wisam J. Hilo. 2009. The use of project management in construction industry. <i>Journal of Applied Sciences</i> 9(10): 1985-1989. 2. Amiruddin Ismail, Abbas M Abd, Zamri Chik and Muhammad Fauzi Mohd. Zain. 2009. Performance assessment modelling for the integrated management system in construction projects. <i>European Journal of Scientific Research</i> 29(2): 269-280.
Awards/Certificates	<p>Excellent Scientist 2005 awards by the Ministry of Higher Education, Malaysia.</p> <p>Gold Medal, Seoul International Invention Fair 2004, Coex, Seoul sponsored by Korea Invention Promotion Association (KIPA), 10 – 14 Dec. Project: Expert system for flexible pavement design and maintenance.</p> <p>Gold Medal, Seoul International Invention Fair 2004, Coex, Seoul sponsored by Korea Invention Promotion Association (KIPA), 10 – 14 Dec. Project: Low cost smart camera for traffic congestion monitoring.</p>



	Bronze Medal, Seoul International Invention Fair 2004, Coex, Seoul sponsored by Korea Invention Promotion Association (KIPA), 10 – 14 Dec. Project: Application of used engine oil for low cost aliphatic concrete cold mix. Excellent Service Award 2003 from UKM.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) 43600 UKM, Bangi, Selangor. Office: 03-8921 6203 H/p: 017-378 2486 abim@eng.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Prototype Virtual Reality Dental Simulator with Force Feedback
Project Number	01-01-15-SF0006
Project Leader and Team Members	Leader: Kenneth Sundaraj
Field of Research	Material Sciences
Project Summary	This project determined the physical and geometrical parameters of the entire set of human teeth. These results were obtained from the literature, from medical professionals, and from the 3D finite element model of the human teeth. Both the physical and geometrical parameters of the human teeth have been used to develop a virtual reality platform containing virtual teeth. A force feedback device has been integrated into this platform to enhance immersion into the virtual environment. Finally, the human teeth are simulated visually and physically so that trainee dentists can learn and practise new procedures using this virtual model.
Contact Institution/Entity Address	Universiti Malaysia Perlis (UNIMAP) Taman JKKK Kubang Gajah, 02600 Arau, Perlis.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Face Emotion Recognition Package Using Electroencephalogram and Vision System
Project Number	01-01-15-SF0010
Project Leader and Team Members	Leader: Mohd Sofian Mohammad Rosbi Members: Ramachandran Nagarajan and Kenneth Sundaraj
Field of Research	Applied Sciences and Technologies
Project Summary	This project was carried out to study facial displays of emotion using a visual system. In addition, brain signals for emotion were also studied. Finally both studies were correlated to enable greater understanding of different human emotions.
Contact Institution/Entity Address	Universiti Malaysia Perlis (UNIMAP) Taman JKKK Kubang Gajah, 02600 Arau, Perlis.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design of an Artificial Intelligent Diagnostic System for Tuberculosis Infection
Project Number	01-01-15-SF0011
Project Leader and Team Members	Leader: Mohd Yusof Mashor Members: Norasmadi Abdul Rahim, Fauziah Mohamad, Habsah Hasan and Siti Suraiya Md Noor
Field of Research	Applied Sciences and Technologies.
Project Summary	Image processing techniques were identified and implemented to improve the quality of captured TB images. Some features of extraction algorithms were developed for extracting useful features from the TB images. An artificial intelligent diagnostic technique for detection of TB bacilli has also been studied in this project.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. 3 papers: <i>Malaysian Technical Universities Conference on Engineering and Technology</i>, 15 – 16 March 2008, Kangar. 2. 1 paper: <i>5th IEEE International Conference on Electrical Engineering, Computing Science and Automatic Control</i>, 12-14 Nov 2008, Mexico City. 3. 3 papers: <i>International Conference at Postgraduate Education Conference</i>, DATE 2000, Pulau Pinang. 4. 1 paper: <i>4th Kuala Lumpur International Conference on Biomedical Engineering (Biomed 2008)</i>, 25-28 Jun 2008, Kuala Lumpur. 5. 2 papers: National Tuberculosis Conference, DATE, Kelantan
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaysia Perlis (UNIMAP) Taman JKKK Kubang Gajah, 02600 Arau, Perlis. Office: 04-979 8335 H/p: 013-488 3867 mashor123@yahoo.co.uk



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and Development of Wireless Web Based Monitoring System Using 32 bit Advance Embedded System and Gnu/Linux
Project Number	01-01-15-SF0024
Project Leader and Team Members	Leader: R.Badlishah Ahmad Members: Suhizaz Sudin, Abu Hassan Abdullah, Abdul Hamid Adom and Ali Yeon Md. Shakaff
Field of Research	Engineering Sciences
Project Summary	The objectives of this project were to design, develop and analyse a sensor system using an advanced Single Board Computer (SBC) system in the design, and to develop wireless access using Wi-Fi.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. R. Badlishah Ahmad, Wan Muhamas Azmi Mamat, Ahmad Nasir Che Rosli, Ali Yeon Md. Shakaff & Mohd Rizon Mohamed Juhari. 2007. Towards Generating Next Generation of Embedded GNU/Linux. <i>International Conference on Robotics, Vision, Information and Signal Processing (ROVISIP)</i>, 2007, Penang. 2. W. M. A. Mamat, R. B. Ahmad, M. R. Mohamed Juhari, A. N. Che Rosli, A. H. Abdul Aziz. 2007. Embedded Design of Wireless Data Acquisition System using 32bit Single Board. <i>International Conference on Engineering and ICT (ICEI)</i>, 2007, Kuala Lumpur. 3. Ahmad Nasir Che Rosli, Ali Yeon Md. Shakaff, R. Badlishah Ahmad, Mohamed Rizon, and Wan Muhamad Azmi Mamat. 2007. Hardware Integration for Face Reader Using 32-Bit Embedded PC. <i>International Conference of Engineering Technology (ICET)</i>, DATE 2007, Kuala Lumpur. 4. W. M. A. Mamat, R. B. Ahmad, M. R. Mohamed Juhari, S. Sudin. Development of Data Acquisition System Using 32bit Single Board. <i>2nd International Conference on Informatics</i>, DATE 2007, Kuala Lumpur.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaysia Perlis (UNIMAP) Taman JKKK Kubang Gajah, 02600 Arau, Perlis. Office: 04-979 8144 H/p: 019-456 3777 badli@unimap.edu.my

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Robust Technique for a Real-time Human Face Recognition System
Project Number	01-01-15-SF0028
Project Leader and Team Members	Leader: Nor Azmi Johari Members: R.Badlishah Ahmad, Ali Yeon Md. Shakaff, Hamzah Arof, Sazali Yaacob, Kenneth Sundaraj and Ramachandran Nagarajan
Field of Research	Applied Sciences and Technologies
Project Summary	The principle aim of this research was to develop a robust system to identify an unknown person by a facial image for which the position, scale and image-plane rotation of the human face are unknown. The task was divided into two main objectives, firstly to develop an algorithm to detect facial features such as eyes and mouth from an image of a human face, and secondly to develop an algorithm to recognise a human face using the geometric measurements taken from facial features.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Chai Tong Yuen, M. Rizon, Woo San San and M. Sugisaka. 2008. Automatic detection of face and facial feature. <i>7th WSEAS International Conference on Signal Processing, Robotics and Automation</i>, 20-22 Feb 2008, 20-22 Feb 2008, University of Cambridge, UK. 2. Chai Tong Yuen, Rizon, M., Woo San San and Sugisaka, M. 2008. Automatic feature-base face recognition using template matching. <i>International Conference on Image and Signal Processing</i>, 1-3 Jul 2008. <p>Other:</p> <ol style="list-style-type: none"> 1. B.Eng theses, Hairulizan Hassan and Azlan Zainul. 2008. Face recognition using neural networks, April 2008
Awards/Certificates	VADS Service Excellence Awrd, 2007 VADS Dream Team Award, 2007
IP Status	Copyright



Additional Information	Linkages: Wakayama University Nippon Bunri University; Bahagian Teknikal.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design of a Portable Continuous Blood Pressure Monitoring Kit with Built-in low and High Blood Pressure Early Warnings
Project Number	01-01-15-SF0056
Project Leader and Team Members	Leader: Mohd Yusof Mashor Members: Muhajir Ab. Rahim, R.Badlishah Ahmad, Nashrul Fazli Mohd Nasir, Mohd Sapawi Mohamed and Mohd Ezane Aziz
Field of Research	Engineering Sciences
Project Summary	This project aimed to design a portable continuous blood monitoring kit with built-in low and high blood pressure early warnings, that met two sub-objectives, to identify the factors which influence the relationship between heart rate and blood pressure and formulate the mathematical formula to relate them, and to study the blood pressure trend of patients with low and with high blood pressure.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ali Hassan, M.K., Mashor, M.Y., Mohd Nasir, N.F. and Mohamed, S. 2008. Continuous measuring of blood pressure based on electrocardiography. <i>Malaysian Technical Universities Conference on Engineering and Technology</i>, 15-16 Mar 2008, Kangar. 2. Ali Hassan, M.K., Mashor, M.Y., Mohd Nasir, N.F. and Mohamed, S. 2008. Measuring of Systolic Blood Pressure Based On Heart Rate. <i>4th Kuala Lumpur International Conference on Biomedical Engineering (Biomed 2008)</i>, 25-28 Jun 2008, Kuala Lumpur. 3. Ali Hassan, M.K., Mashor, M.Y., Mohd Nasir, N.F. and Mohamed, S. 2008. Measuring Blood Pressure Using a Photoplethysmography Approach. <i>4th Kuala Lumpur International Conference on Biomedical Engineering (Biomed 2008)</i>, 25-28 Jun 2008, Kuala Lumpur.



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Portable Network Analyzer Using Embedded Linux Based Single Board Computer (SBC)
Project Number	01-01-15-SF0080
Project Leader and Team Members	Leader: Zahereel Ishwar Abdul Khalib Members: Salina Mohd Asi, Suhizaz Sudin and R.Badlishah Ahmad
Field of Research	Material Sciences
Project Summary	The ultimate outcome of this research was an embedded Network Analyser which runs on LINUX based Single Board Computer.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. The effects of Compiler Optimization in face recognition system, ICCCE 08 Improving System Performance through OS optimization for embedded device platform, ICCCE 08 Portable Network Acquisition System using Single Board Computer & GNU Linux, MUCET 08.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaysia Perlis (UNIMAP) Taman JKKK Kubang Gajah, 02600 Arau, Perlis. Office: 04-979 8641 H/p: 019-477 9177 zahereel_aka@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Non-destructive Fruit Maturity Testing System Utilising Radio Frequency, Capacitive Properties and Neural Network Algorithm
Project Number	01-01-15-SF0081
Project Leader and Team Members	Leader: Zulkifli Husin Members: Hallis Abdul Aziz and R.Badlishah Ahmad
Field of Research	Engineering sciences
Project Summary	<p>The demand for high quality in the food and beverage industry is ever increasing with consumers becoming more sophisticated, demanding a specific, consistent taste for every product on the shelf. Fresh agricultural produce is also expected to behave like any manufactured food or drink with a certain set of taste traits attributable to each brand. Unlike canned products, fresh agricultural produce may taste different with the passing of time. Fruit maturity has long been measured by counting days from when the fruit was cultivated (flowered, wrapped, fertilised or picked). To manually classify a fruit's age requires experience and is prone to human error. More accurate methods give a good indication of a fruit's ripeness but are also invasive and damage the fruit making it less presentable. Therefore, an instrument to assess the maturity of fruit and classify it accordingly would be a great advantage to the consumer. A new portable device for fruit maturity testing using a non-destructive method has been developed using an embedded system design. The product is able to distinguish a fruit's maturity without subjecting any damage to the fruit under test, it is reliable and a promising technology for mass production, using cost effective technology.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Yasmin Yacob, Zulkifli Husin, Rohani S.M. Farook, Abd HallisAziz and M. Shaiful Aziz. 2008. Neural Network Data Analysis from Development of Intelligent Weevil Detection System for Harum Manis Mango Using Dielectric Sensor. ICIMU2008, UNITEN, Malaysia.

	<ol style="list-style-type: none"> 2. Yasmin Yacob, Zulkifli Husin, Rohani S.M. Farook, Abd HallisAziz and M. Shaiful Aziz. 2008. Harum Manis Mango Weevil Infestation Classification Using Backpropagation Neural Network. ICED 2008, 1-3 December 2008, Penang, Malaysia 3. Zulkifli Husin, Abdul Hallis AbdulAziz, R. Badlishah Ahmad. 2008. Feasibility Study of a Non-Destructive Fruit Maturity Testing System on Banana Utilising Capacitive Properties. ICED2008, 1-3 December 2008 at Park Royal Hotel, Penang, Malaysia
Awards/Certificates	UniMAP Research Expo 2009: Silver Medal UniMAP Research Expo 2010: Silver Medal ITEX 2009: Gold Medal SIIF 2010: Gold Medal Seoul International Invention Fair (SIIF) 2010: Best Award on Innovative Enterprises
IP Status	Novelty Search by PINTAS on Title: Portable Fruits Maturity System – Novel
Additional Information	Linkages: Sime Darby (design of Oil Palm ripeness sensors)
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Intelligent Weevil Detection System for Harum Manis Mango Using Dielectric Sensor
Project Number	01-01-15-SF0083
Project Leader and Team Members	Leader: Rohani Farook Members: Abdul Hallis Abdul Aziz, Zulkifli Husin and Hasnah Ahmad
Field of Research	Engineering Sciences
Project Summary	The objective of this project has been accomplished, whereby a weevil detection system was developed to identify the presence of weevils in mangoes using the dielectric sensors. In addition, the ripeness of the mangoes can be detected. The research shows that dielectric sensors can be a tool to identify the weevil and appropriate ripeness to determine the quality of the fruit. The software that acts as GUI for the data acquisition and weevil detection have also been developed and integrated successfully.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Yasmin Yacob, Zulkifli Husin, Rohani S.M Farook, Abdul Hallis A. Aziz and Shaiful Aziz, M. 2008. Harum Manis Mango Weevil Infestation Classification Using Backpropagation Neural Network. <i>International Conference on Electronic Design (ICED 2008)</i>, 1-3 Dec 2008, Penang, Malaysia. 2. Yasmin Yacob, Zulkifli Husin, Rohani S.M Farook, Abdul Hallis A. Aziz and Shaiful Aziz, M. 2008. Neural Network Data Analysis from Development of Intelligent Weevil Detection System for Harum Manis Mango Using Dielectric Sensor. <i>4th International Conference on Information Technology</i>, UNITEN, Malaysia
Contact Institution/Entity Address	Universiti Malaysia Perlis (UNIMAP) Taman JKKK Kubang Gajah, 02600 Arau, Perlis.
e-Mail	asanie01@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and Development of a Portable Anechoic Chamber for Microwave Antenna Measurements
Project Number	01-01-15-SF0084
Project Leader and Team Members	Leader: Ismahayati Adam Members: Soh Ping Jack, Azremi Abdullah Al-Hadi, Mohamad Kamal Abdul Rahim, Hazila Othman, Mohd Fisol Osman, Rosemizi Abd Rahim, Norsuhaida Ahmad, Mohd Taufik Jusoh and Sabarina Ismail
Field of Research	Information and Communication Services
Project Summary	<p>Microwave anechoic chambers are currently used for a variety of indoor antenna measurements, electromagnetic interference measurements, and electromagnetic compatibility measurements, providing a controlled environment to minimise electromagnetic interference. The failure of an anechoic chamber to provide a suitable test environment affects the measurement accuracy. The portable anechoic chamber developed during this project is portable and provides a tightly enclosed RF microwave antenna range which operates over the frequency range 1 to 10 GHz.</p> <p>This investigation successfully developed and tested a low cost microwave absorber using agricultural waste. Several waste materials (rice husk, oil palm empty fruit bunch and sugar cane bagasse) were tested for suitability. Rice husk was the most suitable due to its material properties and became the subject of investigation. A method of characterising/defining the material's permittivity and electrical properties was then carried out using the free space method. These values provided the input for further electromagnetic simulations. Optimised sizes/shapes of absorbers were then fabricated in-house using a custom mould and hot-press facilities. Sets of absorbers were then tested for performance in a shielded room (courtesy of Motorola Technology Sdn. Bhd.), and mounted and integrated onto the mini-portable anechoic chamber which was developed for this purpose.</p>



Publications/Products/ Outcomes

Journals:

1. Nornikman, H., Malek, F., Ahmed, M., Wee, F.H., Soh, P.J., Azremi, A.A.H., Ghani, S.A., Hasnain, A. and Taib, M.N. 2011. Setup and Results of Pyramidal Microwave Absorbers using Rice Husks. *Progress in Electromagnetic Research (PIER)* 111: 141-161.
2. Nornikman, H., Malek, F., Soh, P.J., Azremi, A.A.H., Wee, F.H. and Hasnain, A. 2010. Parametric Study of Pyramidal Microwave Absorber using Rice Husk. *Progress in Electromagnetic Research (PIER)* 104: 145-166.

Proceedings/Conferences/Seminars:

1. Nornikman, H., Malek, F., Soh, P.J., Azremi, A.A.H. and Ismahayati, A. 2010. Reflection Loss Performance of Triangular Microwave Absorber. *Antennas and Propagation, International Symposium*, 23-26 Nov, Macao.
2. Nornikman, H., Malek, F., Soh, P.J. and Azremi, A.A.H. 2010. Reflection Loss Performance of Hexagonal Base Pyramidal Absorber using Different Agricultural Waste. *Loughborough Antenna and Propagation Conference (LAPC 2010)*, 8-9 Nov, Loughborough.
3. Nornikman, H., Malek, M.F., Soh, P.J. and Azremi, A.A.H. Design of a Rice Husk Pyramidal Microwave Absorber with Split Ring Resonator. *Asia Pacific Symposium on Applied Electromagnetics and Mechanics (APSAEM 2010)*, 28-30 Jul 2010, Kuala Lumpur.
4. Nornikman, H., Malek, F., Soh, P.J., Azremi, A.A.H. and Ghani, S.A. 2010. Potential of Rice Husk for Pyramidal Microwave Absorber Design. *2nd International Conference of the IET Brunei Network (ETBIC 2010)*, 21-23 Jun 2010, Bandar Seri Begawan.

Awards/Certificates

1. Pertandingan Rekacipta dan Inovasi 2010 anjuran Univ Malaysia Pahang (UMP): Bronze medal

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Universal Modulator for Software Defined Radio Communication System
Project Number	01-01-15-SF0092
Project Leader and Team Members	Leader: Mohd Fareq Abd Malek Members: Hasliza, Azremi Abdullah Al-Hadi, Amir Razif Arief Jamil and Muhammad Imran Ahmad
Field of Research	Applied Sciences and Technologies
Project Summary	FPGA based reconfigurable architectures were developed for an embedded processor to suit the requirements of SDR Communication Systems. Based on FPGA, the Universal Modulator and other subsystems (such as Down Converter and Up-Converter) were also developed. The subsystems with Low Noise Amplifier (LNA) and Power Amplifiers were integrated and tested with existing wireless standards. User manuals and reports were prepared for further reference.
Publications/Products/ Outcomes	Publications: 1. R. Othman, I. Puspasari, A.W. Mohammad, M. Ismail, Biodiesel Modular Plant: Process design and sensitivity analysis.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Text Mining Techniques in Malay Natural Language Processing
Project Number	01-01-04-SF0100
Project Leader and Team Members	Leader: Masrah Azrifah Azmi Murad Members: Rodziah Atan and Tengku Mohd Tengku
Field of Research	Material Sciences
Project Summary	This study has overcome the problem of most government bodies in Malaysia in handling, managing and manipulating large amount of document collection in the contexts of Malay language. It has provided an overview of the contents of a large document collection. The hidden structures between groups of topics using clustering method are identified so that all related documents are connected by hyper links. Duplicated documents in an archive were detected. This project is also aimed to ease the process of browsing in finding similar or related information.
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Phone Number e-Mail	Office: 03-8946 6546 masrah.azrifah@gmail.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Event Reconstruction System for Digital Computer Forensics
Project Number	01-01-04-SF0109
Project Leader and Team Members	Leader: Ramlan Mahmod Member: Abdul Azim Abdul Ghani
Field of Research	Physical Sciences
Project Summary	This study designed and implemented an event reconstruction model based on the FSM. The basic prototype of the tool was successfully developed and tested. The Symbolic Representation technique was successfully used to represent the possible scenario of the incident. The accuracy of event reconstruction for a given computer system was improved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Comparison of Instructional Efficiency of Dynamic Softwares on Mathematics Learning at the Secondary Level
Project Number	01-01-04-SF0126
Project Leader and Team Members	Leader: Rohani Ahmad Tarmizi Members: Ahmad Fauzi Mohd Ayub, Kamariah Abu Bakar and Aida Suraya Md Yunus
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has successfully completed an evaluation of the instructional efficiency of mathematical softwares in mathematics teaching and learning at the Malaysian secondary school level. The effectiveness was measured in terms of understanding, performance, visual processing ability mathematical problem solving, and effective attributes such as achievement motivation, mathematical aptitude and mathematical anxiety.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Wan Zah Wan Ali, Rohani Ahmad Tarmizi, Ahmad Fauzi Ahmad Ayub, Kamariah Abu Bakar & Aida Suraya Md Yunus. 2008. Effect of Graphing Technology on Performance and Mathematical Thinking among Secondary Mathematics Learners. <i>INTED2008</i>, 2008, Valencia. 2. Rohani Ahmad Tarmizi, Ahmad Fauzi Mohd Ayub, Kamariah Abu Bakar & Aida Suraya Md. Yunus. 2008. Perceived Efficacy of Dynamic Mathematical Softwares - A Malaysian Secondary Mathematics Students Experiences. <i>INTED2008</i>, 3-5 March 2008, Valencia. 3. Rohani Ahmad Tarmizi, Ahmad Fauzi Mohd Ayub, Kamariah Abu Bakar & Aida Suraya Mohd Yunus. 2008. Instructional Efficiency Index of Learning via Integration of Autograph Softwares and Graphing Calculators versus Traditional in Secondary Mathematics in Proceeding. <i>INTED2008</i>, 3-5 March 2008, Valencia.



	<p>4. Nor'ain Mohd Tajudin, Rohani Ahmad Tarmizi, Wan Zah Wan Ali & Mohd Majid Konting. 2008. The use of Graphic Calculator in Teaching and Learning of Mathematics: Effects on Performance and Metacognitive Awareness. <i>NCGC</i>, 16-18 April 2008, Kuala Lumpur, Malaysia..</p> <p>5. Rohani Ahmad Tarmizi, Kamariah Hj. Abu Bakar, Ahmad Fauzi Mohd Ayub & Aida Suraya Md. Yunus. Exploring Effects of Handheld Graphing Calculator and Autograph Software in Secondary Mathematics Teaching. <i>NCGC</i>, 16-18 April 2008, Kuala Lumpur, Malaysia.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor. Office: 03-8946 8199 rht@educ.upm.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Wireless Adhoc and Sensor Optimisation Tool for Network Reconfiguration
Project Number	01-01-04-SF0224
Project Leader and Team Members	Leader: Shamala Subramanian Members: Zuriati Ahmad Zukarnain and Mohamad Othman
Field of Research	Physical Sciences
Project Summary	<p>A comprehensive framework/tool encompassing optimisation, reconfiguration embedded with scheduling and resource reservation algorithms was developed based on an analysis of simulation of Wireless Adhoc. A device to track the movement of people in correlation to the formation or structuring of a network designed and implemented using the Cricket Indoor Location Sensors. Optimisation algorithms related to strategic movement were developed in correlation with strategic counter events. Thus, developing algorithms of analysis derived from the sensors acquisition in a cohesive reconfiguration mapped to the network topological design with the usage of the Kalman Filter and Trigonometry location detection. The network related resource utilisation such as communication bandwidth, response time, number of tracking points, and wiring of the user's body and the performance of the various types of sensors used in the study including flex sensors, pressure sensors, and accelerometers has been improved.</p>
Publications/Products/Outcomes	Journals: <ol style="list-style-type: none">1. International Conference on Convergence and Hybrid Information Technology (ICCIT'08) Proceedings/Conferences/Seminars: <ol style="list-style-type: none">1. International Journal of Computer Science and Network Security
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and Development of Intelligent Machine Vision System for Agriculture (oil palm)
Project Number	01-01-04-SF0249
Project Leader and Team Members	Leader: Wan Ishak Wan Ismail Member: Azmi Yahya
Field of Research	Engineering Sciences
Project Summary	<p>The main aim of the project was to design and develop a vision system instrumentation which could be used for yield and LAI mapping, yield forecasting, and identifying water stress of the crop (oil palm).</p> <p>The specific objectives of the project were to develop a database for yield information of oil palm and an image processing system for water stress of the oil palm.</p> <p>In addition to that, this study also aimed to design vision system instrumentation for yield forecasting of the crop and developing database and yield mapping for oil palm.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Wan Ishak, W.I. and Awal, M. A. 2007. Leaf Area Index Model for Oil Palm FFB Yield Prediction. <i>Pertanika Journal of Tropical Agricultural Science</i> 30(1): 51 -56. 2. Wan Ishak, W.I. 2007. Development of Automation Technology For The Malaysian Agricultural Sector. <i>Journal of The Ingenieur</i> 33: 46-54. 3. Awal, M.A. and Wan Ishak, W.I. 2008. Measurement of Oil Palm LAI by Manual and LAI-2000 Method. <i>Asian Journal of Scientific Research</i> 1(1): 49–56. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Wan Ishak, W.I., Nur Lailina Makhtar and Mohd. Hudzari Razali. 2009. Camera Vision to Predict Oil Palm FFB Crop Maturity. <i>3rd International Engineering Convention</i>, 11-14 May 2009, Damascus. 2. Mohd. Hudzari Razali and Wan Ishak Wan Ismail. 2007. Development Of Software Automation For Agriculture Vision System. <i>World Engineering Congress (WEC07)</i>, 5–9 Aug 2007, Penang.

	3. Awal, M. A., and Wan Ishak, W.I. 2007. Ground-Based Imaginary System for Determination of LAI in Oil Palm. <i>International Conference on Control, Instrumentation and Mechatronics Engineering</i> , 28-29 May 2007, Johor.
Awards/Certificates	1. Pameran Rekacipta, Penyelidikan dan Inovasi (PRPI) 2007, Universiti Putra Malaysia: Gold Medal)
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor. Office: 03-8946 7533 wiwi@putra.upm.edu.m





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Distributed Embedded System of Multimedia Applications for Ubiquitous Home Entertainment
Project Number	01-01-04-SF0253
Project Leader and Team Members	Leader: Abd. Rahman Ramli Member: Siti Mariam Shafie Musa
Field of Research	Engineering Sciences
Project Summary	A software engine with comprehensive specifications for a distributed embedded server has been developed for a home entertainment system, which can be configured to any kind of appliances - ranging from paging consoles to music streamers which require access through the network. A fully fledged multimedia user interface was developed using NET Framework to interface the paging console and music streamer for home users.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Thinagaran Perumal, Abd Rahman Ramli and Chui Yew Leong. 2007. Remote Triggering Based Embedded Server for Smart Home. <i>Intelligent Systems and Information Technology Symposium (ISITS 2007)</i> , 27-29 Nov 2007, UPM.
Awards/Certificates	1. UPM–PRPI R&D Exhibition 2007: Silver Medal 2. Malaysian Technology Expo 2008: Bronze Medal
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor. Office: 03-8946 7532 arr@eng.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of an Early Warning System for Monitoring Water Catchment
Project Number	01-01-04-SF0262
Project Leader and Team Members	Leader: Zailani Khuzaimah Member: Shattri Mansor
Field of Research	Engineering Sciences
Project Summary	A real time monitoring system has been developed to monitor water turbidity and EC. Under this system, a blinking red light and continuous playback of the warning sound would indicate that a given area is at high risk of a drop in water quality index, while a yellow light indicates a medium risk and blue indicates a low risk location. A real time monitoring system was established in a catchment area using the integrated system of remote sensing data (conductivity and tubidity), geographic information system (GIS), and telemetry.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Zailani Khuzaimah. 2007. Satellite Remote Sensing Technology for Forest Type Classification and Inventory in Gunung Stong Forest Reserve, Kelantan, Malaysia. <i>International Geoscience and Remote Sensing Symposium</i> , 23-27 Jul 2007, Barcelona.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor. Office: 03-8946 7565 zailani@putra.upm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Developing a Connector Based Extraction Model for Relation Extraction in a Knowledge Management System
Project Number	01-01-04-SF0272
Project Leader and Team Members	Leader: Jamaliah Abd Hamid Members: Mohd Hasan Selamat, Rusli Abdullah and Hamidah Ibrahim
Field of Research	Engineering Sciences
Project Summary	A concept relational model and connector based extraction model has been developed in the course of this study. A relationship extraction algorithm based on the connector based extraction model has also been developed.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> Nurul Amelina Nasharuddin, Jamaliah Abdul Hamid, Hamidah Ibrahim, Mohd. Hasan Selamat, Rusli Abdullah, Wan Malini Wan Isa,. 2008. Visualizer for Concept Relations in an Automatic Extraction System. <i>VINE: The Journal of Information And Knowledge Management System</i> 38(2): pp.232 – 240. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> Rusli Abdullah, Jamaliah Abdul Hamid, Mohd Hasan Selamat, Hamidah Ibrahim, Ungku Azmi Ungku Chulan & Nurul Amelina Nasharuddin. 2008. Semantics representation in a sentence with Conceptual Relational Model. <i>Knowledge Management International Conference</i>, 10-12 Jun 2008, Langkawi. Mohd Hasan Selamat, Wan Malini Wan Isa, Jamaliah Abdul Hamid, Hamidah Ibrahim, Rusli Abdullah & Nurul Amelina Nasharuddin. 2008. PTree: A tool to draw tree for Concept Relational Tree (CRT). <i>Knowledge Management International Conference</i>, 10-12 Jun 2008, Langkawi.

	<p>3. Mohd Hasan Selamat, Wan Malini Wan Isa, Jamaliah Abdul Hamid, Hamidah Ibrahim, Rusli Abdullah, Muhamad Taufik Abdullah & Nurul Amelina Nasharuddin. 2008. MetaVis: Metadata Visualization using JUNG'S Library. <i>Knowledge Management International Conference</i>, 10-12 Jun 2008, Langkawi.</p> <p>4. Mohd Hasan Selamat, Wan Malini Wan Isa, Jamaliah Abdul Hamid, Hamidah Ibrahim, Rusli Abdullah, Muhamad Taufik Abdullah & Nurul Amelina Nasharuddin. 2008. Metadata Extraction with Cue Model. <i>Knowledge Management International Conference</i>, 10-12 Jun 2008, Langkawi.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor. Office: 03-8946 8177 aliah@putra.upm.edu.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Ubiquitous Pond Sensing for Proactive and Precision Aquaculture Farming
Project Number	01-01-04-SF0334
Project Leader and Team Members	Leader: Mohd Fadlee A Rasid Members: Raja Syamsul Azmir, Borhanuddin Mohd Ali, Wan Azizun Wan Adnan and Suhaimi Napis
Field of Research	Material Sciences
Project Summary	Wireless biological and chemical sensors were developed for aquaculture farming as laboratory proof-of-concept prototypes. In addition, a system of Artificial Intelligence for Aquaculture Operations was designed and developed.
Additional Information	Linkages: Lembaga Kemajuan Ikan Malaysia (an aquaculture company providing the use of ponds for testbed purposes).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor. Office: 03-8946 6434 fadlee@eng.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Collaborative Knowledge Management in Mobile Computing Environment
Project Number	01-01-04-SF0336
Project Leader and Team Members	Leader: Rusli Abdullah Members: Mohd Hasan Selamat and Azmi Jaafar
Field of Research	Material Sciences
Project Summary	A model of collaborative knowledge management for mobile computing environment has been developed and tested. A prototype system has been produced and is ready to be implemented with minor customisation based on the model that was developed.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Wan Noor Rafida Wan Mayu Othman, Rusli Abdullah, Mohd Hasan Selamat, Azmi Jaafar, and Wan Roslina Wan Ishak. 2007. An XML Based of Mobile Knowledge Management for E-Learning Systems. <i>MySEC'07</i>. 2. Wan Roslina Wan Ishak, Rusli Abdullah, Mohd Hasan Selamat, Azmi Jaafar and Wan Noor Rafida Wan Mayu Othman. 2007. Infrastructured Requirement for Knowledge Management System with Mobile Using Extended Markup Language. <i>MySEC'07</i>.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor.
Phone Number	Office: 03-8946 6518
e-Mail	rusli@fsktm.upm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Knowledge Management System in Bioinformatics with Collaborative Environment
Project Number	01-01-04-SF0338
Project Leader and Team Members	Leader: Rusli Abdullah Members: Hamidah Ibrahim, Rodziah Atan and Suhaimi Napis
Field of Research	Engineering Sciences
Project Summary	This study successfully formulated a model in a Knowledge Management System (KMS) of bioinformatics with a collaborative environment. A prototype has been developed and is ready to be tested and used in the context of bioinformatics.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Rusli Abdullah, Mohd Hasan Selamat, Azmi Jaafar, Suhaimi Napis, Wan Noor Rafida Wan Maya Othman & Wan Roslina Wan Ishak. 2007. Mobile Access to Bio-Plant Databases in a Collaborative Environment. <i>ISITS'07</i>. 2. Rusli Abdullah, Hamidah Ibrahim, Rodziah Atan & Suhaimi Napis. 2007. The Development of Bioinformatics Knowledge Management System with Collaborative Environment. <i>WEC2007</i>, Penang, Malaysia. 3. AUTHORS. 2007. BioKnowledgeWebs: A Knowledge Portal for Bioinformatics Environment. <i>MySEC'07</i>, 3-4 Dis 2007, Selangor.
Additional Information	Linkages: MOA (consultation)
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor. Office: 03-8946 6518 rusli@fsktm.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	An Agent-based Semantic Integrity Subsystem for Managing Mobile Databases Constraints
Project Number	01-01-04-SF0340
Project Leader and Team Members	Leader: Hamidah Ibrahim Members: Ali Mamat, Lilly Suriani Affendey and Md. Nasir Sulaiman
Field of Research	Material Sciences
Project Summary	Comparisons have been performed between approaches proposed by previous researchers for maintaining integrity constraints in centralised, distributed, parallel, and mobile databases. This research was divided into three main modules, firstly localising integrity checking (transforming the initial integrity constraints into local checks), secondly caching relevant data items whereby this module is introduced based on the comments given by one of the BNCOD (British National Conference on Databases) reviewers, and introducing two types of agent to maintain data integrity. The agents are Integrity Checker Agent and Syn-Up Agent. Finally, a prototype agent-based integrity subsystem has been developed. The case study used is based on the TELCO company. The prototype has been tested based on the steps and time taken to perform checking and maintenance of integrity constraints in mobile databases. The results show that the use of agents improved performance.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Hamidah Ibrahim. AbSIS - An Agent-based Semantic Integrity Subsystem for Managing Mobile Databases' Constraints. <i>2007 International Conference on Information and Knowledge Engineering (IKE'07)</i> , 25-28 Jun, Las Vegas.
Awards/Certificates	Universiti Putra Malaysia Excellent Service Award in 2000 and 2001.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor.
Phone Number	Office: 03-8946 6510
e-Mail	hamidah@fsktm.upm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Performance Analysis Software Specific to Badminton
Project Number	01-01-04-SF0472
Project Leader and Team Members	Leader: Tengku Fadilah Tengku Kamalden Members: Saidon Amri and Zaharin Yusoff
Field of Research	Engineering Sciences
Project Summary	This project has successfully collected performance data during badminton matches, to enable the researcher to gather information of all singles and double games played. Critical attributes in a successful game were identified, which confer major tactical and technical advantages in winning a game. Specific badminton performance analysis software was also developed which is coach driven and user-friendly. This allows quick and accurate feedback to be provided to coaches and athletes to allow systematic analysis of the game.
IP Status	Copyright
Additional Information	Linkages: Badminton Academy of Malaysia and National Sports Council of Malaysia are keen to adopt the software as part of the coaching and education tool of their high level coaches.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor.
Phone Number e-Mail	Office: 03-8946 8155 tengku@putra.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design of Low Voltage Pipeline Analog to Digital Converter for Software Defined Radio Receiver
Project Number	01-01-04-SF0490
Project Leader and Team Members	Leader: Sudhanshu Shekhar Jamuar Member: Mohd Adzir Mahdi
Field of Research	Applied Sciences and Technologies
Project Summary	A 10 bit pipeline ADC, consisting of several flash ADCs, a digital correction, adder, encoder, and a current steering digital to analog converter DAC (highest speed DAC), has been designed using 0.18 micron CMOS technology. The maximum sampling rate achieved was 20 MHz. The circuits were designed to use a 1.8 V DC supply. The DNL and INL obtained were ± 0.19 LSB and 0.27 LSB respectively. The power dissipation was 76 mW. The chip area is expected to be around 0.754 mm \times 1.32 mm.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. AUTHORS. 2007. Low-voltage, Low-power Fully Differential Folded Cascode OTA Utilized in S/H Stage of Pipeline ADC. <i>4th International Conference on Cybernetics and Information Technologies, Systems and Applications: CITSA2007</i> , 12-15 Jul 2007, LOCATION.
IP Status	Copyright
Additional Information	Industrial Linkages: Silterra (0.18 micron CMOS Technology used in design of ADC subsystems); MIMOS (Dr. M. Rais Ahmad aided implementation of the Sample and Hold block for the ADC).
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor.
Phone Number e-Mail	Office: 03-8946 6311 ssjamuar@eng.upm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and Development of 3D Biometric Face Recognition System
Project Number	01-01-04-SF0525
Project Leader and Team Members	Leader: Wan Azizun Wan Adnan Members: Abd. Rahman Ramli, Salasiah Hitam, Roslizah Ali and Mohd Fadlee A Rasid
Field of Research	Material Sciences
Project Summary	This project has successfully developed an algorithm for 3D face detection and recognition. The goal of face detection and facial features extraction of a single image is to identify and localise all image regions which contain a face regardless of its three dimensional position, orientation and lighting conditions. Such a problem is challenging because faces are non-rigid and have a high degree of variability in size, shape, colour and texture.
Additional Information	Linkages: SIRIM (collaboration in developing Malaysian Standard for Biometrics, specifically on 3D).
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor.
Phone Number	Office: 03-8946 6442
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Multi User Detection Using Parallel Interference Cancellation Strategy for Combined Code and Space Division Multiple Access Technique
Project Number	01-01-04-SF0588
Project Leader and Team Members	Leader: Sabira Khatun Members: Borhanuddin Mohd Ali and Nor Kamariah Noordin
Field of Research	Physical Sciences
Project Summary	A new multi user detection receiver was developed to enhance the system performance (BER and user capacity) of the combined CDMA/SDMA multiple access technique in a heterogeneous scenario. An analytical model and algorithm was also developed to calculate the BER of the final user. A new threshold constraint has been identified to evaluate the efficiency of adding a PIC canceller on the base station receiver, taking the asymptotic system capacity into consideration.
Additional Information	Linkages: MIMOS (possible commercialization); HKUST, Hongkong (prototyping and possible physibility test)
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor. Office: 03-8946 6435 sabira@eng.upm.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Elastic Image Registration for Land Movement Monitoring for Landslides Detection and Prediction
Project Number	01-01-04-SF0590
Project Leader and Team Members	Leader: Siti Khairunniza Bejo Members: Maria Petrou, Abdul Rashid Mohamed and Shattri Mansor
Field of Research	Applied Sciences and Technologies
Project Summary	The study shows that elastic image registration can detect landslide locations with sub-pixel accuracy by quantifying the size of pixel movements during a registration process. It also shows that it can be used to monitor the landslide areas when sequence of images in the areas are available. The method has a great potential to be used as one of the indicator of the landslide occurrence.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Khairunniza-Bejo, S. and Siti Rusaniza Jusoh. 209. Integrated Change Detection Method for Landslide Monitoring. <i>International Conference on Signal Acquisition and Processing</i> , DATE 2009, Kuala Lumpur.
IP Status	Copyright
Additional Information	Linkages: Imperial College London, UK (project team)
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor. Office: 03-8946 4332 skbejo@eng.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of River Flow Estimator for limpact of Landuse Changes
Project Number	01-01-04-SF0593
Project Leader and Team Members	Leader: Mohd Amin Mohd Soom Members: Helmi Zulhaidi Mohd and Ezrin Md Husin
Field of Research	Engineering Sciences
Project Summary	This study showed improvement in the river flow estimation using radar-derived rainfall data. The effects of landuse changes on river flow were also studied in this project.
Additional Information	Linkages: Malaysian Meteorological Department (provided raw weather radar data); Department of Irrigation and Drainage (provided hydrological data); Department of Agriculture (provided soil maps, soil properties and landuse maps); Pidmams Smartfarming Sdn. Bhd.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor. Office: 03-8946 6427 amin@eng.upm.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Weather Elements Detection and Removal in Robotic Vision
Project Number	01-01-04-SF0600
Project Leader and Team Members	Leader: Mohammad Hamiruce Marhaban Members: Raja Mohd Kamil Raja Ahmad, Samsul Bahari Mohd and Abd. Rahman Ramli
Field of Research	Engineering Sciences
Project Summary	A new algorithm for the detection and removal of weather elements from images have been proposed. The algorithm was developed by manipulating its spatial and temporal information embedded in the image. Comparison with existing techniques show a great improvement in terms of quality as well as computational complexity.
Publications/Products/ Outcomes	Journals: 1. Mohammad H. Marhaban, Amjad N. Jabir and Samsul B. Mohd Noor. 2008. Modified minimum-maximum exclusive mean filter. <i>IEICE Electronics Express</i> . 5(20): 865-869
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM, Serdang, Selangor. Office: 03-8946 6306 hamiruce@eng.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Access and Utilisation of Computers and the Internet Among Older Malaysians
Project Number	01-01-04-SF0649
Project Leader and Team Members	Leader: Sharifah Norazizan Syed Abd Rashid Members: Chai Sen Tyng, Mohd Rizal Hussain, Mohamad Ibrani Shahrinin and Sri Rahayu Ismail
Field of Research	Agricultural Sciences
Project Summary	Factors that affect the acquisition of computer technology, as well as access and utilisation of computers and the internet among older Malaysians were identified. Research was also conducted to determine the level of computer anxiety among older Malaysians and their attitudes towards computers and internet use.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	<i>Penggunaan ICT di Kalangan Usahawan Asas Tani: Satu Pendekatan ke Arah Pembentukan Petani Berpengetahuan (K-Farmer)</i>
Project Number	01-01-04-SF0668
Project Leader and Team Members	Leader: Md. Salleh Hassan Members: Narimah Ismail, Musa Abu Hassan and Mohd Azam Khan Gorima
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of this project were to understand the purpose of using ICT amongst agro based entrepreneurs and their level of usage. The contribution of ICT towards productivity for the entrepreneurs was studied. The project had also identified the obstacles and problems faced and the linkages and support provided for them.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) 43400 UPM, Serdang, Selangor. Office: 03- 8946 8571 mdsalleh@putra.upm.edu.m

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	An Expert System for Selecting an Appropriate Solid Waste Treatment Technology
Project Number	01-01-04-SF0675
Project Leader and Team Members	Leader: Latifah Abd Manaf Member: Hafizan Juahir
Field of Research	Applied Sciences and Technologies
Project Summary	The objective of this project was to develop an expert system of selecting an appropriate solid waste treatment technology. To aid the decision making process, the hierarchy of solid waste management problem was structured into objectives, criteria and alternatives. A prototype system was built and tested to select solid waste management technology.
Publications/Products/Outcomes	Journals: <ol style="list-style-type: none"> 1. Latifah Abd Manaf, Mohd Armi Abu Samah and Nur Iliyana Mohd Zukki. 2009. Municipal solid waste management in Malaysia: Practices and challenges. Waste Management. Vol :29 pp. 2902–2906. 2. Mohd Armi Abu Samah, Latifah Abd Manaf and Nur Iliyana Mohd Zukki. 2010. Application of AHP Model for Evaluation of Solid Waste Treatment Technology. International Journal of Engineering and Techno science. Vol :1(1) 2010,35-40. 3. Mohd Armi Abu Samah, Latifah Abd Manaf, Ahmad Zaharin Aris and Wan Nor Azmin Sulaiman. 2011. Solid waste management: Analytical Hierarchy Process (AHP) Application of selecting treatment technology in Sepang Municipal Council, Malaysia. Vol 06(1), Current World Environment. (ISI Journal)





<p>Publications/Products/ Outcomes</p>	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohd Armi Abu Samah, Latifah Abd Manaf, Wan Nor Azmin Sulaiman and Rafikul Islam. 2007. Application of the Analytical Hierarchy Process (AHP) for selecting an appropriate solid waste treatment technology. The 2nd National Intelligent System and Information Technology Symposium (ISITS '07), 30 – 31 October 2007. Institut Teknologi Maju (ITMA), UPM Serdang. Page 170 – 199. 2. Mohd Armi Abu Samah, Latifah Abd Manaf, Wan Nor Azmin Sulaiman and Rafikul Islam. 2008. Application of the Analytical Hierarchy Process (AHP): assigning weights for selecting an appropriate solid waste treatment technology. <i>International Conference on Environmental Research and Technology (ICERT)</i> 2008. 28-30 May 2008, School of Industrial Technology, USM Penang, pp. 4-13.
<p>Awards/Certificates</p>	<ol style="list-style-type: none"> 1. UPM Exhibition of Invention, Research & Innovation 2007: 1 Silver Medal 2. UPM Exhibition of Invention, Research & Innovation 2008: 1 Bronze Medal 3. Malaysia Technology Expo 2009: 1 Bronze Medal
<p>Contact Institution/Entity Address Phone Number e-Mail</p>	<p>Universiti Putra Malaysia (UPM) 43400 UPM, Serdang, Selangor. Office: 03-8946 6747 latifah@env.upm.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Success Strategies in the Knowledge-based and Innovation. Economy: A Critical Appraisal of National and Organisational Initiatives Using Structural and Complexity Methodologies
Project Number	01-01-04-SF0689
Project Leader and Team Members	Leader: Han Chun Kwong Members: Amirudin Abdul Wahab and Haslina, Bong Kit Siang
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of this project were to develop a critical perspective of the dynamics of knowledge and innovation policy processes and decision making at the national, selected state and organisational levels. The theoretical and practical methodologies for the management of the k-economy organisations and innovations were also successfully developed.
IP Status	Copyright
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) 43400 UPM, Serdang, Selangor. Office: 03- 8948 3118 han@putra.upm.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Update Strategies to Maintain Replica Consistency in Data Grid
Project Number	01-01-04-SF0693
Project Leader and Team Members	Leader: Ali Mamat Members: Mustafa Mat Deris, Hamidah Ibrahim and Subramaniam Shamala
Field of Research	Database Technology
Project Summary	The objectives of this project were to propose efficient update strategies that maintain synchronous replica consistency in data grid. The objective has been achieved whereby the new technique for propagating updates that has been proposed has better performance than the line and radial strategies.
Publications/Products/Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Radi, M., Mamat, A., 2008. Access weight replica consistency protocol for large scale data grid. Journal of Computer Science 4(2), pp. 103-110. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Radi, M., Mamat, A., Deris, M.M., Ibrahim, H., Shamala, S. 2008. 2008. Framework for evaluating update propagation techniques in large scale data grid. 1st International Conference on Distributed Frameworks and Application, DFmA 2008 , art. no. 4784419, pp. 89-95 2. Mamat, A., Radi, M., Deris, M.M., Ibrahim, H. 2008. Performance of update propagation techniques for data grid. Proceedings of the International Conference on Computer and Communication Engineering 2008, ICCCE08: Global Links for Human Development , art. no. 4580623, pp. 332-335. <p>Others:</p> <ol style="list-style-type: none"> 1. Radi, M., Mamat, A., Deris, M.M., Ibrahim, H., Shamala, S. Update Propagation Technique for Data Grid” Lecture Notes in Computer Science, Vol. 4707, pp 115-127, August 2007.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) 43400 UPM, Serdang, Selangor. Office: 03-03-8947 1719 H/p: 019-259 9530 ali@fsktm.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A Musical Search Engine for Malaysian Musical Genres
Project Number	01-01-04-SF0695
Project Leader and Team Members	Leader: Shyamala C.Doraisamy Members: Rahmita Wirza and Fatimah Ahmad
Field of Research	Information Systems
Project Summary	The objectives of this project were to develop a music search engine that addresses the distinct musical structures and modes of Malaysian music which was successfully achieved. It also incorporated Western and Traditional Malay Music
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Az Azrinudin, Shyamala Doraisamy and Fatimah Ahmad (2008). Improving Retrieval Precision by Combining User Context and Data Fusion, <i>Persidangan Kebangsaan Capaian Maklumat & Pengurusan Pengetahuan, CAMP '08</i>, Kuala Lumpur, pp. 197-203. 2. Az Azrinudin Alidin, Shyamala Doraisamy and Fatimah Ahmad (2007). Precision Improvement Using Contextual Retrieval and Data Fusion Approaches, <i>The International Conference on IT in Asia, CITA '07</i> Kuching, Sarawak 3. Shyamala Doraisamy, Shahram Golzari, Nasir Sulaiman, Nur Izura Udzir and Noris Mohd. Norowi (2008). A Comprehensive Study in Benchmarking Feature Selection and Classification Approaches for Traditional Malay Music Genre Classification, <i>The 4th International Conference on Data Mining (DMIN'08)</i>, Las Vegas. 4. Shahram Golzari and Shyamala Doraisamy (2008), Artificial Immune Recognition System with Nonlinear Resource Allocation Method and Application to Traditional Malay Music Genre Classification, <i>7th International Conference on Artificial Immune Systems, (ICARIS) 2008</i>, 10-13 Aug, Phuket, Thailand.
Awards/Certificates	Silver Medal, INPEX 2007, Pittsburgh, USA



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	An Effective Content-based Image Retrieval Through Improved Sub-block Technique
Project Number	01-01-04-SF0696
Project Leader and Team Members	Leader: Fatimah Ahmad Members: Ramlan Mahmod and Rahmita Wirza
Field of Research	Materials Performance and Processes/ Analysis
Project Summary	The objectives of this project were to develop the Improved Sub-block technique that is able to retrieve images with higher degree of accuracy and rank the retrieved images in a correct manner compared to the previous Sub-Block technique, thus contributing to a more effective Content-Based Image Retrieval application. The objectives were successfully achieved.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Mas Rina Mustaffa, Fatimah Ahmad, Rahmita Wirza O.K. Rahmat, and Ramlan Mahmod. 2007. An Integrated Color-Spatial Approach for Content-Based Image Retrieval. The 2007 International Conference on Multimedia Systems and Applications (MSA '07), Las Vegas, USA, 25-28 June 2007.
IP Status	Copyright
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	New Component Model for Composition in Both Design and Deployment Phase
Project Number	01-01-04-SF0704
Project Leader and Team Members	Leader: Mohd Hasan Selamat Member: Rodziah Atan
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of this project were to define a new composition operators or connector to develop a new component model to support composition in both design and deployment phase.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohd Hasan Selamat, Hamid Sanatnama, Abdul Azim Abdul Ghani, Rodziah Atan, (2007), Software Component Models from Technical Perspective, submitted to Malaysian Software Engineering Conference 2007 (MySec07), December 2007 2. Mohd Hasan Selamat, Hamid Sanatnama, Abdul Azim Abdul Ghani, (2007), Software Component Model: Mediator Connectors, Technical Report 2
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A New Block Cipher Algorithm
Project Number	01-01-04-SF0706
Project Leader and Team Members	Leader: Zaiton Muda Members: Sharifah Md Yasin and Ramlan Mahmud
Field of Research	Applied Sciences and Technologies
Project Summary	The objective of this project was to achieve security on a new block cipher algorithm. A new 128-bit symmetric block cipher named HIRA' was produced. HIRA' had passed the entire 16 NIST Statistical Tests which means that HIRA' has a good confusion and diffusion properties in the structure.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Quantum Computing for the System of Qutrits in Small World Networks
Project Number	01-01-04-SF0708
Project Leader and Team Members	Leader: Zuriati Ahmad Zukarnain Member: Hishamuddin Zainuddin
Field of Research	Construction processes
Project Summary	The objectives of this project were to propose the structure for non-classical algorithms and design the various phases of the probabilistic quantum-classical algorithm for classical and quantum parts. The classical Dijkstra's algorithm which implement quantum search on two qubits between two points in a graph and a minimal weight spanning tree in small world networks were modified. The result of implementing and simulating Dijkstra's algorithm as the probabilistic quantum-classical algorithm was presented.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Scalability Solution to Source Specific Multicast for Mobile IPv6
Project Number	01-01-04-SF0710
Project Leader and Team Members	Leader: Mohd Adzir Mahdi Members: Fazirulhisyam Hashim and Mohd Fadlee A Rasid
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of this project were to develop a multicast routing algorithm that built a source specific multicast like architecture, for one-to-many group communication where the multicast source acts as the root and the receivers as leaves of the multicast delivery tree. The suitable channel model for one-to-many type of group communication was found. The multicast deployment problems of conventional model and why the Internet Service Providers (ISPs) prefer to use the unicast type State Scalability solution to Source Specific Multicast were studied. The state scalability problem in intermediate routers was investigated and a new source specific multicast routing algorithm was developed to reduce the multicast forwarding states at intermediate routers of Source Specific Multicast type of group communication in Mobile IPv6 based Networks.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Security Enhancement of Mobile IPv6 Route Optimisation
Project Number	01-01-04-SF0711
Project Leader and Team Members	Leader: Raja Syamsul Azmir Raja Abdullah Members: Mohd Fadlee A Rasid and Nor Kamariah Noordin
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of this project were to develop a new security solution for Mobile IPv6 Route Optimisation. A security testbed was designed and developed. The developed algorithm was tested and implemented.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Abbas Mehdizadeh, S. Khatun, B.M. Ali, R.S.A. Raja Abdullah, G. Kurup, 'Security enhancement of route optimisation in mobile IPv6 networks', <i>International Review on Computers and Software</i> , Vol. 3, No.1 , Jan 2008, pp.1 – 10.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Imaging Through Human Body Using Ultra-Wideband (ITHBU)
Project Number	01-01-04-SF0714
Project Leader and Team Members	Leader: Sabira Khatun Members: Mohamad Khazani Abdul and Borhanuddin Mohd Ali
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to investigate the human body as transmission media and modelled the channel impulse response including the reflection, radiation and scattering properties of UWB pulses that propagate through the human body; to design matrix formulation of multirate filter banks (one-stage and multistage) for 2D and 3D Discrete Wavelet Transform (DWT) and define the fast wavelet transform (FWT) for 2D and 3D matrix in order to evaluate multi-scale digital imaging processing; and to develop intelligent interpreter software that interprets and simulates the DWT and FWT signals to the display unit.
Publications/Products/Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Rashid A. Saeed, S. Khatun, B. M. Ali, M. K. Abdullah (2006), "Jointly PHY/MAC Capacity for Ultra-Wideband Multi-hop Networks", International Network for Scientific Information (INSInet), Journal of Applied Sciences Research (JASR), vol. 2(1), pp. 13-19. (CI: INSInet Publication, Abstracted: DAS Abs <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. S. Rashid, S. Khatun, A. Borhanuddin, M. Khazani, (2007), "Performance Analysis of Ultra- Wideband System in Presence of IEEE802.11a and UMTS/ WCDMA Frequency Bands ," In the proceedings of International Conference on Information and Communication Technology (ICICT 2007), March 7-9, Dhaka, Bangladesh





	2. Rashid A. Saeed, Sabira Khatun, Borhanuddin Mohd. Ali, and Mohamad Khazani Abdullah, (2006), "Performance of Ultra-Wideband Time-of-Arrival Estimation Enhanced With Synchronisation Scheme," Transactions on Electrical Eng., Electronics, and Communications (ECTI-EEC), vol. 4, No.1, pp. 78-84.
IP Status	Patent Pending: PI 20072065 : An Ultra Wideband Pulse Shaper In Band Interference Mitigation
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Managing and Mining Audio with/without Texts
Project Number	01-01-04-SF0716
Project Leader and Team Members	Leader: Shyamala C.Doraisamy Members: Abdul Azim Abdul Ghani and Norwati Mustapha
Field of Research	Computer Science
Project Summary	The objective of this project was to develop an engine for managing and mining multimedia audio elements together with the methodologies, techniques and software tools for audio mining taking into account all general categories of sound. An Audio Management system that addresses the mining of news and music has been created. Hence, the project has successfully achieved the objectives.
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Shahram Golzari , Shyamala Doraisamy, Md. Nasir b Sulaiman and Nur Izura Udzir “Notes on Using Nonlinear Resource Allocation Methods in AIRS Classifier”, The 4th International Conference on Data Mining (DMIN’08), Las Vegas, USA, pgs 91-95. 2. Shahram Golzari , Shyamala Doraisamy , Md Nasir B Sulaiman and Nur Izura Udzir,” Effect of Nonlinear Resource Allocation On Airs Classifier Accuracy “, Knowledge International Management Conference, KMICe 2008, Langkawi, Malaysia, pgs 596-600.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A Novel Coding and Modulation Technique for OFDM System Performance Enhancement
Project Number	01-01-04-SF0729
Project Leader and Team Members	Leader: Nor Kamariah Noordin Members: Sabira Khatun and Borhanuddin Mohd Ali
Field of Research	Fabricated Metal Products
Project Summary	The objectives of this project were to design and develop new mapping/modulation method that would reduced the peak to average power ratio in OFDM and designing a new algorithm as a forward error correction codes in OFDM for an improved error correction with reasonable complexity. All objectives for this project have been successfully achieved.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Wisam F. Al-Azzo, Borhanuddin Mohd. Ali, Sabira Khatun, Syed M. Bilfagih and Nor K. Noordin, "Addition of Gaussian Random Signals for Peak to Average Power Ratio Reduction in OFDM Systems," <i>International Conference on Computer and Communication Engineering (ICCCCE'08)</i>, Kuala-Lumpur, Malaysia, pp. 134 2. Wisam F. Al-Azzo, Borhanuddin Mohd. Ali, Sabira Khatun, Syed M. Bilfagih and Nor K. Noordin, "Insertion of Gaussian Dummy Sub-Carriers for PAPR Reduction in OFDM Systems," <i>5th IASTED International Conference on Communication Systems and Networks (AsiaCSN 2008)</i>, Langkawi, Malaysia, pp.130 - 133
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) 43400 UPM, Serdang, Selangor. Office: 03-89466 4272 H/p: 0133511230 nknordin@eng.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Land Use Cumulative Index (LUCI) for River Water Quality Management
Project Number	01-01-04-SF0733
Project Leader and Team Members	Leader: Mohd Kamil Yusoff Members: Mohammad Firuz Ramli, Hasfalina and Hafizan Juahir
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of this project were to develop a water quality model for prediction of water quality parameter upon development along the riverbanks that can produce a locally-developed, commercially competitive and user-friendly tools or software for river management and also minimise the pollution impact on the river environment.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. H. Juahir, Mohd Kamil Yusoff, S. Mohd Zain, M.F. Ramli, O. Oksel, Z. Mat Perak and A.R. Haron. (2008). The prediction of suspended solids of river in forested catchment using artificial neural network. <i>The Malaysian Forester</i> 71: 201-210. 2. Mazlin Mokhtar, Ahmad Zaharin Aris, Mohd Harun Abdullah, Mohd Kamil Yusoff, Md. Pauzi Abdullah, Abd. Rahim Idris and Raja Ibrahim Raja Uzir, (2008). A Pristine Environment And Water Quality In Perspective – Maliau Basin, Borneo's Mysterious World. <i>Water and Environment Journal</i> (ISSN: 1018-4619) <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohd Kamil Yusoff, Mohd Zamani Ismail, Shamsuddin Johan, Nur Aina Khairuddin and Norhafiza Mat Daud. (2007). River water quality assessment of Bukit Bauk's urban forest using Harkin's Index. <i>Seminar on Scientific Expedition of Bukit Bauk</i>. 6-7 Aug, Awana Kijal, Terengganu.



	<p>2. Mohd Kamil Yusoff, H. Juahir, S. Mohd Zain, M. Mokhtar and M.E. Toriman. (2007). Chemometrics approach in the sustainable utilisation of water resources in Langat River Basin, Selangor. <i>International Conference on Mathematical Biology 2007</i>. 4-6 Sep, Bangi, Selangor..</p> <p>3. Mohd Kamil Yusoff, O. Oksel, N.H. Mihamzah, S. Johan, M.Z. Ismail, A.H. Mat Yusoff, N.A. Khairuddin and N. Mat Daud. (2007). River water quality assessment of Bintang Hijau Forest Reserve, Perak, Malaysia. <i>Seminar on Scientific Expedition in Bintang Hijau, Perak</i>. 10-11 Dis, Damai Resort, Lumut, Perak.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Innovating Automatic Essay Scoring (AES) in Malaysian Public Examinations
Project Number	01-01-04-SF0744
Project Leader and Team Members	Leader: Tan Bee Hoon Members: Mardziah Hayati Abdullah, Zaitul Azma Zainon, Ooi Bee Lee, Chan Swee Heng and Wong Bee Eng
Field of Research	Information, Computer and Communication Technology Services
Project Summary	The objectives of this project were to assess the reliability of the AES Intelligent System in scoring the writing component of four public examination papers, i.e. MUET English, SPM English, SPM Malay and SPM Chinese; to determine the user-friendliness of the AES System in uploading writing prompts as well as training the engine for auto-scoring; to compare the effectiveness of the AES System in scoring writing in three different languages (SPM English, Malay and Mandarin); and to investigate the readiness of the Malaysian education ecology for AES through pilot testing the system in five writing tests.
Publications/Products/Outcomes	<p>Books:</p> <ol style="list-style-type: none"> 1. Tan, B.H., Mardziah Hayati Abdullah, Zaitul Akma, and Ooi, B. L. 2011. Evaluating the Reliability of an Automated Essay Scoring Systems in Assessing Multilingual Essays. In: Kärchner-Ober, R. (Ed.). <i>Multilingual Thumbprint: Multilingualism in South-East Asia</i> (pp. 106-120). Germany, Schneider-Verlag Hohengehren. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Tan, B.H. and Lee, W.J. 2010. Assessing the Assessor: Reliability Factors of an Automated Multilingual Essay Scoring System. <i>International Association for Educational Assessment 36th Annual Conference</i>, 22-27 Aug 2010, Bangkok. 2. Tan, B.H. and Lee, W.J. 2009. Automated Essay Scoring: Computer Judgement versus Human Judgement. <i>14th International Conference on Thinking (ICOT)</i>, 22-26 Jun 2009, Kuala Lumpur. 3. Tan, B.H. 2009. Assessing the Assessor: How Much Can We Trust Machine Marking? <i>International Conference of Academic Disciplines</i>, 16-19 Feb 2009, Orlando.



Additional Information	Linkages: Vantage Learning, USA; Summit Intellimetric; Majlis Peperiksaan Malaysia; Kementerian Pelajaran Malaysia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Improved Forest Mapping and Classification of Tropical Tree Species Using Remote Sensing and GIS Technology
Project Number	01-01-04-SF0751
Project Leader and Team Members	Leader: Mohd Hasmadi Ismail Members: Kamaruzaman Jusoff and Pakhriazad Hassan Zaki
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of this project were to test the applicability of hyperspectral remote sensing in determining tree species in tropical forest, to classify and map current forest types in the Permanent Forest Reserve (PFR) using real time data, and to develop a spatial database system for producing a tree inventory for forest management and development.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mohd Hasmadi Ismail, Pakhriazad, H.Z., and Kamaruzaman Jusoff. 2008. Mangrove Canopy Density of Sungai Merbok, Kedah from Landsat TM. <i>The Malaysian Forester, Malaysia</i> 71(1):57- 63. 2. Mohd Hasmadi, I., Kamaruzaman, J. and Nurul Hidayah, M.A. 2010. Analysis of Crown Spectral Characteristic and Tree Species Mapping of Tropical Forest using Hyperspectral Imaging. <i>Journal of Tropical Forest Science</i> 22(1):67-73. 3. Kamaruzaman Jusoff, Mohd Hasmadi Ismail and Nurul Hidayah Mohd Ali. 2009. Spectral Separability of Tropical Forest Tree Species using Airborne Hyperspectral Imager. <i>Journal of Environmental Science & Engineering</i> 3(1):37-41. 4. Mohd Hasmadi Ismail, Kamaruzaman Jusoff, Alias Mohd Sood, Pakhriazad Hassan Zaki and Manohar Mariapan. 2009. A Review on Application of Hyperspectral Imaging to Forest Resources in Malaysia. <i>Journal of Sustainability Science and Management</i> 4(1): 75-84.



	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nurul Hidayah, Mohd. Hasmadi Ismail and Kamaruzaman Jusoff. 2007. Hutan Pantai Kuala Kedah-Analysis Menggunakan Penderiaan Jauh untuk Pengurusan Pemuliharaan (In Malay). <i>Seminar Hutan Pesisir Pantai Negara: Kesedaran dan Tindakan Bersama</i>, 5-7 Nov 2007, Paka.
Additional Information	<p>Linkages: Komplek Perkayuan Kelantan (assistance in field work).</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Software Project Sizing Metrics for Object Oriented Environment
Project Number	01-01-04-SF0845
Project Leader and Team Members	Leader: Mohd Hasan Selamat Members: Koh Tieng Wei
Field of Research	Engineering Sciences
Project Summary	The objectives of this project were to formulate a new metrics and model for software sizing in an object-oriented environment, and to develop and implement the software project costing management application in the software development industry. Its accuracy has been assessed and measured.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Koh, T.W., Selamat, M.H. and Ghani, A.A.A. 2008. Exponential Effort Estimation Model Using Unadjusted Function Points. <i>Information Technology Journal</i> 7(6): 830-839. 2. Koh, T.W., Selamat, M.H., Ghani, A.A.A. and Abdullah, R. 2008. Review of Complexity Metrics for Objectoriented Software Products. <i>International Journal of Computer Science and Network Security</i> 8(11): 314-320. 3. Zaid, A., Selamat, M.H., Ghani, A.A.A., Atan, R. and Koh, T.W. 2008. Issues in Software Cost Estimation. <i>International Journal of Computer Science and Network Security</i> 8(11): 350-356.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Fuzzy Event Clustering for Video Closed-caption
Project Number	01-01-04-SF0846
Project Leader and Team Members	Leader: Lilly Suriani Affendey Members: Ali Mamat
Field of Research	Material Sciences
Project Summary	Manual video annotation has been a popular way of describing video contents. However, the task was very tedious and time-consuming. The objectives of this project were to find a more efficient technique in video annotation. Focused on using video closed-caption, this project extracts the events using event detection technique and then clusters them for indexing. Evaluation includes the accuracy of the event extraction, clustering and retrieval of the query results.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ali Reza Mansouri, Lilly Suriani Affendey and Ali Mamat. 2008. Named Entity Recognition. <i>International Journal of Computer Science and Network Security</i> 8(2): 339-343. 2. Ali Reza Mansouri, Lilly Suriani Affendey and Ali Mamat. 2008. Named Entity Recognition Using a New Fuzzy Support Vector Machine. <i>International Journal of Computer Science and Network Security</i> 8(2): 320-325. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Lilly Suriani Affendey, Ali Mamat, Hamidah Ibrahim and Fatimah Ahmad. 2008. Hybrid Query for Video Database System. <i>Knowledge Management International Conference 2008 (KMICe08)</i>, 10-12 Jun 2008, Langkawi. 2. Alireza Mansouri, Ali Mamat, and Lilly Suriani Affendey. 2007. Named Entity Recognition and Extraction using Machine Learning Methods. <i>3rd Malaysian Software Engineering Conference, MySEC'07</i>, 3-4 Dec 2007, Selangor.

	<p>3. Ali Reza Mansouri, Lilly Suriani Affendey, Ali Mamat and Rabiah Abdul Kadir. 2008. Semantically Factoid Question Answering Using Fuzzy SVM Named Entity Recognition. <i>International Symposium on Information Technology 2008 (ITSIM'08)</i>, 26-29 Aug 2008, Kuala Lumpur.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Quality Determination for Web-based Applications
Project Number	01-01-04-SF0848
Project Leader and Team Members	Leader: Abdul Azim Abdul Ghani Members: Hazura Zulzalil
Field of Research	Chemical Sciences
Project Summary	<p>The objectives of this project were to develop a Web-Based Applications (WBA) quality model which consists of quality criterion, indicators, scales and preferred values, to establish an aggregation technique in order to find a unified score for each criterion and overall evaluation, and eventually to validate the effectiveness of the technique.</p> <p>The WBA quality model was defined in a hierarchical structure of quality criteria and the associated measures. Furthermore, the framework was developed to provide an overview and summary of the aggregation process. The 2-additive Choquet Integral was used to handle the interaction that exists between the quality criteria. Lastly, the case study of three types of WBA (e-commerce, museum and university website) was conducted to validate the aggregation approach. Overall, the objectives of the project were successfully achieved.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Zulzalil, H. Zain, Z.M. Ghani, A. Selamat, M.H. Mahmod, R. 2008. Relationships Analysis between Quality Factors for Web Application. <i>International Symposium on Information Technology</i>, 26-29 Aug 2008, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Refining Garbage Collection in Open Distributed Systems
Project Number	01-01-04-SF0850
Project Leader and Team Members	Leader: Nur Izura Udzir Members: Zaiton Muda and Md. Nasir Sulaiman
Field of Research	Information and Communication Technology (ICT)
Project Summary	Resource management is an important aspect in open distributed systems as these systems are persistent and ubiquitous. One resource that needs to be managed is memory, which is limited but can be reclaimed through garbage collection. Although garbage collection has been proposed for the standard Linda coordination model with multiple tuple-spaces in a system named Ligia, their implementation however, was restricted to garbage collection of tuple-spaces: ability to garbage collect or keep the whole tuple space, but not selectively garbage collect certain tuples within the tuple-space. This research aims to introduce a more refined garbage collection mechanism in the Linda-like model, i.e. garbage collection of selected tuples in tuple-spaces, using a capability-based mechanism.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Nur Izura Udzir, Hamidah Ibrahim and Sileshi Demesie. 2010. Finer Garbage Collection in LINDACAP. <i>International Journal of Information Technology and Web Engineering (IJITWE)</i> 5(3):1-26. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nur Izura Udzir, Sileshi Demesie and Hamidah Ibrahim. 2009. Garbage Collection in LINDACAP. <i>11th International Conference on Information Integration and Web-based Applications & Services (iiWAS2009)</i>, 14-16 Dec 2009, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and Development of an Integrated Tunable Laser and Amplifier
Project Number	01-01-04-SF0870
Project Leader and Team Members	Leader: Ahmad Fauzi Abas Members: Mohd Hanif Yaacob, Makhfudzah Mokhtar and Mohamad Khazani Abdul
Field of Research	Engineering Sciences
Project Summary	The objectives of this project were to develop an integrated fibre laser and amplifier for fibre optic communication systems. The objectives have been fulfilled as the development of high power tuneable fibre laser has been completed.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) 43400 UPM, Serdang, Selangor. Office: 03-8946 4351 H/p: 019-380 1123 fauzi@eng.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Fast and Compact Polarisation Control System for High Speed Advanced Modulation Formats Fiber Optics Transmission Systems
Project Number	01-01-04-SF0872
Project Leader and Team Members	Leader: Ahmad Fauzi Abas Members: Khairulmizam Samsudin
Field of Research	Engineering Sciences
Project Summary	The objective of this project was to develop high speed polarisation control for a high speed optical fibre telecommunication system. The objective has been successfully achieved by the development of low-cost polarisation control system.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) 43400 UPM, Serdang, Selangor. Office: 03-8946 4351 H/p: 019-380 1123 fauzi@eng.upm.edu.my

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Web Usage Mining Techniques for Improving Web Document Prediction
Project Number	01-01-04-SF0897
Project Leader and Team Members	Leader: Norwati Mustapha Members: Md. Nasir Sulaiman and Masrah Azrifah Azmi Murad
Field of Research	Information and Communication Technology (ICT)
Project Summary	<p>The objectives of this project were to develop a Web based recommendation system to predict future user movements. A system named WebPUM has been developed, which comprises two main phases: the offline phase and the online phase. The approach in the offline phase was based on the new graph partitioning algorithm to model user navigation patterns for the navigation pattern mining. For the online phase, the longest common subsequence algorithm was used as a new approach to a recommendation system for classifying current user activities to predict users' next movements. The system achieves an accuracy of up to 56%, which is about 5% higher than the previous method, meaning that the new recommendation system can predict more relevant web pages for future user movements than the previous method and it is able to help users save considerable amounts of time in their internet activities.</p>
Publications/Products/ Outcomes	<p>Books:</p> <ol style="list-style-type: none"> 1. Mehrdad Jalali, Norwati Mustapha, Nasir Sulaiman and Ali Mamat. 2009. OPWUMP: An Architecture for Online Predicting in WUM-Based Personalization System, In: Hamid Sarbazi-Azad (Eds.). <i>Advances in Computer Science and Engineering</i>, Vol. 6, Part 2. (pp. 838-841). Heidelberg, Springer Berlin. <p>Journals:</p> <ol style="list-style-type: none"> 1. Mehrdad Jalali, Norwati Mustapha, Ali Mamat and Md. Nasir B. Sulaiman. 2010. WebPUM: A Web-based Recommendation System to Predict User Future Movements. <i>Journal of Expert Systems with Application</i> 37: 6201-6212.



<p>Publications/Products/ Outcomes</p>	<ol style="list-style-type: none"> Mehrdad Jalali, Norwati Mustapha, Md Nasir Sulaiman and Ali Mamat. 2009. A Recommender System Approach for Classifying User Navigation Patterns using Longest Common Subsequence Algorithm. <i>American Journal of Scientific Research</i> 4: 17-27. Mehrdad Jalali, Norwati Mustapha, Nasir Sulaiman and Ali Mamat. 2008. Web User Navigation Patterns Mining Approach based on Graph Partitioning Algorithm. <i>Journal of Theoretical and Applied Information Technology</i> 4(11): 1125-1130. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> Mehrdad Jalali, Norwati Mustapha, Nasir Sulaiman and Ali Mamat. 2009. A Recommendation System for Online Personalization in the WUM Applications. <i>International Conference on Internet and Multimedia Technologies, The World Congress on Engineering and Computer Science 2009 (WCECS2009)</i>, 20-22 Oct 2009, San Francisco. Mehrdad Jalali, Norwati Mustapha, Nasir Sulaiman and Ali Mamat. 2009. Towards Online Personalized Foreseeing System by New Approach through Web Usage Mining. <i>International Conference on Data Mining (DMIN'09)</i>, 13-16 Jul 2009, Las Vegas.
<p>Awards/Certificates</p>	<ol style="list-style-type: none"> International Conference on Internet and Multimedia Technologies 2009: Certificate of Merit
<p>Contact Institution/Entity Address Phone Number e-Mail</p>	<p>Universiti Putra Malaysia (UPM) 43400 UPM, Serdang, Selangor. Office: 03-89471703 H/p: 019-323 6129 norwati@fsktm.upm.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Hybrid Remotely-pumped EDFA/Raman Amplifier for L-band Transmission Window
Project Number	01-01-04-SF0908
Project Leader and Team Members	Leader: Mohd Adzir Mahdi Members: Ahmed Wathik Naji, Salasiah Hitam and Syed Javaid Iqbal
Field of Research	Engineering Sciences
Project Summary	The objectives of this project were to design and develop remotely-pumped Erbium-doped fibre amplifier (EDFA) for L-band, Raman fibre for L-band, and a new pumping scheme for L-band transmission systems with hybrid remotely-pumped EDFA/Raman amplifier.
Publications/Products/Outcomes	Journals: 1. Abu Bakar, M.H., Mahdi, M.A., Mokhtar, M., Abas, A.F. and Md. Yusoff, N. 2009. Investigation on the effect of stimulated Raman scattering in remotely-pumped L-band Erbium-doped fiber amplifier. <i>Laser Physics Letters</i> 6(8) 602-606.
Awards/Certificates	Recognition as a Center of Excellence
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) 43400 UPM, Serdang, Selangor. Office: 03-8946 6438 H/p: 012-232 3614 mdadzir@eng.upm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Vertical Fast Handoff Technique in MIPv6-enabled Heterogeneous Networks
Project Number	01-01-04-SF0926
Project Leader and Team Members	Leader: Sabira Khatun Members: Mohd Fadlee A Rasid, Raja Syamsul Azmir, Fazirulhisyam Hashim and Nor Kamariah Noordin
Field of Research	Applied Sciences and Technologies
Project Summary	The project objectives were to develop algorithms for the introduced technique based on route anticipation and motion detection, to test the performance of the developed algorithm by applying it in a heterogeneous network comprising UMTS, GPRS and WLAN sub-networks using simulation tools, and to implement the system in a testbed for further measurements.
Additional Information	Linkages: MIMOS (possible commercialisation); NAV6 (possible implementation as Malaysia is going to be IPv6 enabled within near future).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) 43400 UPM, Serdang, Selangor. Office: 03-8946 6435 H/p: 016-976 5026 sabira@eng.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Nonlinear Optical Parametric Amplification in Raman Oscillator
Project Number	01-01-04-SF0935
Project Leader and Team Members	Leader: Mohd Adzir Mahdi Members: Faisal Rafiq Mahamd Adika, Mohammed Haydar Al-Mansoori and Ahmad Fauzi Abas
Field of Research	Engineering Sciences
Project Summary	The project objectives were to design and develop a nonlinear optical parametric amplifier utilizing a Raman oscillator and to investigate the characteristics of the amplifier.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Yeo, K.S., Mahdi, M.A. and Md. Yusoff, N. 2009. All-optical wavelength-tunable Raman fiber laser in ring cavity. <i>Topical Meeting on Lasers and Optoelectronics</i> , 8-10 Feb, Langkawi.
Awards/Certificates	Recognition as a Center of Excellence
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) 43400 UPM, Serdang, Selangor. Office: 03-8946 6438 H/p: 012-232 3614 mdadzir@eng.upm.edu.my



TOWARDS AN INNOVATIVE NATION :
A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Virtual Reality and Artificial Intelligence-based Pedagogical Agent in Constructivist e-learning System
Project Number	01-01-05-SF0012
Project Leader and Team Members	Leader: Hanafi Atan Members: Wong Su Luan and Baharuddin Aris
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project was about developing a 3-D personalised pedagogical agent with relevant social cues in the e-learning system using virtual reality (VR) technology and constructivist e-learning system incorporating the main features of constructivist learning principles, such as real word problems, a repository for learning objects, collaborative tools and concept mapping. The VR 3-D agent with automated dialogue conversational/feedbacks utilising artificial intelligence (AI) will then be incorporated. Furthermore, a VR-AI based pedagogical agent will be integrated with the constructivist e-learning system and finally, assessment and evaluation will be conducted in terms of learning performances, especially in improvements in high order thinking skills, the engagement of learners and their enjoyment.
Additional Information	Linkages: GETALP-LIG; Université Pierre Mendès France (Grenoble II); UNIMAS.
Contact Institution/Entity Addresss	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-653 3265 H/p: 012-404 0056
e-Mail	ahanafi@usm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of a Clinical Linguistic Decision Support System for the Differential Diagnosis of Child Language Disorders Using Artificial Neural Network (ANNs) and Digital Brain Atlas
Project Number	01-01-05-SF0015
Project Leader and Team Members	Leader: Rozaida Abdul Rauf Members: Tan Hock Thye, Shukri Sulaiman, Ahamad Tajudin Khader and Ruslan Rainis
Field of Research	Medical and Health Sciences
Project Summary	The objectives of this project were to design a clinical linguistic decision-making support system (knowledge-based system and digital image tool) that provides doctors with a relevant differential diagnosis of child language disorders when they select clinical features and images, to enhance the diagnostic skills of doctors and to serve as an educational aid in order to increase the understanding of communication disorders in children. This should improve the methodologies for diagnosing and treating them so that it can be ensured that all possible conditions relating to the paediatric patient's initial symptoms have been considered before reaching a final diagnosis. This in turn will help reduce the risk of paediatric patients receiving either incorrect or delayed treatment as a result of possible misdiagnosis.
Additional Information	Linkages: The School of Psychology and Clinical Language Sciences, University of Reading.
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-658 1557 H/p: 016-389 4629
e-Mail	rozaida@usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Voice-enable Automatic Question Answering System
Project Number	01-01-05-SF0019
Project Leader and Team Members	Leader: Ranaivo Balisoamanandray Members: Zaharin Yusoff, Tang Enya Kong and Cheah Yu-N
Field of Research	Humanities
Project Summary	The objectives of this project were to define ontology that facilitates the understanding of the question and document contents that will be used in the development of a matching mechanism based on structural rules and Wh analysis. This project will also develop a consistency checking mechanism, an assembly module to combine document fragments into an answer and a Voice-enable Question Answering system.
Contact Institution/Entity Addresss	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-658 1557
e-Mail	ranaivo@cs.usm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	An e-mail-based Knowledge Acquisition Tool for Health Care Knowledge Management
Project Number	01-01-05-SF0023
Project Leader and Team Members	Leader: Cheah Yu-N Members: Tang Enya Kong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>E-mail discussion groups are a popular means of forwarding inquiries and problems. But shortcomings exist, such as the need to maintain an internet connection, discussion threads are extensive (difficult to navigate), the list of recipients is extensive (difficult to manage), their use is mainly as archives (hardly reused), and the quality of messages is unknown and unverified.</p> <p>This KM-Mail focuses on knowledge acquisition, based on expertise and experience expressed via e-mails, interface improvement (as it incorporate forum and discussion-type interaction), and knowledge evaluation (as it allows experts and readers to evaluate and appreciate the e-mail content).</p>
Publications/Products/Outcomes	Products: 1. KM-Mail
Contact Institution/Entity Address Phone Number e-Mail	Universiti Sains Malaysia (USM) School of Computer Sciences Universiti Sains Malaysia 11800 USM, Pulau Pinang. Office: 04-653 3830 H/p: 017-590 0978 yncheah@cs.usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Example-based Machine Translation (EBMT) Integrated Development Environment (IDE)
Project Number	01-01-05-SF0025
Project Leader and Team Members	Leader: Cheah Yu-N Members: Zaharin Yusoff and Chuah Choy Kim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to create an Integrated Development Environment (IDE) for developing or generating a domain-specific Example-Based Machine Translation (EBMT) system, to create an IDE for preparing and fine-tuning a domain-specific Bilingual Knowledge Bank (BKB), and to develop a more efficient way of indexing the BKB.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Lim Huan Ngee, Ye Hong Hoe, Lim Chai Kim and Tang Enya Kong. 2007. Adapting an Existing Example-Based Machine Translation (EBMT) System for New Language Pairs based on an Optimised Bilingual Knowledge Bank (BKB). <i>11th International Conference on Translation</i> , Nov 2007, Kuala Lumpur.
Additional Information	Linkages: UNIMAS (collaboration).
Contact Institution/Entity Addresss	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number e-Mail	Office: 04-653 3830 yncheah@cs.usm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development and Application of an Intelligent Multimodal System Integrated with an Information Repository for Support of Medical Decision Making
Project Number	01-01-05-SF0027
Project Leader and Team Members	Leader: Lim Chee Peng Members: Tan Kay Sin, Kamal Zuhairi Zamli and Zalina Abdul Aziz
Field of Research	Medical and Health Sciences
Project Summary	<p>This project focused on the design and development of an intelligent Decision Support System (iDSS) based on Artificial Intelligence (AI) methodologies and its integration with an electronic Medical Information Repository (MIR) for medical prognosis and diagnosis. State-of-the-art technologies in AI (particularly soft computing methodologies and medical informatics) and statistical methods were synergised into a unified framework to assist clinicians in making accurate and timely medical decisions.</p> <p>An application to early prognosis and diagnosis of acute stroke patients has been conducted. The main output of the project include an iDSS for early prognosis and diagnosis of diseases based on medical data that useful for junior and inexperienced clinicians, an MIR containing anonymous patient records including physical symptoms, family history, and biochemical test results that is useful for medical practitioners and researchers, and a collection of disease statistics and facts that useful for healthcare administrators and policy makers.</p>
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Chee Peng Lim, Shir Li Wang, Kay Sin Tan, Jose C. Navarro and Lakhmi C. Jain. 2010. Use of the circle segments visualisation technique for neural network feature selection and analysis. <i>Neurocomputing</i> 73(4-6): 613-621.

	2. Anas Quteishat, Chee Peng Lim and Kay Sin Tan. 2010. A Modified Fuzzy Min-Max Neural Network With a Genetic-Algorithm-Based Rule Extractor for Pattern Classification. IEEE Transactions on Systems, Man, and Cybernetics, Part A 40(3): 641-650.
Additional Information	Linkages: University of South Australia; Universiti Malaya Medical Centre (UMMC).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang. Office: 04-599 6033 cplim@eng.usm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Information Integration and Representation for Business Intelligence
Project Number	01-01-05-SF0033
Project Leader and Team Members	Leader: Vincent Khoo Kay Teong Members: Bahari Belaton and Chan Huah Yong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Overall, the project aimed to analyse possible mechanisms to structure knowledge profiles and associate them with some 2D/3D knowledge maps. This project has leveraged the Cloud Computing technology and Software Agent-based technologies to derive a suite of marketing analytic for organisational decision making and prediction support. The outcomes include support tools for customer segmentation, visualisation, decision making, and prediction.
Awards/Certificates	Recognition as a Center of Excellence National Award
IP Status	Copyright
Additional Information	Linkages: We have been working through an agency in Penang to further collaborate with SME Corp and its 1,000+ SMEs. Commercialisation: In progress. Spin-off: MapGen Sdn. Bhd.
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-658 1557 H/P: 012-459 3933
e-Mail	vkhoos@cs.usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Improving Performance of Unidirectional Link (UDL) Mesh Network via Header Compression Scheme
Project Number	01-01-05-SF0036
Project Leader and Team Members	Leader: Wan Tat Chee Members: Sureswaran Ramadass
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to develop a UDL satellite feed and receiver Gateway which can be used to transmit IP packets through satellite links with less overhead compared with existing technologies. The gateway uses Digital Video Broadcasting via Satellite (DVB-S) for data transmission which can be adapted to any other DVB based standards. The gateway has Link Layer Tunnelling Mechanism (LLTM) and UniDirectional Link Mesh (UDL Mesh) configuration modes. In addition, a new RObust Header Compression (ROHC) technique has been implemented for satellite communication links to reduce the redundant headers carried by IP packets. It supports Link Layer Tunnelling Mechanism (LLTM) with broadcast emulation, UDL mesh network over satellite links and Robust Header Compression (ROHC) over Unidirectional Lightweight Encapsulation. It is also cost effective solution by using commodity hardware.
Publications/Products/ Outcomes	Products: 1. Unidirectional Link (UDL) Feed and Receiver Gateway
Awards/Certificates	Malaysia Technology Exhibition (MTE) 2009: Silver medal
IP Status	Copyright
Additional Information	International Linkages: Shonan Fujisawa Campus (SFC) of Keio University.
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) School of Computer Sciences / NAV6, Universiti Sains Malaysia, 11800 USM, Pulau Pinang,
Phone Number e-Mail	Office: 04- 653 4633 tcwan@cs.usm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Parallel Stream Cipher Cryptosystem Based on NP-Hard Problem (PSCC)
Project Number	01-01-05-SF0037
Project Leader and Team Members	Leader: Azman Samsudin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project aimed to build a stream cipher platform that can process data in parallel and be used especially in Grid computing. A new highly secure stream cipher, based on mathematically hard problems, was developed. The parallel stream cipher platform has a flexible pluggable encryptor or decryptor algorithm.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Monther Rateb Enayah and Azman Samsudin. 2007. Securing Telecommunication based on Speaker Voice as the Public Key. <i>International Journal of Computer Science and Network Security</i> 7(3): 201-209. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Uma S. Kanniah and Azman Samsudin. 2007. Multi-threading Elliptic Curve Cryptosystems. <i>IEEE International Conference on Telecommunications and Malaysia International Conference on Communications</i>, 14-17 May 2007, Penang. 2. Bahareh Pahlevanzadeh and Azman Samsudin. 2007. Distributed Hierarchical IDS for MANET over AODV+. <i>IEEE International Conference on Telecommunications and Malaysia International Conference on Communications</i>, 14-17 May 2007, Penang.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang. Office: 04-653 3635 azman@cs.usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A Hybrid (neural network and fuzzy logic) Approach for a Better Intrusion Detection System (IDS) Architecture to Counter Intrusion, Espionage, and Cyber-warfare
Project Number	01-01-05-SF0041
Project Leader and Team Members	Leader: Aman Jantan Members: Bahari Belaton
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Attempts was carried out to produce a hybrid system-a combination of neural network and fuzzy logic as a new paradigm for the inference engine of the AI-ed IDS sensor, which is able to secure and support a computer or network system automatically at anytime. It is enhanced to deal with cyber-warfare and espionage affairs by scanning encrypted files and reporting who and how the attack occurs.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Mahmoud Jazzar and Aman Jantan. 2006. NFDE: Neuro-Fuzzy Decision Engine Components for Intrusion Detection. <i>International Conference on Network and Mobile Computing – IIC20</i> , Aug 2006, INTI College, Malaysia.
Additional Information	Linkages: CyberSecurity Malaysia
Contact Institution/Entity Addresss	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-653 3888 H/p: 019-423 2777
e-Mail	aman@cs.usm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Design and Development of a Web-based Open Source Geographical Information System (GIS) as Teaching Tools in Promoting Spatial Thinking/Skills in Secondary School Education
Project Number	01-01-05-SF0044
Project Leader and Team Members	Leader: Ruslan Rainis Members: Shuki Osman, Tarmiji Masron and Zuliyadini A. Rahaman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project aimed to create awareness among teachers and students of the potential of GIS as a teaching tool. GIS tools, based on Open Source software, and teaching/ learning materials focusing on the uses of these tools, were developed to suit the need of Malaysian school education. Suitable selected geography related subjects were identified. The potential, challenges and effectiveness of applying GIS as a tool in promoting spatial thinking/skills in school education were determined. In addition, implementation strategies for the use of GIS tools in school education were also established.
Additional Information	International Linkages: Ministry of Education (gave permission and intellectual input).
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-653 2875 H/p: 013-421 3343
e-Mail	rruslan@usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Automatic 3D Landmarks Detection and Placement on Craniofacial Data
Project Number	01-01-05-SF0045
Project Leader and Team Members	Leader: Bahari Belaton Members: Zainul Ahmad Rajion
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	A system which provides basic functionalities was developed for analysis of Craniofacial data. It facilitates the upload of CT-scan skull data, allows editing of anatomical landmarks on the 3-D skull (by placing, deleting or moving), data saving and uploading the landmarks of 3-D coordinates. The system also provides a set of basic analysis functions such as measuring distances between landmarks (Euclidean distance) and measuring angles between three selected landmarks.
Publications/Products/Outcomes	Products: 1. 3D Anatomical Craniofacial Landmarks System
Additional Information	Linkages: USM Health campus (expert advise and data collections - MRI/CT scan data).
Contact Institution/Entity Addresss	Universiti Sains Malaysia (USM) School of Computer Sciences, Universiti Sains Malaysia, 11800 Minden, Pulau Pinang.
Phone Number e-Mail	Office: 04-657 4382/3083 bahari@cs.usm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Parallel Sequence Alignment and Clustering Algorithms for Sequence Analyses of Fish Species
Project Number	01-01-05-SF0052
Project Leader and Team Members	Leader: Nur 'Aini Abdul Rashid Members: Siti Azizah Mohd and Rosni Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	An attempt was made to develop a system for sequence analysis for identification of Fish species. A fast protein sequence comparison tool based on a parallel dynamic programming-based sequence alignment algorithm was obtained. This system is able to produce an index table from protein sequence clusters based on a parallel graph clustering algorithm. Besides that, a space efficient algorithm was obtained by incorporating the n-gram method into the dynamic programming-based sequence alignment algorithm. The algorithms developed were tested on real fish protein sequence data. Benchmarking was also done against similar commercial tools.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nurul Naslia Khairuddin, NurAini Abdul Rashid and Rosni Abdullah. 2007. Extended Smith-Waterman Algorithm for searching DNA Patterns. <i>9th Symposium of The Malaysian Society of Applied Biology</i>, May 2007, Penang. 2. NurAini Abdul Rashid, Rosni Abdullah and Abdullah Zawawi Hj. Talib. 2007. Parallel Homologous Search Hirschberg Algorithm: A hybrid MPI-Pthread Solution. <i>11th WSEAS International Conference on Computers</i>, Jul 2007, Agios Nikolaos.
Awards/Certificates	Recognition as a Center of Excellence
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number e-Mail	Office: 04-653 3640 nuraini@cs.usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A Tutor-Based Software Visualisation Approach (TubVis) in a Reverse Engineering Environment
Project Number	01-01-05-SF0075
Project Leader and Team Members	Leader: Shahida Sulaiman Members: Rosni Abdullah, Zurinahni Zainol, Ahamad Tajudin Khader and Nur 'Aini Abdul Rashid
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The existing approach of visualisation software was improved and a prototype tool was developed using tutor-based approach (TubVis). The reverse engineering environment (UDaRE) was intergrated with TubVis. The significance of TubVis tool in enhancing the quality of software design and coding compared with existing tools was studied.
Additional Information	Linkages: Universiti Teknologi Malaysia (survey conducted among the students); SIRIM (provided a standard as a guide to the project).
Contact Institution/Entity Addresss	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-653 3611 H/p: 013-365 6065
e-Mail	shahida@cs.usm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Texture Analysis for Computer Vision
Project Number	01-01-05-SF0076
Project Leader and Team Members	Leader: Ong Hong Choon Members: Wong Ya Ping
Field of Research	Mathematical Sciences
Project Summary	A study into various techniques of texture analysis in computer vision was performed. The ways in which texture analysis can be used for image segmentation was investigated. Algorithms for shape classification based on texture analysis were also developed.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ya-Ping Wong, Victor Chien-Ming Soh, Kar-Weng Ban and Yoon-Teck Bau. 2008. Improved Canny Edges using Ant Colony Optimisation. <i>5th International Conference Computer Graphics, Imaging and Visualisation (CGIV2008)</i>, 26-28 Aug 2008, Penang. 2. Hee-Kooi Khoo, Hong-Choon Ong and Ya-Ping Wong. 2008. Image Texture Classification using Combined Grey Level Co-occurrence Probabilities and Support Vector Machines. <i>5th International Conference Computer Graphics, Imaging and Visualisation (CGIV2008)</i>, 26-28 Aug 2008, Penang.
IP Status	Copyright
Additional Information	Linkages: MMU
Contact Institution/Entity Address Phone Number e-Mail	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang. Office: 04-653 4763 H/p: 016-498 1802 hccong@cs.usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Web Front End to the Grid for Resource Sharing, Image Analysis and Visualisation
Project Number	01-01-05-SF0086
Project Leader and Team Members	Leader: Mandava Rajeswari Members: Zaharin Yusoff, Ibrahim Lutfi Shuaib, Chan Huah Yong, Dhanesh Ramachandram and Gian Chand Sodhy
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project aimed to design and develop a scalable framework for hardware and software resource sharing for the processing, annotation and analysis of images that offer access to distributed image databases, basic image processing capabilities such as loading, viewing and geometric manipulation of images, collaborative high-level image analysis and visualisation as well as collaborative image annotation and management. In addition, message passing between various processors using open-standards based meta-languages was established. A facility to create and re-use “workflows”, which consist of a sequence of tasks that can be implemented on a single or several machines was also developed. The system was designed as a web-based GUI.
Additional Information	Linkages: Imperial College, London (Medical Image Analysis Research).
Contact Institution/Entity Addresss	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-653 2157 H/p: 012-470 8112
e-Mail	mandava@cs.usm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Visual Data Mining Tool for Medical Data
Project Number	01-01-05-SF0087
Project Leader and Team Members	Leader: Hasimah Mohamed Members: Abdullah Zawawi, Azuraliza Abu Bakar, Muhammad Rafie and Abdul Razak Hamdan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The most suitable pixel based information visualisation technique for high dimensional data exploration was determined. An algorithm for data cleaning was designed and generated to pre-process the data of heart patients. An algorithm for visual data mining using the selected pixel was also defined. Consequently, an application for mining data from heart patients, which incorporates visualisation for data exploration and pattern recognition, was generated.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Hasimah H.M, Azuraliza A.B., Abdul Razak, H. 2007. Pixel-based Parallel-Coordinates Technique for Outlier Detection in Cardiac Patient Dataset. <i>ICEEI 2007</i> , 17-19 Jun 2007, Bandung.
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-653 3616 H/p: 013-423 5484
e-Mail	hasimah@cs.usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Watermarking Algorithms to Enhance Security Feature of Medical Images
Project Number	01-01-05-SF0114
Project Leader and Team Members	Leader: Khoo Bee Ee Members: Zalina Abdul Aziz and Mohd Ezane Aziz
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The requirements and criteria for watermarking algorithms for analysis of medical images were identified and developed for various modalities (MRI, ultrasound, CT scan). From the findings a tool has been successfully developed for watermarking medical images.
Additional Information	<p>Journals:</p> <ol style="list-style-type: none"> 1. Osamah M. Al-Qershi and Bee Ee Khoo. 2011. Authentication and Data Hiding Using a Hybrid ROI-based Watermarking Scheme for DICOM Images. <i>Journal of Digital Imaging</i> 24(1): 114-125. 2. Osamah M. Al-Qershi and Bee Ee Khoo. 2011. High capacity data hiding schemes for medical images based on difference expansion. <i>Journal of Systems and Software</i> 84(1): 105-112. 3. Osamah M. Al-Qershi and Bee Ee Khoo. 2009. Authentication and Data Hiding Using a Reversible ROI-based Watermarking Scheme for DICOM Images. <i>International Journal of Information and Communication Engineering</i> 5(6): 425-430. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Husna Baharom, Khoo Bee Ee, Zalina Abdul Aziz and Mohd Ezane Aziz. 2008. Comparison of Image Quality Measures for Medical Image Watermarking. <i>4th International Conference on Information Technology & Multimedia</i>, 18-19 Nov 2008, Bangi.
Contact Institution/Entity Addresss	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-599 5999 H/p: 016-453 1046
e-Mail	beekhoo@eng.usm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Software Fault Injection Tool to Ensure Dependability of Commercial-off-the-Shelf Components (COTs) for Embedded System Applications
Project Number	01-01-05-SF0124
Project Leader and Team Members	Leader: Kamal Zuhairi Zamli Members: Umi Kalthum Ngah and Nor Ashidi Mat Isa
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	A new fault injection and containment tool (FICT) based on the use of computational reflection was developed and the suitability of the computational reflection was evaluated for assisting the fault injection process. Suggestions for novel techniques for detecting and marking out faults in COTs were generated and used to develop a suitable methodology for robustness testing of COTs. The usefulness of FICT using a suitable case study involving real-time embedded system was assessed.
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-599 6079 H/p: 012-930 604
e-Mail	eekamal@eng.usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Image Processing Technique via Wireless Internet for Continuous Air Quality Monitoring
Project Number	01-01-05-SF0139
Project Leader and Team Members	Leader: Wong Chow Jeng Members: Nasirun Mohd Saleh, Mohd Zubir Mat Jafri, Khiruddin Abdullah and Lim Hwee San
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Attempts to develop image processing technique via wireless internet for Continuous Air Quality Monitoring was carried out. The algorithm was generated to develop software that was integrated with the research set-up. This newly developed technique was tested for air quality data acquisition in Malaysia and Saudi Arabia which represent equatorial region and arid region respectively. In addition, system optimisation has been also carried out.
Additional Information	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Wong, C.J., MatJafri, M.Z., Abdullah, K. and Lim, H.S. 2009. Determination of Aerosol Concentration using an Internet Protocol Camera. <i>IEEE Aerospace Conference</i>, 7-14 Mar 2009, Big Sky. 2. Wong, C.J., MatJafri, M.Z., Abdullah, K. and Lim, H.S. 2009. Temporal and Spatial Air Quality Monitoring using Internet Surveillance Camera and ALOS Satellite Image. <i>IEEE Aerospace Conference</i>, 7-14 Mar 2009, Big Sky. 3. Wong, C.J., MatJafri, M.Z., Abdullah, K., Lim, H.S.S. and Hashim, A. 2008. Algorithm for haze determination using digital camera images. <i>SPIE Defense and Security Symposium</i>, 16-20 Mar 2008, Orlando. 4. Wong, C.J., MatJafri, M.Z., Abdullah, K., Lim, H.S.S. and Low, K.L. 2008. Development of Air Quality Monitoring Remote Sensor Using a Digital SLR Camera. <i>IEEE Aerospace Conference</i>, 1-8 Mar 2008, Big Sky.



	<p>5. Wong, C.J., MatJafri, M.Z., Abdullah, K., Lim, H.S.S. and Low, K.L. 2007. Using Image Processing Technique for the Studies on Temporal Development of Air Quality. <i>4th IEEE International Conference of Computer Graphics, Imaging and Visualisation</i>, 14-17 Aug 2007, Bangkok.</p>
Awards/Certificates	<p>1. The 17th International Invention, Industrial Design & technology Exhibition 2006: World Intellectual Property Organization Awards - International Best Invention</p> <p>2. The 17th International Invention, Industrial Design & technology Exhibition 2006: Kandaya & Associates (KASS) Award – Malaysia Best Invention</p> <p>3. The 17th International Invention, Industrial Design & technology Exhibition 2006: ITEX Gold Invention Award</p> <p>4. The International Exposition of Research and Inventions of Higher Learning 2007: PECIPTA Silver Invention Award</p> <p>5. The 56th World Exhibition of Innovation Research & New Technologies : Silver Invention Award</p>
Additional Information	<p>Linkages: National Central University, Chungli Taiwan; Dept. of Geological and Atmospheric Sciences, Iowa State University; Environmental Research and Information Center, Chang Jung Christian University, Tainan, Taiwan; Department of Physics, Yogi Vemana University, Kadapa, India.</p>
<p>Contact Institution/Entity Addresss</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang. Office: 04-653 3679 H/p: 012-427 8082 wongcj@usm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Feature Extraction from Engineering Drawing Images for the Purpose of Segmentation
Project Number	01-01-05-SF0147
Project Leader and Team Members	Leader: Abdullah Zawawi Talib Members: Rosalina Abdul Sala
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to develop a CAD system which facilitates and simplifies the drafting process and makes it less labour intensive. Development of an automated system to analyse and convert these drawings into vector format usable by CAD software which is important to reduce errors and to minimise cost. This research will examine some aspects of the analysis or conversion process and also develop the solutions.
IP Status	Copyright
Additional Information	Linkages: La Rochelle University, France (informal collaboration).
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
e-Mail	azht@cs.usm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A Portal of an Integrated Molecular Structure Database of Antimicrobial Components from Natural Resources
Project Number	01-01-05-SF0182
Project Leader and Team Members	Leader: Wahidah Husain Members: osalina Abdul Sala, Rosma Ahmad and Zurinahni Zainol
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	An integrated database for molecular structures of active antimicrobial components was developed to reduce problems in accessing existing highly distributed and heterogeneous molecular structure databases. The system provides a tool to compare the molecular structure of isolated antimicrobial components in the integrated database in order to determine similarities/differences between the components. It also provides a visual query interface and user-friendly query language for facilitating the interaction of scientists with antimicrobial component databases.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ahmad Fadel Klaib, Zainol, Z., Ahamed Hassain Malim, N.H., Ahmad, R. and Husain, W. 2007. Application of Exact String Matching Algorithms towards SMILES Representation of Chemical Structure. <i>International Journal of Computer & Information Science and Engineering (IJCISE)</i>1(4): 235-239. 2. Ahmad Fadel Klaib, Zainol, Z., Ahamed Hassain Malim, N.H., Ahmad, R. and Husain, W. 2007. Application of Exact String Matching Algorithms towards SMILES Representation of Chemical Structure. <i>International Journal of Computer & Information Science and Engineering (IJCISE)</i> 1(4): 235-239. 3. Ahmad Fadel Klaib, Wahidah Husain and Zurinahni Zainol. 2008. Searching Similar Antimicrobial Structures Using Quick Search and Horspool Algorithms. <i>International Journal of Communications (CoSIWN)</i> 3: 95-101.

	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Wen Hui Loh and Wahidah Husain. 2008. A Vocabulary-based System for Integrating Biomedical Databases. <i>2nd International Conference on Mathematics and Natural Sciences (ICMNS)</i>, 28-30 Oct, Bandung. 2. AUTHORS. 2007. Extraction of Defensin Antimicrobial Peptide from Swiss-Prot database using Extended Boyer Moore Algorithm. <i>International Conference on Electrical Engineering and Informatics (ICEEI 2007)</i>, 17-19 Jun 2007, Bandung.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang. Office: 04-653 3645 H/p: 019-472 3995 wahidah@cs.usm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Electropalatograph (EPG) Artificial Palate for Speech Therapy of Cleft Lip and Palate Children
Project Number	01-01-05-SF0193
Project Leader and Team Members	Leader: Siti Noor Fazliah Mohd Noor Members: Abdul Hakim Abdul Basir and Ab Rani Samsudin
Field of Research	Medical and Health Sciences
Project Summary	The EPG palate was made according to the manufacturer's instructions with some modification, such as points for electrode placement and an adaptor to connect the CPU. The idea of EPG palate production is that, first, the impressions are taken from subjects, then the Study models (Model A) are prepared and points of silver electrode placement are marked on the model (Model B). After that, a software needs to be developed to capture the image of the model (Model B) and the processed images are sent to a machine. This machine prepares and cuts aluminium foil or acrylic plate according to Model B which needs to be further developed. The EPG palate is ready to be tested once the acrylic plate is incorporated with wire.
Publications/Products/ Outcomes	Products: Electropalatograph
Additional Information	Linkages: Faculty of Dentistry, Universiti Malaya (planned EPG study on patients wearing full dentures).
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Advanced Medical and Dental Institute, Universiti Sains Malaysia, No. 18-2, Lot 13, Persiaran Seksyen 4/9, Bandar Putra Bertam, 13200 Kepala Batas, Pulau Pinang,
Phone Number	Office: 04 562 2393 H/p: 013 -396 0943
e-Mail	fazliah@kck.usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Parallelisation of Protein Sequence Comparison Algorithms Using Hybridised Parallel Techniques
Project Number	01-01-05-SF0198
Project Leader and Team Members	Leader: Rosni Abdullah Mustafa Members: Nur 'Aini Abdul Rashid and Rosalina Abdul Sala
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to deliver faster protein sequence comparison algorithms by combining three parallel processing techniques: Single Instruction Multiple Data (SIMD), Multiple Instruction Multiple Data (MIMD) using symmetric multiprocessing (SMP) with shared memory, and Multiple Instruction Multiple Data (MIMD) using cluster computing (distributed). This combination will provide a faster biological database distributed search algorithm and implement the algorithms into a cost-effective commodity hardware utilising consumer high-end 64-bit processors.
IP Status	Copyright
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number e-Mail	Office: 04-656 1241 rosni@cs.usm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Segmentation and 3D-visualization of Tumour from 2D Computed Tomography Datasets
Project Number	01-01-05-SF0199
Project Leader and Team Members	Leader: Dhanesh Ramachandram Members: Ibrahim Lutfi Shuaib, Mohd Ezane Aziz, Mandava Rajeswari and Bahari Belaton
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project is about designing and developing an automated or semi-automated image segmentation algorithm that has the ability to delineate tumours from CT images, and a prototype application that renders a 3D-model of the segmented tumour using a stack of pre-segmented CT images. In addition, a user-friendly Graphical User Interface is designed and developed that enables a physician or doctor to easily segment and visualise the 3D model of the thyroid region.
Awards/Certificates	1. Pecipta Exhibition 2007: 1 Silver Award
Additional Information	Linkages: Imperial College, UK (medical image analysis).
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-653 4046 H/p: 013-423 3351
e-Mail	dhaneshr@cs.usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Video Conferencing Over Wireless Network
Project Number	01-01-05-SF0201
Project Leader and Team Members	Leader: Rosnah Idrus
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project was about optimisation of the wireless and non-multicast wireless network for video conferencing.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Usman Sarwar, Sureswaran Ramadass and Rahmat Budiarto. 2007. A Framework for Detecting Bluetooth Mobile Worms. <i>14th International Conference on Telecommunication and 8th Malaysia International Conference on Communications (ICT-MICC 2007)</i>, 14-17 May 2007, Penang.
Awards/Certificates	<ol style="list-style-type: none"> 1. National Innovation Awards 2007. 2. 19th International Invention Innovation Industrial Design & Technology Exhibition 2008 (ITEX 2008): Gold Medal.
Additional Information	Linkages: TMRnD (through JMCS provided additional hardware and 3G broadband lines); JMCS Sdn Bhd.
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) National Advanced IPv6 Centre (NAv6), 6th Floor, School of Computer and Mathematical Sciences Building, Universiti Sains Malaysia, 11800 USM, Pulau Pinang.
Phone Number	Office: 04-653 3006/4384 H/p: 012-408 8426
e-Mail	rosnah@cs.usm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Enhancing File Transfer Algorithm for Real-time Document Conferencing
Project Number	01-01-05-SF0205
Project Leader and Team Members	Leader: Azlan Osman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Document conferencing enables web-based sharing of documents such as PowerPoint presentations, Microsoft Excel sheets, Microsoft Word documents, web pages, image files, text files, Macromedia flash, audio and video file, Adobe Acrobat, and AutoCAD files. The system also has the ability to synchronize the presentation among all the participants and allows interactive editing of the shared documents. All participants in a video conferencing session are able to get the updated document in real time.
IP Status	<ol style="list-style-type: none"> 1. Malaysian Patents filed (PI 20080667); A Point to Multipoint File Distribution Method And A System Therefor. 2. Malaysian Patents filed (PI 20080666); A Method For File Distribution In A Computer Network.
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-653 4395 H/p: 012-484 5256
e-Mail	azlan@cs.usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Secure Multimedia Conferencing System Over WAN
Project Number	01-01-05-SF0206
Project Leader and Team Members	Leader: Rahmat Budiarto
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project is about developing a secure delivery method for multimedia conferencing content through network.
Additional Information	Linkages: Syphernetics Adecs; Mlabs Sdn Bhd.
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-653 3006 H/p: 016-406 5468
e-Mail	rahmat@cs.usm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Model for Landslides in Malaysia
Project Number	01-01-05-SF0238
Project Leader and Team Members	Leader: Habibah Lateh Members: Abdul Rahman Othman, Zuhar Zahir Tuan Hari, Ismail Abustan, Tang Enya Kong and Bahari Belaton
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project aimed to develop an integrated landslide risk assessment model specifically for the Malaysian environment. The objectives of the project involved collecting, characterising, examining and producing geotechnical, hydrological, and vegetation parameters related to landslide modelling/slope stability analysis.
Additional Information	Linkages: Universiti Teknologi Petronas and NONINS; University of Bistol, UK; Mohd Asbi & Associates; Link Information System.
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Canselor, (Penyelidikan & Inovasi), USM Minden, 11800 Minden, Pulau Pinang.
Phone Number	Office: 04-653 3608 H/p: 019-440 5704
e-Mail	habibah@usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Interactive Voice Communications Over WLAN
Project Number	01-01-05-SF0239
Project Leader and Team Members	Leader: Widad Ismail Members: Farid Ghani, Mohamad Kamal Abdul, Mandeep Singh, Toni Anwar and Zaini Abd Halim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This project has completed its objectives successfully. A planar microstrip antenna array with a Butler matrix has been implemented to form a microstrip antenna array that has narrow beamwidth, circular polarisation, and polarisation diversity. Furthermore, the circular polarisation diversity with the square patch microstrip antenna was obtained by the implantation of the quadrature hybrid as a microstrip feed line. The implementation of the circular polarisation is more suitable for indoor dynamic environments and applications such as real time tracking because it doesn't require an alignment between the transmitting and receiving antenna. This system could be integrated with a Real Time Locating System (RTLS) for tracking and monitoring object movement. It has the potential to be used with Radio Frequency Identification (RFID) system for object identification in real time.</p>
Publications/Products/ Outcomes	Proceedings/Conferences/ Seminars: <ol style="list-style-type: none">1. Mohamed Elhefnawy, Widad Ismail and Farid Ghani. 2007. A New Approach for Designing High Frequency Low Noise Amplifiers. <i>International Conference on Robotics, Vision, Information and Signal Processing (ROVISP2007)</i>, 28-30 Nov 2007, Penang.2. Hamood Shehab Hamid and Ismail, W. 2008. Low Power FSK Detection at Low Probability Bit- errors. <i>International Conference on Electronic Design (ICED)</i>, 3 Dec 2008, Penang.



<p>IP Status</p>	<ol style="list-style-type: none"> 1. Malaysian Patent filed (PI 20091865) ; Circular Polarization Diversity with Small Size Microstrip Antenna. 2. Malaysian Patent filed (Patent No: PI 20092411); Economical and Efficient Technique /Process.
<p>Additional Information</p>	<p>Linkages: Amphenol Malaysia Sdn. Bhd.</p> <p>Gross Sales: Commercial Potential: Several proposal & quotations has been requested by clients.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Sains Malaysia (USM) School of Electrical & Electronic Engineering, Engineering Campus, Universiti Sains Malaysia, 14300 Nibong Tebal, Pulau Pinang.</p> <p>Office: 04-599 6050 H/p: 012- 425 2683 eewidad@eng.usm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Mobile Agent Based Parallel and Automated Java Testing Tool
Project Number	01-01-05-SF0240
Project Leader and Team Members	Leader: Kamal Zuhairi Zamli Members: Shahida Sulaiman and Nor Ashidi Mat Isa
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to survey the current state-of-the-art on parallel and automated Java unit testing tools, identify the main characteristics and deficiencies in the existing tools, develop a tool, called JTstP, addressing the requirements and deficiencies identified earlier and develop a suitable mechanism using Mobile Agent technology, enabling parallel execution of test cases over heterogeneously distributed environment.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Muhammad Firdaus Alias, Kamal Z. Zamli and Mohd Annuar Md Isa. 2008. An Automated Change Impact Analysis For C Program. <i>4th Malaysian Software Engineering Conference</i>, 16-17 Dec 2008, Kuala Terengganu. 2. Zainal Hisham Che Soh, Syahrul Afzal Che Abdullah and Kamal Z. Zamli. 2008. A Parallelization Strategies of Test Suites Generation for T-Way Combinatorial Interaction Testing. <i>International Symposium on Information Technology (ITSim 2008)</i>, 26-28 Aug 2008, Kuala Lumpur. 3. Mohammed I Younis, Kamal Z. Zamli and Nor Ashidi Mat Isa. 2008. Algebraic Strategy to Generate Pairwise Test Set for Prime Number Parameters and Variables. <i>International Symposium on Information Technology (ITSim 2008)</i>, 26-28 Aug 2008, Kuala Lumpur. 4. Mohammed I Younis, Kamal Z. Zamli and Nor Ashidi Mat Isa. 2008. Generating Pairwise Combinatorial Test Set Using Artificial Parameters and Values. <i>International Symposium on Information Technology (ITSim 2008)</i>, 26-28 Aug 2008, Kuala Lumpur.



Additional Information	Linkages: Amphenol Malaysia Sdn Bhd
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Sains Malaysia (USM) Timbalan Naib Cancellor, (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang.</p> <p>Office: 04 599 6079</p> <p>H/p: 012-93 0604</p> <p>eekamal@eng.usm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of an Improved Radial Basis Function Network System (RBFN) for Protein Structure Prediction
Project Number	01-01-05-SF0243
Project Leader and Team Members	Leader: Zarita Zainuddin Members: Lim Eng Aik
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to provide faster and more effective and efficient neural network training algorithms for prediction purposes, to provide a more accurate protein structure prediction tool to determine protein function, and to develop a fully functional stand-alone system to predict protein structure.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Zarita Zainuddin and Ong Pauline, Classification of Cancer Classes in Genetic Microarray data by Using Multilayer perceptrons and Wavelet Neural Network, <i>The Malaysian Journal of Medical Sciences</i>, Vol 14, 2007, p95. 2. Zarita Zainuddin and Ong Pauline. 2007. Classification of Cancer Classes in Genetic Microarray data by Using Multilayer perceptrons and Wavelet Neural Network. <i>The Malaysian Journal of Medical Sciences</i> 14: 95. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Zainuddin, Z. and Lim Eng Aik. 2007. Improved Fuzzy C- Means Clustering Based On Feature-Weight Learning For Training RBF Network. <i>IMTGT 07</i>, 5-6 Dec 2007, Penang. 2. Zarita Zainuddin and Ong Pauline. 2007. Piecewise Function Approximation Using Artificial Neural Networks. <i>IMTGT 07</i>, 5-6 Dec 2007, Penang. 3. Zarita Zainuddin and Ong Pauline. 2008. Performance Comparison of Wavelet Families in Function Approximation Using Wavelet Neural Network. <i>Simposium Kebangsaan Sains Matematik Ke-16</i>, 3-5 Jun 2008, Kota Bharu.



	<ol style="list-style-type: none"> 4. Zarita Zainuddin and Lim Eng Aik. 2007. Improved Fuzzy C- Means Clustering Based On Feature-Weight Learning For Training RBF Network. <i>IMTGT 07</i>, 5-6 Dec 2007, Penang. 5. Zarita Zainuddin and Ong Pauline. 2007. Piecewise Function Approximation Using Artificial Neural Networks. <i>IMTGT 07</i>, 5-6 Dec 2007, Penang. 6. Zarita Zainuddin and Ong Pauline. 2008. Performance Comparison of Wavelet Families in Function Approximation Using Wavelet Neural Network. <i>Symposium Kebangsaan Sains Matematik Ke-16</i>, 3-5 Jun 2008, Kota Bharu.
Additional Information	Linkages: Universiti Malaysia Perlis (UNIMAP).
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Sains Malaysia (USM) Timbalan Naib Cancellor, (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang. Office: 04-657 3940 zarita@cs.usm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Construction of an Integrated Development Environment (IDE) for Example-Based Machine Translation (EBMT) System Development
Project Number	01-01-05-SF0244
Project Leader and Team Members	Leader: Chan Huah Yong Members: Ranaivo-Malançon Bali and Chuah Choy Kim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to create an Integrated Development Environment (IDE) for developing/generating a domain-specific Example-Based Machine Translation (EBMT) system, to create an IDE for preparing and fine-tuning a domain-specific Bilingual Knowledge Bank (BKB), and to develop a more efficient way of indexing the BKB.
Additional Information	Linkages: UNIMAS.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Intelligent Slope Monitoring and Mitigation System Using Latest Advanced ICT Technology
Project Number	01-01-05-SF0247
Project Leader and Team Members	Leader: Fauziah Ahmad Members: Rosni Abdullah
Field of Research	Engineering Sciences
Project Summary	This project aimed to develop an intelligent alert warning system as part of a pilot study to improve the current monitoring system setup at USM Slope. The objectives of the project involved studying and implementing the latest cost-saving communication technology to be used with the current setup for a better market value and long-term sustainability.
Awards/Certificates	Recognition as a Center of Excellence
Additional Information	Linkages: JPS; Macres; Ensotech; Soil Instrument Sdn Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Intelligent Network Anomaly and Misuse Detection Using Fuzzy Logic and Neural Network Techniques
Project Number	01-01-05-SF0248
Project Leader and Team Members	Leader: Azlan Osman Members: Rahmat Budiarto, Sureswaran Ramadass and Rosnah Idrus
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This overall aim of this project is to develop intelligent network anomaly and misuse detection using fuzzy logic and neural network techniques. The specific objective of this project were to develop an intrusion detection system that consists of a number of agents that have two different functions: training and detection. Each of these agents will be able to look at the network behaviour and determine the types of attack depending on the behaviour the agents detected. Furthermore, a tool called Signature Editor will allow users to define new rules with ease and automatically download new signature files from the Internet. This project also focussed on designing a framework for an intrusion detection system in order to support a new model that improves the detection rate, without creating false alarms, and also finding possible intrusive activity in the user behaviour level. Moreover, a reference behaviour pattern was built for each user in the system. The current behaviour can then be compared with the historical reference pattern to check for similarities and differences so that any significant deviations from the profile which may signal possible intruder attack can be detected.</p>
Additional Information	Linkages: Universiti Sains Malaysia; National Advanced IPv6 Centre; iNetmon Sdn. Bhd.
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Cancellor, (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Tsunami Simulation with Grid Computing for Coastal Zone Protection
Project Number	01-01-05-SF0249
Project Leader and Team Members	Leader: Koh Hock Lye Members: Donald L. DeAngelis, Rosni Abdullah, Teh Su Yean and Ahmad Izani Md. Ismail
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The objectives of this project were to enhance the existing in-house tsunami simulation model TUNA, developed by the study team for robust and reliable simulation of tsunami generation, propagation and run-up for application in Malaysia. The aim is to develop the technology of Grid Computing based upon previous research on parallel computing to further enhance the performance of TUNA, to assess the hazards and to provide early tsunami warning system for affected coastal regions in Malaysia by TUNA simulations. The system also aims to produce inundation maps and evacuation routes maps by TUNA simulations, and the project involved conducting sensitivity analysis by TUNA on various tsunami scenarios, based upon global seismic activity data, using the system to provide improved guidelines for coastal zone management incorporating tsunami hazards. The project had the added benefit of enhancing the capability of Malaysia in the field of ICT, which has immense potential for other applications.</p>
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none">1. Teh, S.Y., Kew, L.M. and Koh, H.L. 2008. Application of Grid Computing in Modeling Tsunami and Dengue. <i>ICTP Advanced School in High Performance and GRID Computing</i>, 3-14 Nov 2008, Trieste.2. Koh, H.L., Tan, K.B., Sui, L.L., Teh, S.Y., Bahari, B. and Izani, A.M.I. 2008. Modeling Mosquitoes Distribution. <i>15th Pacific-Rim Application And Grid Middleware Assembly (PRAGMA 15)</i>, 22-23 Oct 2008, Penang.3. Koh, H.L., Tan, K.B., Sui, L.L., Teh, S.Y., Bahari, B. and Izani, A.M.I. 2008. Grid Application: Modeling Mosquitoes Distribution. <i>15th Pacific-Rim Application And Grid Middleware Assembly (PRAGMA 15)</i>, 22-23 Oct 2008, Penang.

Awards/Certificates	Recognition as a Center of Excellence
IP Status	Copyright
Additional Information	Linkages: Coastal and Offshore Engineering Institute in UTM; USGS, USA; University of Miami; Cornell University; Academia Sinica Taiwan ASGC; Aker Engineering Solution of Norway.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Sains Malaysia (USM) Timbalan Naib Cancellor, (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang. Office: 04-653 3657 H/p: 016-451 8829 hlkoh@cs.usm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Image Enhancement and Recognition Tool for Underwater Images
Project Number	01-01-05-SF0250
Project Leader and Team Members	Leader: Rosalina Abdul Salam Members: Mohd Shahrizal Sunar and Muhammad Suzuri Hitam
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The original project objectives were to investigate existing image enhancement tools, propose an image enhancement tool for underwater images, implement a prototype of the underwater image enhancement tool and investigate the fish recognition system in order to propose an intelligent recognition method for fish recognition system, allowing us to implement a prototype of fish recognition system.</p> <p>Almost all of the objectives have been successfully achieved except the development of intelligent recognition method for fish recognition system did not progress as expected, and a prototype of fish recognition system could not be implemented. Furthermore, the enhancement and the recognition system were not properly combined, but the system does work at a low accuracy level. In conclusion, only the first part of the project (the system enhancements) has been successfully implemented.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Farook, H. and Salam, R.A. 2007. Automatic Fish Recognition and Classification: A Framework. <i>International Conference on Robotic, Vision, Information & Signal Processing 2007 (ROVISP 2007)</i>, 28-29 Nov 2007, Penang. 2. Salam, R.A. and Tong, Y.S. 2008. Image Enhancement using Outlier Median Filter. <i>4th IASTED International conference on Advances in Computer Science and Technology</i>, 2-4 Apr 2008, Langkawi. 3. Samma, A.S. and Salam, R.A. 2007. Application of Machine Learning for Fish Recognition. <i>International Conference on Robotic, Vision, Information & Signal Processing 2007 (ROVISP 2007)</i>, 28-29 Nov 2007, Penang.

	<ol style="list-style-type: none"> 4. Samma, A.S. and Salam, R.A. 2009. Adaptation of K-Means Algorithm for Image Segmentation. <i>International Conference on Computer, Electrical, and Systems Science and Engineering, (Cesse 2009)</i>, 25-27 Feb 2009, Penang. 5. Salam, A. 2008. Comparison between White Balance Adaptive Approach and Existing Methods for Underwater Image Enhancement. <i>IEEE International Workshop on Digital Info Tainment and Visualisation (IWDTV2008)</i>, 16-18 Jun 2008, Universiti Malaysia Terengganu.
Additional Information	Linkages: Universiti Malaysia Terengganu; University Teknologi Malaysia; AquaVideoPic Tool.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Sains Malaysia (USM) Timbalan Naib Cancellor, (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang. Office: 04-653 2486 rosalina@cs.usm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Embedded System for Grid Handtop Computing
Project Number	01-01-05-SF0251
Project Leader and Team Members	Leader: Mohd Azam Osman Members: Chan Huah Yong and Tang Enya Kong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The original project objectives were to choose and identify the suitable OS for the end user, create alternative method for installation of OS (i.e. Thumbdrive), customise the OS for the Handtop and also develop driver to support the Handtop component, making use of any available computing power combination or data intensive programs to execute computer that cannot be done by a single machine, and to extend the heterogeneity of the present grid computing resources in order to link between two emerging technologies that is grid computing and mobile handheld technology.
Additional Information	<p>Publications:</p> <ol style="list-style-type: none"> 1. Mohd Azam Osman, Chan Huah Yong, Wong Poh Lee, Lim Kek Yong, "Design of Embedded System for Grid Handtop Computing", International Conference on Electronic Design (ICED 2008), 1-3 December 2008, Park Royal Hotel, Penang, Malaysia 2. Mohd Azam Osman, Chan Huah Yong, Ang Wai Heng, Lim Kek Yong, Tan Choo Jun, Muhammad Imran Sarwar, "Mobile Desktop Grid", The Pacific Rim Applications and Grid Middleware Assembly (PRAGMA 15), 21-24 October 2008, Universiti Sains Malaysia, Penang, Malaysia 3. Mohd Azam Osman, Muhammad Imran Sarwar, "Efficient Queue and GSI Security Management Framework for Mobile Desktop Grid", The International Conference on Distributed Framework & Applications 2008 (DFMA 2008), 21-22 October 2008, Universiti Sains Malaysia, Penang, Malaysia 4. Mohd Azam Osman, Muhammad Imran Sarwar, Chan Huah Yong, "Efficient Queue & GSI Security Management Framework for Mobile Desktop Grid", The Fifth International Symposium on High Capacity Optical Networks and Enabling Technologies (HONET), 18-20 November 2008, Park Royal Hotel, Penang, Malaysia

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	DRAFS: Dynamic Resource Allocation Towards Fair-share Scheduling on Grid Environment
Project Number	01-01-05-SF0252
Project Leader and Team Members	Leader: Fazilah Haron Members: Chan Huah Yong and Gian Chand Sodhy Didar Singh
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The original project objectives were to define allocation priorities based on the Google PageRank concept and the framework for grid platform, to design the modules which will support the resource rank technique (i.e. Link Repository, Resource Rank/Virtual Organisation Rank Calculator), and to develop DRAFS, a plug-in module to existing grid scheduler that will enable efficient, scalable and dynamic resource allocation and management.</p> <p>All of the objectives in this project were successfully achieved. A paper entitled Grid Resource Discovery using PageRank Technique in Grid Environment was published in the Proceeding The 6th IEEE International Symposium on Cluster Computing and The Grid (CCGrid 06), reflecting the achievement of objective 1 and 2. As for objective 3, the prototype of DRAFS has been completed and the result was reported in the Final Report and also in the paper entitled Dynamic Resource Allocation Towards Fair Share Scheduling in Grid Environment (DRAFS).</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Noorisyam Hamid, Fazilah Haron and Chan Huah Yong. 2006. Grid Resourse Discovery using PageRank Technique in Grid Environment. <i>6th IEEE International Symposium on Cluster Computing and the Grid (CCGrid 06)</i>, 16-19 May 2006, Singapore. 2. Noorisyam Hamid, Fazilah Haron and Chan Huah Yong. 2005. Enhancing Directory Service for Grid-based Data Mining Towards Dynamic Resources Discovery. <i>National Computer Science Postgraduate Colloquium 2005 (NaCSPC'05)</i>, 27-28 Jun 2005, Penang.

Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Cancellor, (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	3D Liver Model for Hepatocellular Carcinoma (HCC) Pre-surgical Planning
Project Number	01-01-05-SF0255
Project Leader and Team Members	Leader: Haidi Ibrahim Members: Ng Theam Foo, Umi Kalthum Ngah, Maria Petrou and Siti Khairunniza Bejo
Field of Research	Engineering Sciences
Project Summary	<p>The original project objectives were to develop a robust segmentation method to segment the liver components such as blood vessels, liver surface, and tumours, and furthermore to transform the segmented liver components into a 3D geometrical liver model and provide an interactive interface to help medical practitioners in their decision making.</p> <p>All of the objectives have successfully been achieved. A segmentation method to extract the liver components has been developed and the segmented liver can be displayed as a 3D model; zooming and rotations of the model are possible.</p>
Awards/Certificates	1. CITISIA2008 2008: Best Paper Award.
Additional Information	Linkages: Imperial College London.
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Phone Number e-Mail	Office: 04-599 5822 haidi@eng.usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Intelligent Passive Network Fault Detection and Isolation
Project Number	01-01-05-SF0257
Project Leader and Team Members	Leader: Rahmat Budiarto Members: Rosnah Idrus and Sureswaran Ramadass
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The original project objectives were to develop an intelligent passive network fault detection and isolation tool that can detect faults before they become serious to the network, based on packet observation equipment intelligent in detecting faults and armed with neural network learning rules. The project also aimed to develop a program that can predict 24 hour traffic for management purposes. An additional management module included real time prediction based on “mouse and elephant” events that will lead to high amounts of traffic. Additional objectives of the project were to develop a program to do monitoring and class machines based on characteristics seen, to develop a program that can monitor, log, learn and give intelligent warnings on MAC and IP ownership conditions, to develop a program that can learn the characteristic of network activity and traffic trends or patterns for the specific network, and to develop a program that can recognise and detect inconsistencies and act accordingly by sounding an alarm.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Pahlevanzadeh, B., Seyed Amin Hosseini Seno, Tat-Chee Wan, Rahmat Budiarto, M. 2008. A Cluster-Based Distributed Hierarchical IDS Manets. <i>International Conference on Network Applications, Protocol & Services 2008 (NetApps2008)</i>, 12-13 Dec 2008, USM. 2. Bahareh Pahlevanzadeh, Seyed Amin Hosseini Seno, Tat-Chee Wan and Rahmat Budiarto. 2008. A comparative study on the development of ethernet flow control. <i>2nd International Conference on Science and Technology (ICSTIE 2008)</i>, 12-13 Dec 2008, Penang.



	<p>3. Seyed Amin Hosseini Seno, Baherah Pahlevanzadeh, Tat-Chee Wan, Rahmat Budiarto. 2008. A security scheme cluster based mobile ad hoc networks. <i>2nd International Conference on Science and Technology (ICSTIE 2008)</i>, 12-13 Dec 2008, Penang.</p> <p>4. Hosseini-Seno, S.A., Pahlevanzadeh, B., Wan, T.C., Rahmat Budiarto and Kadhum, M.M. 2008. A distributed resource-management approach in manets. <i>UUM College of Arts and Science</i>, 12-13 Dec 2008, Universiti Utara Malaysia.</p>
Additional Information	Linkages: Universiti Sains Malaysia; National Advanced IPv6 Centre; iNetmon Sdn. Bhd.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Sains Malaysia (USM) Timbalan Naib Cancellor, (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang.</p> <p>Office: 04-653 3006 H/p: 016-406 5468 rahmat@cs.usm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Medical Image Registration and Fusion Algorithms for MRI Image Sequences
Project Number	01-01-05-SF0295
Project Leader and Team Members	Leader: Khoo Bee Ee Members: Mohd Ezane Aziz
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The original project objectives were to study and develop an image registration algorithm for MRI image sequences and an image fusion algorithm in order to identify and develop performance measures for image registration and fusion algorithms. In addition the study aimed to implement the new methods in a real life radiological situation, based on the advice of a radiologist and their requirements.</p> <p>The first objective, to study and develop an image registration algorithm for MRI image sequences, was dropped as the existing image registration algorithm was working fine for MRI image sequences. The second objective was successfully achieved; a comparison was made for a few developed algorithms based on the frequency domain. The third objective was partly achieved and is currently still in progress. This work was carried out by one full time MSc student and one part-time MSc student. Based on the input and practical requirements of the radiologist, a new approach was developed such that image segmentation is performed first, before image fusion is carried out.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a New Architecture and Learning Algorithm of Artificial Neural Networks for Determination of Potential Drug in Herbal Medicine
Project Number	01-01-05-SF0309
Project Leader and Team Members	Leader: Nor Ashidi Mat Isa Members: Habibah A Wahab, Kamal Zuhairi Zamli and Junita Mohamad Saleh
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The original project objectives were to develop a new architecture of artificial neural networks that can produce better performance than existing neural networks, to develop a new training/learning algorithm of artificial neural networks with a shorter processing time and more intelligence than existing algorithms, and to study the suitability and capability of the developed neural network as an intelligent classifier/detection tool. The final aim was to develop an intelligent system for potential drug detection in herbal medicine using the new architecture and learning algorithm of artificial neural networks.</p> <p>All of the objectives have successfully been achieved. However, during the development of an intelligent system for potential drug detection in herbal medicine the objective was altered, and this project has instead successfully developed a more general intelligent drug likeness detection system. As the system has successfully been tested using benchmark drug likeness data, the developed system has potential to be implemented on real data in further research.</p>
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mohammad Subhi Al-Batah, Nor Ashidi Mat Isa, Kamal Zuhairi Zamli, Zamani Md Sani and Khairun Azizi Azizli. 2009. A Novel Aggregate Classification Technique Using Moment Invariants and Cascaded Multilayered Perception Network. <i>International Journal of Mineral Processing</i> 92(1-2): 92–102.

	<ol style="list-style-type: none"> 2. Mohammad Subhi Al-Batah, Nor Ashidi Mat Isa, Kamal Zuhairi Zamli and Khairun Azizi Mohd Azizli. 2010. Modified Recursive Least Square to Train Hybrid Multilayered Perception Network. <i>Applied Soft Computing</i> 10(1): 236-244. 3. Nor Ashidi Mat Isa and Wan Mohd Fahmi Wan Mamat. 2011. Clustered-Hybrid Multilayered Perception Network for Pattern Recognition Application. <i>Applied Soft Computing</i> 11(1): 1457-1466. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Wan Mohd Fahmi Wan Mamat, Nor Ashidi Mat Isa, Kamal Zuhairi Zamli and Wan Mohd Fairuz Wan Mamat. 2008. Hybrid Version of MLP Neural Network for Transformer Fault Diagnosis System. <i>International Symposium on Information Technology</i>, 26-29 Aug 2008, Kuala Lumpur. 2. Wan Mohd Fahmi Wan Mamat, Nor Ashidi Mat Isa, Habibah A. Wahab and Wan Mohd Fairuz Wan Mamat. 2009. Drug-like and Non Drug-like Pattern Classification Based on Simple Topology Descriptor Using Hybrid Neural Network. <i>31st Annual Interational Conference of the IEEE Engineering in Medicine and Biology Society (EMBC 2009)</i>, 2-6 Sep 2009, Minneapolis.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Sains Malaysia (USM) Timbalan Naib Cancellor, (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang. Office: 04-599 6051 H/p: 012-427 8054 ashidi@eng.usm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	An Intelligent Genetic Algorithm's Parameters Adaptation for RNA Folding Problem
Project Number	01-01-05-SF0342
Project Leader and Team Members	Leader: Ahamad Tajudin Khader
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The performance of genetic algorithms in solving the RNA folding algorithm was found to be superior to the compared method. The results obtained using the former method were significantly better, as shown experimentally. This research also studied the effect of three parameters, i.e. population size, mutation rate and crossover rate. The number of parameters involved was an improvement, since most previous studies have only focused on just one or two parameters. Interestingly, those parameters were found to be dependent on each other while most previous studies showed multiple parameters to be independent from one another. Furthermore, this research has provided a new genetic algorithm with multiple parameter adaptations for RNA folding problems, which provides better performance and identified an alternative representation for an RNA problem which eases the usage with the intelligent adaptation-based GA for the RNA folding problem.</p>
Contact Institution/Entity Address Phone Number e-Mail	Universiti Sains Malaysia (USM) Timbalan Naib Cancellor, (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang. Office: 04-653 3646 H/p: 012-464 1715 tajudin@cs.usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Generic Scheduling Algorithms for All-optical Shared-buffer Timeslot/Packet/Burst Switches
Project Number	01-02-11-SF0017
Project Leader and Team Members	Leader: Liew Soung Yue Members: Tay Yong Haur and Wong Chim Chwee
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	A proposed scheduling algorithm for shared-FDL all-optical switches, called the variable-length packet FDL assignment (VAPFA) algorithm, was shown to be able to resolve the contention of variable-length packets, and to successfully perform FDL buffer allocation. With the slotted model proposed in this project, it was discovered that in all-optical switching with burst traffic, the performance (maximum load for zero-loss rate of ~ 0.7) deteriorates with traffic and so only allows fixed-length packets (maximum load for zero-loss rate of ~ 0.9). A new model, called variable-length-packet fixed-length-slot switching (VPFS), had been proposed for all-optical networks. Such a model could be extended to optical burst switching (OBS). Analysis and simulation were done for both OPS and OBS.
Publications/Products/Outcomes	Products: A smart backpack system
IP Status	Copyright
Contact Institution/Entity Address	Universiti Tunku Abdul Rahman (UTAR) Building PD, No. 9 Jalan Bersatu 13/4, 46200 Petaling Jaya, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Research and Development of an Embedded Platform for Computer Vision Applications
Project Number	01-02-11-SF0019
Project Leader and Team Members	Leader: Tay Yong Haur Members: Yap Shook Chin and Lau Phooi Yee
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The original project objectives were to identify suitable embedded processors and imaging devices for use in industrial vision problems, to develop an embedded computer platform for executing computer vision application, to optimise a digital image processing algorithm in an embedded system, and to develop an efficient artificial neural networks algorithm for an embedded system.</p> <p>This project has successfully developed an embedded computer platform running on an ARM-based processor with Linux OS. Furthermore, a few image processing algorithms from an OpenCV open source have been successfully ported to the platform, and optimisation on several image processing and neural networks algorithms has been achieved. Overall, all of the project objectives have been successfully achieved.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Jing Yi Tou, Phooi Yee Lau and Yong Haur Tay. 2007. Computer Vision-based Wood Recognition System. <i>International Workshop on Advanced Image Technology (IWAIT)</i>, Jan 2007, Bangkok.
Additional Information	International Linkages: Ecole Polytechnique de Universite, Nantes.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Tunku Abdul Rahman (UTAR) Building PD, No. 9 Jalan Bersatu 13/4, 46200 Petaling Jaya, Selangor. Office: 03-79551511 tayyh@utar.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Comprehensive Framework for Forensics Examination and Investigation of Systemic Information Processes: A Research Study on Application of Information Forensics on Development and Operation of Bioinformatics Systems
Project Number	01-02-11-SF0020
Project Leader and Team Members	Leader: Elok Robert Tee Members: Johari Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The objectives of the project were firstly to identify the human processes which contribute towards the development, deployment and operation of systemic information processes in curbing untoward incidences in operations of information systems. Secondly the project aimed to formulate a framework for examination and investigation of faults in systemic information processes which may arise from criminal acts or negligence in deployment, monitoring or operations of information systems or its systemic components. The final aim was to define specific models for the study of potential fault occurrences in systemic information processes. The causal factors and concerns for the study included factors related to psychology, sociology, ethnicity, linguistics, organisations, ethics, theology and beliefs, epistemology, applied standards, development models, compliance assessment, knowledge engineering and knowledge management.</p> <p>The commercialisation of this work was in the form of training, and the provision of expert services during the course of examination and investigation of experimental systemic faults.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	To Design and Develop a Ubiquitous Object-oriented Database Kernel Using p2p Grid-based Storage Sharing Techniques and Auto-synch Access Methods (for a distributed network using ad-hoc networking provided by wireless pdas and notebooks in remote locations)
Project Number	01-02-11-SF0021
Project Leader and Team Members	Leader: Lim Tong Ming Members: Tan Teik Boon
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to study and identify strengths and weaknesses of wireless pervasive devices such as wireless Personal Digital Assistant (PDA), to study and review Peer-to-peer (P2P) technology, Grid technology, storage and access architecture of a OODB system and to study, propose and design an architecture for storage and access for UOODB kernel. The project also aimed to study, adopt, enhance, implement and test a Pervasive IP Map for wireless PDA devices using an Ubiquitous Dynamic Messaging Scheme that supports a generalised publish-subscribe mechanism for the implementation of P2P grid on wireless PDAs and notebooks. The focus was on systems designed for Netbooks, due to software requirements. Finally the study included the design, implementation and testing of a proposed Ubiquitous Object-oriented Database Kernel, using P2P Grid-based Storage Sharing Techniques and auto-synch Access Methods for a controlled local distributed computing environment, using ad-hoc networking.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Computational Functional Genomic of Palindrome-like RNA : A Study on Genome-wide Palindromes Distribution and its Application on Organism Complexity Discrimination
Project Number	01-02-11-SF0022
Project Leader and Team Members	Leader: Goh Yong Kheng Members: Ong Teong Joo
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project achieved its objectives: to construct the perfect palindrome and hairpin palindrome distribution map for genomic data; to investigate the relationship between the palindrome to gene ratio and organism complexity; and to produce knowledge workers capable of designing and developing state-of-the-art bioinformatics algorithms.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Goh, Y.K. and Liew, K.W. 2009. The Distributions of Short Palindromes In Bacteria Genomes. <i>Symposium on Progress in Information and Communication Technology</i>, Dec 2009, Kuala Lumpur. 2. Goh, Y.K. 2008. Distribution of DNA Palindromes in short Genomes. <i>International Conference on Genome Informatics</i>, Dec 2008, Goldcoast.
Contact Institution/Entity Address	Universiti Tunku Abdul Rahman (UTAR) Building PD, No. 9 Jalan Bersatu 13/4, 46200 Petaling Jaya, Selangor.
Phone Number	Office: 03-7955 1511 H/p: 017-617 9937
e-Mail	gohyk@mail.utar.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development and Improvement of Metamorphic High Electron Mobility Transistor (MHEMT) for 60 GHZ Infrastructure/Ad-hoc Wireless Network Switching Communication System
Project Number	01-02-11-SF0026
Project Leader and Team Members	Leader: Lim Soo King
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project was about reviewing and revising the design of Metamorphic High Electron Mobility Transistor (MHEMT) device structures and materials for Monolithic Microwave Integrated Circuits (MMIC) in 60-100GHz communication systems, and thus fabricating the power MHEMT for telecommunication applications. This project also successfully improved the linearity and breakdown-voltage of the device (MHEMT) for high power applications and involved the building of a model to describe and explain the device functionality, by comparing designed and fabricated devices.
Contact Institution/Entity Address	Universiti Tunku Abdul Rahman (UTAR) Building PD, No. 9 Jalan Bersatu 13/4, 46200 Petaling Jaya, Selangor.
Phone Number	Office: 03-7955 1511 H/p: 012-351 0326
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Distributed – Interoperable Geographical Information Systems (GIS) Application
Project Number	01-01-14-SF0004
Project Leader and Team Members	Leader: Shahrin Sahib Members: Nanna Suryana Herman, Mohd Hafiz Zakaria and Abdul Razak
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The project is about developing a Distributed – Interoperable Geographical Information Systems (GIS) application which allows borderless information sharing between different organisations, that may reuse spatial data from different times and places that is easily available in the internet without format differences being a significant difficulty.</p> <p>This project achieved its objective by developing a Semantic Translator Engine prototype and Interoperable GIS prototype, UTeM GIS Clearing House (Resources Discovery) Server, Interoperable Malaysian GIS architecture, Client, Data provider and clearing house interoperable models, a proposed Malaysian Interoperability Standard and framework and an Open-sourced middleware software.</p>
Publications/Products/Outcomes	Products: Semantic Translator Engine Software
Awards/Certificates	<p>1. Science and Technology Exhibition (STE) 2002: Gold Medal</p> <p>1. UTEMEX 2007: Silver Medal</p>
Contact Institution/Entity Address	Universiti Teknikal Malaysia Melaka (UteM) Faculty of Information Technology and Communication, Universiti Teknikal Malaysia Melaka, Hang Tuah Jaya, 76100 Durian Tunggal, Melaka.
Phone Number e-Mail	Office: 06-233 2500 shahrinsahib@utem.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of a Multimedia Ubiquitous m-learning System
Project Number	01-01-14-SF0008
Project Leader and Team Members	Leader: Sazilah Salam Members: Mohd. Hafiz Zakaria, Mohammad Radzi Motsidi, Zulkiflee Muslim, Rusnida Romli, Norazlin Mohammed, Ibrahim Ahmad, Farah Nadia Azman and Muhammad Haziq Lim Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The original project objectives were to develop a multimedia ubiquitous M-learning system consisting of innovative multimedia learning applications, multimedia M-learning interface, M-learning infrastructure, and M-learning portal. An M-learning system, mainly consisting of ten innovative multimedia learning applications, has been successfully developed. The system also consists of some infrastructure and design implementation of M-learning services on the portal.
Publications/Products/Outcomes	Products: 1. Kids Cashier 2. Mobile Malay Idioms 3. Mobile Science Stories
Awards/Certificates	1. Mobile Content Challenge 2007: Second Prize 2. MSC-IHL Business Plan Competition 2008/2009: Merit pRIZE
IP Status	Malaysian Patent filed (PI 2009 3988); A Method of Learning Through Mobile Game-based Learning
Additional Information	Linkages: LTT Global Communication Sdn. Bhd.; Maxis Communication Berhad Commercialisation: Kids Cashier commercialised at Nokia Ovi Store and Maxis 1Store
Contact Institution/Entity Address	Universiti Teknikal Malaysia Melaka (UteM) Faculty of Information and Communication Technology, Universiti Teknikal Malaysia Melaka, Hang Tuah Jaya, 76100 Durian Tunggal, Melaka.
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e-Mail	sazilah@utem.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Maintenance Decision Support System for Small and Medium Industries Using Decision Making Models
Project Number	01-01-14-SF0009
Project Leader and Team Members	Leader: Burhanuddin Mohd Aboobaidar Members: Szalinsyah Razali and Anton Satria Prabuwo
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The original project objectives were to examine the relationship between breakdown frequencies and downtime of an individual machine, in order to evaluate a model through the incorporation of multiple criteria and development of algorithms on a Decision Making Grid (DMG), and to develop a prototype of CMMS with the DMG model for SMLs in Malaysia.</p> <p>All of the project objectives have been successfully achieved, and the system has been demonstrated in the Malaysia Technological Expo and PECIPTA exhibitions.</p>
Publications/Products/Outcomes	Products: Prototype of the system
Awards/Certificates	Malaysia Technology Expo (MTE) 2009: Bronze Medal
Contact Institution/Entity Address	Universiti Teknikal Malaysia Melaka (UteM) Faculty of Information and Communication Technology, Universiti Teknikal Malaysia Melaka, Hang Tuah Jaya, 76100 Durian Tunggal, Melaka.
Phone Number	Office: 06-233 3135 H/p: 019-521 7898
e-Mail	burhanuddin@utem.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and Development of Site-specific Throughput Prediction Models for Wireless Mesh Networks
Project Number	01-01-14-SF0010
Project Leader and Team Members	Leader: Mohamad Kadim Suaidi Members: Mohamad Zoinol Abidin, Abdul Rani Othman, Abd Shukur Ja'afar and Mohd Riduan Ahmad
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The original project objective was to design and develop site-specific throughput prediction models and algorithms to be used as a simulator for wireless mesh networks planning and optimisation.
Publications/Products/Outcomes	Products: 1. Algorithm for Throughput-Received Power Relationship in WMN 2. Medium Access Control (MAC) protocol for Wireless Mesh Networks (WMN)
Awards/Certificates	PECIPTA 2009: Silver Medal
Contact Institution/Entity Address	Universiti Teknikal Malaysia Melaka (UteM) Faculty of Electronic and Computer Engineering, Universiti Teknikal Malaysia Melaka, Hang Tuah Jaya, 76100 Durian Tunggal, Melaka.
Phone Number	Office: 06-555 2042 H/p: 019-267 8998
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Framework for Component-based Software Engineering of Embedded Software in Resource Constrained Real-time Systems
Project Number	01-01-06-SF0001
Project Leader and Team Members	Leader: Dayang Norhayati Abang Jawawi Members: Safaai Deris, Rosbi Mamat, Radziah Mohamed, Mohd Adib Sarijari and Mohamad Amir Shamsudin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Applying component-based software engineering (CBSE) to embedded real-time (ERT) systems poses significant challenges to industrial software processes due to the resource-constrained, real-time requirements of the systems. In this research, a framework for Component-Oriented Programming (COP) of ERT software has been developed to enable a systematic development through CBSE. To show the flexibility of the COP framework, two component-based development (CBD) approaches were proposed. The first CBD approach, called ELCRA, was proposed to facilitate a systematic CBSE for early life-cycle reuse of ERT systems. The second approach, using a MARMOT method, was developed to support multi-constraint ERT software requirement and a multi-disciplinary knowledge of the domain. The results of implementing the framework and approaches in developing software for real ERT systems showed that they can fulfill the ERT requirements, especially the resource constraint requirement. The amount of reuse measurement results showed that a reuse rate of up to 80% was achieved for the two ERT case-studies tested. The case-study implementation results and software reuse measurements indicate that the framework that was developed promotes systematic development of component-based ERT software and component-based reuse qualities.
Publications/Products/Outcomes	Journals: 1. Dayang Norhayati Abang Jawawi, Safaai Deris and Rosbi Mamat. 2007. Software Reuse for Mobile Robot Applications through Analysis Patterns. <i>International Arab Journal of Information Technology</i> 4(3): 220-228.



<p>Publications/Products/ Outcomes</p>	<ol style="list-style-type: none"> Dayang Norhayati Abang Jawawi, Safaai Deris and Rosbi Mamat. 2007. A Component-Oriented Programming for Embedded Mobile Robot Software. <i>International Journal of Advanced Robotic Systems</i> 4(2): 371-380. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> Dayang Norhayati Abang Jawawi, Radziah Mohammad, Safaai Deris and Rosbi Mamat. 2008. Early-Life Cycle Reuse Approach for Component-Based Software of Autonomous Mobile Robot System. <i>International Conference on Software Engineering Artificial Intelligent, Networking, and Parallel/Distributed Computing (SPDN2008)</i>, 6-8 Aug 2008, Phuket. Mohd. Zulkifli Mohd. Zaki, Dayang Norhayati Abang Jawawi, Mohd Syahid Yasin, Mohd Khairul Rashid Khairuddin, Mohd Hafizuddin Mazlan and Rosbi Mamat. 2008. <i>A Small Robot for Teaching Embedded Real-Time Programming. Regional Student Conference on Research Development (SCOReD2008)</i>, Nov 2008, Skudai. Dayang Norhayati Abang Jawawi, Safaai Deris and Rosbi Mamat. 2007. A Component-Oriented Approach for Developing Autonomous Mobile Robot Embedded Software. <i>International Conference on Control, Instrumentation and Mechatronics Engineering (CIM'07)</i>, 28-29 May 2007, Johor Bahru.
<p>Awards/Certificates</p>	<p>Regional Student Conference on Research Development 2008: Best Poster.</p>
<p>IP Status</p>	<p>Malaysian Patent filed (PI 2009 7025); Component Based Analysis Patterns for Autonomous Mobile Robot (AMR) Software Development.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) 81310 Skudai, Johor Darul Takzim. Office: 07-553 2354 H/p: 012-766 2874 dayang@utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Depth Dependence of Swim Bladder Target Strength for One Finlet Scad, Round Scad and Indian Mackerel
Project Number	01-01-06-SF0003
Project Leader and Team Members	Leader: Jafri Din Members: Ahmad Ali, Raja Bidin Raja Hassan and Adil Mohd
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p><i>In situ</i> TS measurements have been taken at sea for <i>Selar boops</i>, <i>Megalaspis cordyla</i>, <i>Alapes djedaba</i>, and Indian mackerel, by using an FQ 80 echo sounder. The TS value, depth, and position of the targeted fish can be viewed from an echogram by Top view of TS using Analyzer. Each fish species influenced the backscattering cross section and target strength varies, in a species-specific manner. For example, <i>Megalaspis cordyla</i> produces a higher TS than <i>Selar boops</i> which have a greater length and weight.</p> <p>Furthermore, digital camera and X-ray images of fish have been deployed to measure the length, width, volume, and surface area of the swim bladder, as well as the tilt angle of the swim bladder to fish length. Physical properties of the swim bladder seen from X-ray images show a positive correlation with measured <i>in situ</i> results. Fish with a larger swim bladder and a lower tilt angle exhibit higher TS measurements.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Sunardi, Jafri Din, Raja Bidin Raja Hassan and Nadzri Seman. 2008. <i>In situ</i> Fish Target Strength 1) Measurements Compared with X-ray Images of Swimbladder. <i>International Conference on Computer and Communication Engineering (ICCCCE)</i>, 13-15 May 2008, Kuala Lumpur. 2. Sunardi, Anton Yudhana, Jafri Din and Raja Bidi Raja Hassan. 2008. Indian Mackerel on Target Strength Measurement. <i>International Graduate Conference on Engineering and Science (IGCES)</i>, 23-24 Dec 2008, Johor. 3. Sunardi, Adil Mohd, Raja Bidin Raja Hassan, Nadzri Seman and Jafri Din. 2007. Fish Target Strength Using Sonar. <i>International Conference on Robotics, Vision, Information, and Signal Processing (ROVISIP)</i>, 28-30 Nov 2007, Penang.



Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) 81310 Skudai, Johor Darul Takzim. Office: 07-553 6089 H/p: 013-730 0250 jafri@fke.utm.my
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Integrated Planning and Scheduling Framework for Dynamic and Reactive Environment of Complex Manufacturing Problem
Project Number	01-01-06-SF0004
Project Leader and Team Members	Leader: Zalmiyah Zakaria Members: Safaai Deris
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The goal of this research was to develop an integrated planning and scheduling framework for a complex manufacturing problem through three specific objectives. Firstly the study aimed to develop a conceptual model for an integrated planning and scheduling framework using UML dynamic model in order to understand the dynamic and reactive environment of complex manufacturing problem. The second aim was to develop algorithms for an integrated planning and scheduling framework using modified-hybrid genetic algorithms (MHGA) and Ontology in order to solve the dynamic constraint satisfaction problem. Finally the study aimed to develop a tool for an integrated planning and scheduling framework based on proposed conceptual model and algorithms in order to validate the results.</p>
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) 81310 Skudai, Johor Darul Takzim. Office: 07-553 2357 zalmiyah@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and Development of Fractal Antenna for Ultra High Frequency Band Application
Project Number	01-01-06-SF0030
Project Leader and Team Members	Leader: Mohamad Kamal Abdul Rahim Members: Marwan Hadri Azmi and Mohd Haizal Jamaluddin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to design and develop a fractal antenna for ultra high frequency band applications. The antenna has been designed using fractal koch dipole antenna geometry. The prototype of the antenna was completed and tested for UHF band frequency; this antenna is suitable for use by broadcasting systems.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Karim, M.N.A., Rahim, M.K.A., Majid, H.A., Abu, M., Ayop, O. and Zubir, F. 2010. Log periodic Fractal Koch antenna for UHF band application. <i>Progress in Electromagnetic Research</i> 100: 201-218. 2. Mohd Nazri A. Karim, Mohamad Kamal A. Rahim and Thelaha Masri. 2009. Fractal Koch Dipole Antenna for UHF band application. <i>Microwave Optical Technology Letters</i> 51(11): 2612-2614. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohamad Nazri A. Karim, Mohamad Kamal A. Rahim, Muhammad Ramlee Kamarudin and Mohamad Zoinol Abdul Azziz. 2010. A Comparison of Fractal Koch Antenna for UHF band application. <i>4th European Conference on Antenna and propagation (Eucap 2010)</i>, 12-16 Apr 2010, Barcelona. 2. Mohd Nazri A. Karim and Mohamad Kamal A. Rahim. 2009. Analysis of Second iteration Fractal Koch antenna for wireless application. <i>IEEE International Conference on Antenna, propagation and Systems (INAS 2009)</i>, 3-5 Dec 2009, Johor Bahru.



	<ol style="list-style-type: none"> 3. Karim, M.N.A. and Rahim, M.K.A . 2009. Series Iteration fractal koch antenna for UHF band application. <i>International Symposium on Antennas and Propagation (ISAP 2009)</i>, 20-23 Oct 2009, Bangkok. 4. Mohd Nazri A. Karim, Mohamad Kamal A. Rahim, Osman Ayop and Thelaha Masri. 2008. Broadband Fractal Koch Antenna. <i>6th Student Conference on Research and Development (SCORED 2008)</i>, 26-27 Nov 2008, Johor Bahru. <p>Product</p> <p>Prototype of factual antenna for UHF band application</p>
Awards/Certificates	<ol style="list-style-type: none"> 1. International Exposition of Research and Invention of Institutions of Higher learning 2009 (PECIPTA 2009); Silver Medal
IP Status	<ol style="list-style-type: none"> 1. Malaysian Patent filed (PI 20091929); Second iteration fractal koch dipole antenna array for ultra frequency applications. 2. Malaysian Patent filed (PI 20091163); Series Koch dipole antenna arrays.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM)</p> <p>Universiti Teknologi Malaysia (UTM)</p> <p>81310 Skudai,</p> <p>Johor Darul Takzim.</p> <p>Office: 07-553 6088</p> <p>H/p: 013-748 4664</p> <p>mkamal@fke.utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Electromagnetic Band-gaps Structure in Microwave Device Design
Project Number	01-01-06-SF0031
Project Leader and Team Members	Leader: Mohamad Kamal Abdul Rahim Members: Mohd Haizal Jamaluddin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objective of this project was successfully achieved. The design of the EBG has been completed and the EBG structure has been incorporated into an antenna design. The prototype of this EBG structure has been tested and verified with a simulation using AWR and CST.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Masri, T. and Rahim, M.K.A. 2010. Dual Band Microstrip Antenna Array with a Combination of Mushroom, Modified Minkowski and Sierpinski EBG. <i>IET Microwave Antenna and Propagation</i> 4: 1756-1763. 2. Masri, T., Rahim, M.K.A., Majid, H.A., Ayop, O., Zubir, F. and Karim, M.N.A. 2010. Electromagnetic Band Gap structure for Planar Ultra Wide band antenna. <i>Journal of Electromagnetic Waves and Application</i> 24: 229-239. 3. Masri, T., Rahim, M.K.A., Ayop, O., Zubir, F., Samsuri, N.A. and Majid, H.A. 2010. Electromagnetic Band gap structure incorporate with dual band microstrip antenna. <i>Progress in Electromagnetic Research</i> M 11: 111-122. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Thelaha Masri and Mohamad Kamal A. Rahim. 2008. An Electromagnetic Band gap Structure for Ultra Wideband Antenna. <i>International Symposium on Antennas and Propagation (ISAP 2008)</i>, 27-30 Oct 2008, Taiwan. 2. Masri, T., Rahim, M.K.A. and Karim, M.N.A. 2007. A Novel 2D Minkowski Gasket EBG Structure for Multiband Microstrip antenna. <i>European Conference on Antenna and Propagation (EuCAP 2007)</i>, 11-16 Nov 2007, Edinburgh.



	<p>3. Masri, T., Rahim, M.K.A. and Karim, M.N.A. 2007. A Novel 2D Sierpensi Gasket EBG structure for Multiband Microstrip Antenna. <i>Asia-Pacific Conference on Applied Electromagnetics (APACE 2007)</i>, 4–6 Dec 2007, Melaka.</p> <p>Product: Prototypes of antenna with band gap structure</p>
Awards/Certificates	<p>1. International Exposition of Research and Invention of Institutions of Higher Learning 2009: Bronze Medal</p> <p>2. Industrial Art & Technolgy Exhibition 2010: Silver Medal</p>
IP Status	<p>1. Malaysian Patent filed (PI 2009 1188); An antenna array and UWB antenna incorporating electromagnetic bandgap (EBG) structures.</p> <p>2. Malaysian Patent filed (PI 2010003778); UWB antenna with dual band electromagnetic band gap structure.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim. Office: 07-553 6088 H/p: 013-748 4664 mkamal@fke.utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Adaptive Software Architecture for Radio Frequency Identification (RFID) Middleware
Project Number	01-01-06-SF0032
Project Leader and Team Members	Leader: Siti Zaiton Mohd Hashim Members: Mohd Saberi
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to investigate the architecture of existing middleware technology, RFID middleware and adaptive features in RFID middleware in order to propose adaptive architecture for RFID Middleware. Furthermore, an adaptive middleware, which has filtering capability, multi-reader, multi-platform and message adapter features, will be implemented and developed to adapt to new applications. The final stage of this project was to test and validate the adaptability of the developed middleware architecture with several RFID applications.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Mardiyono and Siti Zaiton Mohd Hashim. 2008. Proving Adaptive Characteristics of Reader Adapter for Adaptive RFID Middleware Architecture. <i>International Joint Conference in Engineering (IJSE2008)</i> , 2-5 Aug 2008, Jakarta.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development and Evaluation of Reusable RFID Software Components
Project Number	01-01-06-SF0033
Project Leader and Team Members	Leader: Wan Mohd Nasir Wan Kadir Member: Siti Zaiton Mohd Hashim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The architecture, interfaces, and evaluation framework for the reusable RFID software components were defined based on an exhaustive literature review and feedback from their application while conducting the case study. Reusable RFID software components were developed based on the above architecture and interfaces. The components were developed using Java programming language.</p> <p>The developed RFID software components were evaluated using the proposed component of evaluation framework. The components are implemented in the case study and consequently evaluated using the criteria defined by the framework. However, the additional evaluation using synthetic experiment is yet to be completed, due to the unavailability of suitable human subjects and the unsuitability of the research object.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Suryani Ismail, Wan, M.N., Wan-Kadir, Yazid M. Saman and Siti Z. Mohd-Hashim. 2008. A Review on the Component Evaluation Approaches to Support Software Reuse. <i>3rd International Symposium on Information Technology</i>, 26-29 Aug 2008, Kuala Lumpur. 2. Suryani Ismail, Wan, M.N., Wan-Kadir, Yazid M. Saman and Siti Z. Mohd-Hashim. 2008. Towards Component Evaluation Approaches. <i>4th Postgraduate Annual Research Seminar (PARS'08)</i>, 1-3 Jul 2008, UTM Skudai.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Bone Adaptation Algorithm for Pre-operative Surgical Tool in Joint Arthroplasty
Project Number	01-01-06-SF0034
Project Leader and Team Members	Leader: Mohammed Rafiq Abdul Kadir Members: Mohd. Hasbullah Idris
Field of Research	Medical and Health Sciences
Project Summary	All of the project objectives have been achieved. Reconstruction of three dimensional models of the hip joint have been completed from CT datasets, obtained from UIAM in collaboration with the radiology and orthopaedics departments. Furthermore, implant designs have been produced for hip replacement, and the bone adaptation phenomena simulated through an interface micro motion algorithm. The code produced during this project can be used not only in hip arthroplasty simulation, but also on various other human joints – for example the shoulder, ankle and spine, and for dental procedures.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Classification Tool Using Intelligent Techniques for Cancer Disease Classification from Microarray Gene Expression Data
Project Number	01-01-06-SF0035
Project Leader and Team Members	Leader: Safaai Deris
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to investigate and analyse cancer disease classification for characterising attributes of the disease which are specific to the patient, and to develop a model of the cancers in order to design and develop an intelligent algorithm for gene selection and classification to develop a classification tool.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
Phone Number	Office: 07-553 7784 H/p: 019-756 9202
e-Mail	safaai@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Radio Frequency (RF) Front-end Design of Radio Access Point for Radio Over Fiber (ROF) Technology
Project Number	01-01-06-SF0038
Project Leader and Team Members	Leader: Razali Ngah Member: Sevia Mahdaliza Idrus
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objective of this project was to design and develop a small size and low power consumption down link Radio Frequency (RF), the front-end of a Radio Access Point (RAP). The Radio Access Point For Radio Over Fiber (ROF) down link consists of an RF power amplifier, a band pass filter and an antenna. Each part was simulated using a suitable simulator before the prototypes were developed. The RF power amplifier, band pass filter and an antenna have been simulated and fabricated.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Razali Ngah, Teguh Prakoso and Yusnita Rahayu. 2007. Coverage range and cost comparison of RAU design for In-building RoF. <i>International Conference of Electrical Engineering & Informatic (ICEEI2007)</i>, 17-19 Jun 2007, Bandung. 2. Razali Ngah, Yusnita Rahayu, Teguh Prakoso and Mohd Shukri Othman. 2007. Printed square UWB antenna. <i>International Conference of Electrical Engineering & Informatic (ICEEI2007)</i>, 17-19 Jun 2007, Bandung. 3. Teguh Prakoso, Razali Ngah and Tharek Abdul Rahman. 2008. Representation of Antenna in Two-Port Network S-Parameter. <i>International RF and Microwave (RFM) Conference</i>, Dec 2008, Kuala Lumpur. 4. Razali Ngah, Reza Abdolee, Tharek Abd Rahman and Vida Vakilian. 2007. Comparative analysis of four wave mixing effect between conventional optical and radio over fiber system. <i>International Conference on Robotics, Vision, Information and Signal Processing (ROVISP 2007)</i>, 28-30 Nov 2007, Penang.



	5. Teguh Prakoso, Razali Ngah and Tharek Abdul Rahman. 2008. 8 GHz photonic antenna for point-to-point applications. <i>International RF and Microwave (RFM) Conference</i> , Dec 2008, Kuala Lumpur.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Photonics Frequency Conversion for Millimeterwave Radio Over Fiber System (MMWROF)
Project Number	01-01-06-SF0064
Project Leader and Team Members	Leader: Sevia Mahdaliza Idrus Member: Razali Ngah
Field of Research	Engineering sciences
Project Summary	<p>This project has successfully achieved its objectives. The photo detection with photonic frequency conversion for the millimetre-wave band radio-overfiber (RoF) systems was characterised theoretically and reported. Furthermore, the proposed photonics frequency conversion design was successfully verified by system model and simulation. The prototype of the optoelectronic mixer for up to 3.4 GHz RF signals was practically demonstrated, as part of the front end receiver for RoF system design.</p>
Publications/Products/Outcomes	<p>Books:</p> <ol style="list-style-type: none"> 1. Supa'at, A.S., Marwanto, A., Idrus, S.M. and Alifah, S. 2008. Performance Analysis Of EDFA For SCM/ WDM Radio Over Fiber Communication Link. In: N.M. Kassim (Ed). <i>Recent Trends In Radio Over Fiber Technology</i> (pp. 49-64). Penerbit UTM. 2. Muhammad, A.B., Harun, H., Idrus, S.M. and Alifah, S. 2008. Radio Over Fiber Receiver Configuration Using An OEM As The Frequency Converter. In: N.M. Kassim (Ed). <i>Recent Trends In Radio Over Fiber Technology</i> (pp.118-128). Penerbit UTM.
Awards/Certificates	<ol style="list-style-type: none"> 1. Malaysia Technology Expo 2010: Special Foreign Award. 2. 9th Invention & Innovation Awards, Malaysia Technology Expo 2010: Gold Medal. 3. The International Exposition of Research and Invention of Institution of Higher learning 2009: Bronze Medal. 4. Industrial Art and Technology Exhibition 2009: Bronze Medal 5. Industrial Art and Technology Exhibition 2008: Silver Medal.



<p>IP Status</p>	<ol style="list-style-type: none"> 1. Malaysian Patent filed (PI 2008 4484); 3.4 GHz Front end Optical Receiver for Radio over Fiber System. 2. Malaysian Patent filed (PI 2010 000304); A Bootstrap Amplifier Of A Front-End Optical Receiver And A Method Of Bootstrap Amplifying. 3. Malaysian Patent filed (PI 2010 001880); Heterojunction Bipolar Transistor (HBT) Optoelectronic Mixer (OEM). 4. Copyright
<p>Additional Information</p>	<p>Linkages: UTM-Osaka Prefecture University (MOU); UTM-TM R&D (MOU for development of the optical wireless communication, in which the product would be the transmitter of the system).</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim. Office: 07-553 5451 H/p: 019-7200403 sevia@fke.utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Fpga-based Space-time MIMO-OFDM Design for Wireless Lans
Project Number	01-01-06-SF0065
Project Leader and Team Members	Leader: Nasir Shaikh Husin Member: Sharifah Kamilah Syed
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The main objective of the project was to design a space-time (ST) MIMO-OFDM for Wireless LANs such as HiperLAN. The design implemented on field programmable gate array (FPGA) enhances rapid prototyping and allows flexible integration of extension to improve the quality of service. An ST MIMO-OFDM baseband system prototype has been completed and this system was tested on the Altera DE2 FPGA development board.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Real-time Rendering for Large-scale 3D Virtual Heritage
Project Number	01-01-06-SF0066
Project Leader and Team Members	Leader: Mohd Shahrizal Sunar Members: Nor Azhar Mohd Arif, Hasnul Hadi Shamsudin, Daut Daman, Abdullah Bade, Abdullah Mohd Zin and Tengku Mohd Tengku Sembok
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project concentrated on the creation of an integrated solution of modelling and real-time visualisation of large-scale 3D virtual heritage environment. In order to accomplish this goal the study focused on the specific objectives to investigate, analyse and formulate an appropriate technique for a real-time rendering algorithm that can be used to design and model the 3D virtual heritage environment, and to construct a software library for real-time rendering of the virtual heritage environment.
Publications/Products/Outcomes	Journals: 1. Mohd Shahrizal Sunar, Abdullah Mohd Zin and Tengku Mohd Tengku Sembok. 2008. Improved View Frustum Culling Technique for Real-time Virtual Heritage Application. <i>International Journal of Virtual Reality</i> 7(3): 43-48.
IP Status	1. Malaysian Patent filed (PI 2010 700020); The Real-time Rendering for Large Scale 3D Virtual Heritage
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Architecture of R.F.I.D. System with Embedded Controllers for P.L.U.S. and P.L.K.N
Project Number	01-01-06-SF0116
Project Leader and Team Members	Leader: Ahmad Zuri Sha'ameri Member: Zulfakar Aspar
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to derive the architecture of an extended range of low cost R.F.I.D. System and also the protocol of the R.F.I.D. architecture so that reader collision is avoided. Furthermore, the architecture will be implemented in P.L.U.S. toll charging system and P.L.K.N. student monitoring system.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Smart Monitoring System (ad hoc sensor networks for river pollution and electric discharge monitoring)
Project Number	01-01-06-SF0117
Project Leader and Team Members	Leader: Safaai Deris Member: Zulfakar Aspar
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to develop new algorithms for data aggregation that can be used to fabricate inexpensive pollution monitoring, as well as electric discharge monitoring sensors, and to derive system architecture for Ad Hoc Wireless Sensor Networks. This is intended to be applied for Johor river pollution monitoring and for electric discharge monitoring at PETRONAS Petroleum Storage Depot at Pasir Gudang, Johor.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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e-Mail	safaai@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Reference Model for Reusable Learning Objects Repository of a Programming Education Learning System
Project Number	01-01-06-SF0120
Project Leader and Team Members	Leader: Norsham Idris Members: Zaidatun Tasir
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Conceptual representation of Reusable Learning Objects has been developed for programming education complete with architectural design, data flow and database design. Moreover, a prototype of Repository of Learning Objects for Programming Education has also been completed.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Artificial Life Neural Network Caching for Adaptive Hypermedia Learning System
Project Number	01-01-06-SF0121
Project Leader and Team Members	Leader: Sarina Sulaiman Member: Siti Mariyam Shamsuddin, Razana Alwee, Nor Bahiah Ahmad, Farhan Mohamed and Fadni Forkan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project successfully achieved its objectives, which were to determine an optimal (effective and efficient) algorithm for intelligent and integrated web caching for Adaptive Hypermedia Learning and to develop an embedded Hypermedia Learning with Artificial Life Neural Network Web Caching Architecture. Prototype applications incorporating the proposed architecture have been developed.
Awards/Certificates	1. 4th Postgraduate Annual Research Seminar 2008: Merit Award.
IP Status	1. Copyright 2. Malaysian Patent filed (PI 20093236);Method and System for Intelligent Web Caching.
Additional Information	International Linkages: Technical University of Ostrava, Czech Republic; MIR Labs, USA; Opus IT.
Contact Institution/Entity Address	Faculty of Computer Science and Information Systems Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
Phone Number	Office: 07-553 2067 H/p: 013-770 4856
e-Mail	sarina@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Intelligent Tool for Rice Yield Prediction
Project Number	01-01-06-SF0130
Project Leader and Team Members	Leader: Mohd Noor Md Sap
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This project was focused on the development of intelligent software for rice yield prediction. Outcomes of the project have been submitted, published and presented in international journals and conferences at National and International level. In addition, a functional first version of the software was also developed and prepared. Eleven research papers have been published, presented and submitted for different seminars and journals at National and International levels, describing the detail of the operating intelligent algorithms of the program. Furthermore, The Rice Yield Prediction Tool prototype has also been developed.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Sap, M.N.M., Kohram, M. and Ralescu, A.L. 2008. Spectral Divergence Based Kernels for SVM Classification of Hyper-Spectral Data. <i>19th Midwest Artificial Intelligence and Cognitive Science Conference (MAICS 2008)</i>, 12-13 Apr 2008, Cincinnati.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim. Office: 07-553 2419 mohdnoor@utm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Intelligent 3D Solid Modeler Based on Artificial Intelligence Technique
Project Number	01-01-06-SF0132
Project Leader and Team Members	Leader: Azlan Mohd. Zain Member: Habibollah Haron
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of this project were to develop intelligent skewed symmetry detection of 2D regular line drawing and 3D geometric modeller to convert 2D regular engineering drawing into a solid 3D model.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Low Cost Enterprise Resource Planning Prototype System for Malaysian Small and Medium Industry Using Open Source Software
Project Number	01-01-06-SF0133
Project Leader and Team Members	Leader: Mohd. Salihin Ngadiman Member: Ruzaini Abdullah Arshah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of the project were to design an alternative framework and methods for developing open source ERP software, specifically for small and medium industries in Malaysia. The second objective was to develop a prototype of open source ERP software that can be implemented in small and medium industries sector, as well as determine its competitiveness compared to current commercial software, and to improve it accordingly.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim. Office: 07-553 2394 msn@fsksm.utm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Virtual Product Life Cycle Design Tool Using Artificial Intelligence Technique
Project Number	01-01-06-SF0134
Project Leader and Team Members	Leader: Habibollah Haron Member: Mazlina Abdul Majid
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This project achieved its objectives to propose a framework with new algorithm of features extraction in determining dimension of machining parameter; to develop a prototype for expert system to select the value of machining parameter in hard turning process; and to develop a rule for parameter selection in expert system.</p> <p>The copyright process will be done as the initial step to commercialise the result of the project.</p>
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
Phone Number	Office: 07-553 2012 H/p: 019-745 4056
e-Mail	habib@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of High Usability and Secure Knowledge Based Authentication Technique Using Hybrid Graphical Password Scheme
Project Number	01-01-06-SF0137
Project Leader and Team Members	Leader: Norafida Ithnin Members: Othman Ibrahim and Hazinah Kuty Mammi
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project achieved its objective in identifying the usability characteristics and secure elements of the knowledge based authentication technique, through the affinity of choice and power of recollection, and applying the usability characteristics and secure elements to produce an alternative knowledge-based authentication technique, using a hybrid graphical password authentication scheme.
Awards/Certificates	1. INATEX/UTM 2008: Bronze Medal 2. Malaysian Technology Expo 2009: Silver Medal
IP Status	1. Malaysian Patent filed (PI20092647); HyGrips (Graphical Password Authentication).
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Smart e-form for Standard Malay Using Agent and Speech Technologies
Project Number	01-01-06-SF0139
Project Leader and Team Members	Leader: Abd Manan Ahmad Member: Ali Selamat
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The aim of this research project was to develop an online registration system for FSKSM students that can be used to register course subjects, with the function of being able to insert and delete a subject. The student is also able to register for a motor sticker using their voice input. In order to accomplish this, two other objectives first needed to be achieved: to develop standard speech corpus consisting of personal information datasets for the Malay language, and to embed intelligence properties into a typical form for the purpose of auto-filing.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Secure Hybrid Networking Technology for Mobile Campus Community System
Project Number	01-01-06-SF0140
Project Leader and Team Members	Leader: Kamalrulnizam Abu Bakar Member: Abdul Hanan Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This completed project focussed on the development of a secure hybrid network system for an enclosed area, such as a campus area with residential complex. The system consists of multiple access networks technologies - including a network selection module and an architecture of hybrid network. Furthermore, the architecture contains three network elements (Main Network, Supplementary Network, and Additional network). The development of a prototype Mobile Campus Community System has also been completed that is designed to be deployed over the hybrid network infrastructure.</p> <p>For the commercialisation of this product, some packages of hybrid network infrastructure solutions has been developed for different scales of area of implementation. For example, network infrastructures for a school, campus, residential area, complex or resort. The network infrastructure solution will be marketed as a package together with an application framework for a mobile community system. The package is customised according to the type and nature of organisation that will use the system.</p>
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Intelligent Algorithm for Criterion-based Dynamic Generation of Test Questions
Project Number	01-01-06-SF0141
Project Leader and Team Members	Leader: Norazah Yusof Member: Noraniah Mohd Yassin, Zaidatun Tasir, Norsham Idris and Razana Alwee
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This project focussed on developing algorithms for retrieving the most similar question items based on the distance and similarity measures. This will allow the reuse, revision and retaining of the selected question item based on the Case-Base Reasoning (CBR) methodology.</p> <p>Furthermore, the project developed a question bank system, following the outcome-based education approach that includes learning objectives, Bloom's taxonomy, discrimination index and difficulty index, and based on Moodle e-learning system database structure.</p>
IP Status	Copyright
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
Phone Number	Office: 07-553 2341 H/p: 019-728 0505
e-Mail	norazah@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Interactive Spatiotemporal Visualisation Algorithm for 3D Surface Movement in Virtual Geographical Information System Application
Project Number	01-01-06-SF0143
Project Leader and Team Members	Leader: Mohd Shafry Mohd Rahim Member: Abdul Rashid Mohamed
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This research aimed to provide an interactive visualisation algorithm for visualising movement of 3D spatiotemporal data which can be manipulated by VGIS users interactively. It has achieved its objectives i.e. the development of interactive visualisation algorithm using a morphological approach for simulating surface movement, a visualisation library for surface movement visualisation has been successfully completed and tested, and surface movement visualisation tools have been developed for GIS Data.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Embedded Soc-based Hardware Integration of Compression-Encryption-authentication for Data Security of Networked Multi-gigabyte Databases
Project Number	01-01-06-SF0146
Project Leader and Team Members	Leader: Mohamed Khalil Mohd Hani Member: Shaikh Nasir Shaikh Husin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This project is about application of a multi-gigabyte database that focuses on the objectives to design and develop encryption and authentication schemes for database security for implementation in an FPGA-based hardware system. It has accomplished the development of a SoC-based networked and embedded system, integrating compression-encryption authentication hardware processors with associated middleware that provides the pervasive information protection and strong database security required in the next-generation, and citizen-friendly e-Government, e-commerce, e-banking and e-health systems and designing an FPGA-based embedded system for high-speed, data-on-the-fly compression.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Zulkifli Md Yusof and Mohamed Khalil-Hani. 2007. System Level Modelling of Compressed Memory Architectures using systemC. <i>International Conference on Robotics, Information & Signal Processing (ROVISP 2007)</i>, 28-30 Nov 2007, Penang. 2. Mohamed Khalil-Hani, Illiasaak Ahmad and Norashikin. 2007. Embedded Cryptosystem for Strong Data Security in Telemedicine. <i>International Conference on Robotics, Vision, Information and Signal Processing (ROVISP 2007)</i>, 28-30 Nov 2007, Penang. 3. Mohamed Khalil-Hani, Arif Irwansyah and Hau, Y.W. 2008. A Tightly coupled Finite Field Arithmetic Hardware in an FPGA-based Embedded Processor core for Elliptic Curve Cryptography. <i>International Conference on Electronic Design (ICED 2008)</i>, 1-3 Dec 2008, Penang.

	<p>4. Vishnu P. Nambiar, Mohamed Khalil-Hani and Mun'im A. Zabidi, M. 2008. Accelerating the AES Encryption function in OpenSSL for Embedded Systems. <i>International Conference on Electronic Design (ICED 2008)</i>, 1-3 Dec 2008, Penang.</p>
<p>Contact Institution/Entity Address Phone Number e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) 81310 Skudai, Johor Darul Takzim. Office: 07-553 5223 H/p: 012-774 2740 khalil@fke.utm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Reconfigurable Ultra Wideband (UWB) Antenna Design and Development
Project Number	01-01-06-SF0147
Project Leader and Team Members	Leader: Tharek Abd Rahman Member: Mohd Riduan Ahmad
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has successfully produced reconfigurable UWB antenna for wireless communication.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
Phone Number	Office: 07-553 5305
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Antenna Design Using Left-handed Materials
Project Number	01-01-06-SF0148
Project Leader and Team Members	Leader: Tharek Abd Rahman Member: Mohd Riduan Ahmad
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has successfully fulfilled its objective to design a High Gain Antenna using Left-handed Materials with Tuneable Radiation Angle and Beamwidth Functionalities. Furthermore, the antenna which can tune the beam in any desired direction and adjust the beam gain needed also has been implemented.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Flow Regime Identification and Particle Sizing Investigation of a Solids Conveying in Pneumatic Pipeline Using Electrostatic Sensors and Neural Network Techniques
Project Number	01-01-06-SF0158
Project Leader and Team Members	Leader: Mohd. Fua'ad Rahmat Member: Shahrum Shah Abdullah
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of this research were to detect the inherent charge on dry moving solid particles using electrostatic sensors and to provide data on concentration profiles for verifying the existing mathematical models using neural network as a tool.</p> <p>The specific objectives of the research were to design a measurement section for a pneumatic conveyor to measure the peripheral pneumatically conveyed particles concentration profiles, to identify the flow regimes in a pneumatic conveyor using artificial neural network technique via simulation of different flow regimes by inserting baffles to obtain training data, and to investigate the particles size of solid conveying by generating concentration profiles over the cross-section of the conveyor and frequency spectrum analysis.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohd Fua'ad Rahmat and Norhalimatul Saadiah bt Kamarudin. 2008. Application of Electrical Charged Tomography for Imaging Industrial Process. <i>Regional Student Conference on Research and Development (SCOReD 2008)</i>, 26–27 Nov 2008, Universiti Teknologi Malaysia. 2. Mohd Fua'ad Rahmat and Hakilo Ahmed Sabit. 2007. Process Tomography System by Electrostatic Charge Carried by Particles using Neural Network as Flow Identification Tools. <i>Malaysia-Japan International Symposium on Advanced Technology</i>, 12–15 Nov 2007, Kuala Lumpur.



	<p>3. Mohd Fua'ad Rahmat and Mohd Daud Isa. 2008. Image Reconstruction algorithm based on least square with regularisation for process tomography system using electrical charged carried by particles. <i>Regional Student Conference on Research and Development (SCORed 2008)</i>, 26–27 Nov 2008, UT M.</p> <p>4. Mohd Fua'ad Rahmat and Hakilo Ahmed Sabit. 2007. Electrical Charge Tomography for Process Measurement Utilizing Electrostatic Charge Carried by Particles. <i>1st International Conference on Control, Instrumentation and Mechatronics (CIM 2007)</i>, 28–29 May 2007, Johor.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim. Office: 07-553 5900 H/p: 019-762 4446 fuaad@fke.utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Phoneme Based Medium Vocabulary Malay Continuous Speech Recognition System
Project Number	01-01-06-SF0159
Project Leader and Team Members	Leader: Rubita Sudirman Member: Muhammad Arif Abdul Rahim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	A Phoneme unit based of Medium Vocabulary Malay continuous speech recognition system was designed, and an extended method of HMM was used as the feature extraction technique as the front end processing of speech signals. Hence, various language modelling techniques were designed to capture the language probabilistic properties of the speech corpus and its language graph.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Rubita Sudirman, Sh-Hussain Salleh and Shaharuddin Salleh. 2007. Hybrid Method for Digits Recognition using Fixed-Frame Scores and Derived Pitch. <i>Proceedings of the International Federation of Medical and Biological Engineering</i> 15: 67-70. 2. Rubita Sudirman, Sh. Hussain Salleh and Shaharuddin Salleh. 2007. An Improved Method in Speech Signal Input Representation Based on DTW Technique for NN Speech Recognition System. <i>Jurnal Teknologi</i> 46: 135–149. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ting Chee Ming, Sh-Hussain Salleh, Ariff, A.K. and Normaziah, A.A. 2006. Speaker Dependent Malay Isolated Digit Recognition Using Continuous Density Hidden Markov Model. <i>3rd International Conference on Artificial Intelligence in Engineering and Technology</i>, 22-24 Nov. 2006, Sabah.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Digital Optical Switch for All Optical Cross-connect
Project Number	01-01-06-SF0162
Project Leader and Team Members	Leader: Abu Sahmah Mohd Supa'at Member: Razali Ngah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The project objectives were to design, realise and characterise the Digital Optical Switch for All Optical Cross Connect. A new design of Digital Optical Switch for All Optical Cross Connect has been developed with low crosstalk and low power consumption.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
Phone Number	Office: 07-553 5243 H/p: 019-712 4642
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Cooperative Intrusion Detection System for Grid Computing
Project Number	01-01-06-SF0163
Project Leader and Team Members	Leader: Abdul Samad Ismail Member: Kamalrulnizam Abu Bakar
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The project objective focussed on developing an architecture of intrusion detection system for a grid environment. The grid intrusion detection has two main parts: the first is an intrusion detection agent responsible for gathering information, and the second part is the intrusion detection server responsible for analysing the gathered information and cooperating with other Intrusion Detection Systems to detect intrusion.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Automation of DNA Computing Readout Based on in Vitro-in Silico Processing of Real-time Polymerase Chain Reaction
Project Number	01-01-06-SF0176
Project Leader and Team Members	Leader: Zuwairie Ibrahim Member: Nor Haniza Sarmin
Field of Research	Biotechnology
Project Summary	The project objectives were to design and develop an automated output visualisation system for a DNA-based computer, to discover and identify the applications of real-time PCR in DNA computation, to perform biochemical experiments of in vitro computation of weighted graph problems based on DNA computing approach, and to provide an evolutionary approach towards the development of a hybrid DNA-silicon based computer.
Publications/Products/Outcomes	Journals: 1. Zuwairie Ibrahim, John A. Rose, Akira Suyama and Marzuki Khalid. 2008. Experimental Implementation and Analysis of a DNA Computing Readout Method Based on Real-Time PCR with TaqMan Probes. <i>Natural Computing Journal</i> 7(2): 277-286.
IP Status	1. Malaysian Patent filed (PI2008 4654); An automated output visualization of a DNA computer on a LightCycler.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Agent Based Language Identification Tools for Web Documents Using Machine Learning Algorithms
Project Number	01-01-06-SF0180
Project Leader and Team Members	Leader: Ali Selamat Member: Safaai Deris
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The project objectives were to design model agent-based web language identification tools on web documents, using statistical machine learning algorithms, and to analyse the model agent-based web language identification tools on web documents, using statistical machine learning algorithms.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim. Office: 07-553 8099 aselamat@utm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	EEG-based Brain-computer Interface System to Control a Prototype Intelligent Wheelchair
Project Number	01-01-06-SF0184
Project Leader and Team Members	Leader: Salwani Mohd Daud Member: Jasmy Yunus and Norlaili Mat Safri
Field of Research	Engineering Sciences
Project Summary	The objectives of this project were to introduce a new mental task as an alternative input for brain-computer interface, to develop suitable technique in acquisition of EEG, and to remove ocular artefacts in EEG and analysed the effectiveness of lifting wavelet transform used in eliminating these artefacts. In addition, the project aimed to study, analyse and select relevant features in electroencephalogram related to these mental tasks, to investigate the effectiveness of few classifiers to distinguish the mental tasks, and to design and develop a prototype motorised wheelchair that can be controlled by these mental tasks features.
IP Status	PI 2009 1091: EEG Wavelet based features to control a prototype motor for a wheelchair and a system thereof
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Jalan Semarak, 54100 Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Appointment Scheduling Agent Using Distributed Constraint Satisfaction (DISCS)
Project Number	01-01-06-SF0185
Project Leader and Team Members	Leader: Nurulhuda Firdaus Mohd. Azmi Member: Mohd. Nazri Kama
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The goal of this research was to develop appointment scheduling agent in a reservation environment, with implementation of Distributed Constraint Satisfaction (DisCS). In order to arrive at this goal there were two other objectives to be achieved, which were developing applicable mathematical model based on Distributed Constraint Satisfaction (DisCS) in appointment schedule, and also designing and developing the system architecture of appointment scheduling agent.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ibrahim, Rozana Diana Ahmad Rusli and Nurulhuda Firdaus Mohd Azmi. 2007. Preliminary analysis data collection on vehicle inspection, Rozana. <i>Regional Annual Fundamental Science Seminar</i>, 28-29 May 2007, UTM Skudai. 2. Diana, Nuzulha Khilwani and Nurulhuda Firdaus. 2007. Development of Appointment Scheduling for Vehicle Inspection: A data analysis. <i>Regional Annual Fundamental Science Seminar</i>, 28-29 May 2007, UTM Skudai. 3. Nuzulha Khilwani, Nurulhuda Firdaus, Habibollah Haron and Rozana Diana. 2007. Modeling of an agent based meeting schedule in reservation system: a preliminary study. <i>1st Regional Conference in Science and Technology</i>, 29-30 Nov 2007, Sabah. 4. Rozana Diana, Nuzulha Khilwani and Nurulhuda Firdaus. 2007. <i>2nd International Conference on Mathematical Science (ICOMS 07)</i>, 28-29 May 2007, UTM Skudai.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Jalan Semarak, 54100 Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Intelligent Tool for Poultry Disease Detection from Chaotic Data Using Machine Learning Techniques
Project Number	01-01-06-SF0192
Project Leader and Team Members	Leader: Mohd Noor Md Sap Member: Muhamad Radzali Mispa
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of the project have been achieved by enhancing existing and developing new techniques in classification and outlier detection.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	An Intelligent Agent Based Spoken Dialogue System for Content Based Image Retrieval
Project Number	01-01-06-SF0212
Project Leader and Team Members	Leader: Ali Selamat Member: Md Hafiz Selamat
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This project has achieved its objectives to analyse and design an intelligent agent model and a spoken dialogue system for content based image retrieval, and to develop and test the effectiveness of the prototype. The analysis and design has been documented and the prototype system for content based image retrieval has been developed and tested with the spoken dialogue system.</p> <p>The results of this research could be used to support an image search retrieval using a spoken dialogue system. The algorithm, developed based on perspective box, can be patented and used for other content based image retrieval systems such as medical informatics.</p>
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim. Office: 07-553 8099 aselamat@utm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Microstrip Lines with Special Deformation
Project Number	01-01-06-SF0213
Project Leader and Team Members	Leader: Wan Khairuddin Wan Ali Member: Kamarul Baharin Tawi
Field of Research	Applied Sciences and Technologies
Project Summary	This project has achieved its objectives to study, theoretically and experimentally, the characteristics of microstrip lines with special deformation, to analyse, test and apply the microstrip lines with a special deformation onto practical circuits, to develop a practical method to apply the microstrip line with special deformation onto real circuit, and to compare the effectiveness the method with various design parameters.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) 81310 Skudai, Johor Darul Takzim. Office: 07-553 4719 H/p: 012-7088 825 wankhai@fkm.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Knowledge Sharing Framework for Government to Society
Project Number	01-01-06-SF0221
Project Leader and Team Members	Leader: Azizah Abdul Rahman Member: Norasnita Ahmad
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has achieved its objective in categorising a knowledge based SECI model. A knowledge sharing framework has been developed that can be used as a guideline in implementing knowledge sharing system in e-government. The framework proposed a mapping of shared knowledge type with appropriate sharing techniques and respective appropriate knowledge sharing tools. The framework tools and web-based knowledge sharing have also been developed based on a case study, in order to demonstrate the proposed framework.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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e-Mail	azizah@fsksm.utm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Information Architecture for Malaysian Natural Product Repository
Project Number	01-01-06-SF0222
Project Leader and Team Members	Leader: Azizah Abdul Rahman Member: Suraya Miskon
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This project has achieved its objectives. These were to model the information requirement by the stakeholders of Malaysian natural products by identifying the information that they require and that they are willing to share among themselves. The general public, researchers studying herbs, entrepreneurs wishing to use herbal products, and special service organisations related to the natural product industry are considered to be the stakeholders.</p> <p>This project also developed information requirement capturing tools, which capture research information as requested by herbs researchers. Research information is represented using an ontology technique.</p> <p>Information Architecture was designed for Malaysian natural products according to stakeholder analysis. Based on this work, a prototype Malaysian Natural Product Repository has been developed.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Turtle Excluder Device (TED) Using Sound Technique
Project Number	01-01-06-SF0225
Project Leader and Team Members	Leader: Jafri Din Member: Raja Bidin Raja Hassan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project concentrated on characterisation of turtle behaviour when exposed to various sounds. Besides identifying the hearing threshold for the turtle, TED specification has been determined using underwater sound technique.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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e-Mail	jafri@fke.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Intelligent Multi-agent Robotic System
Project Number	01-01-06-SF0226
Project Leader and Team Members	Leader: Shamsudin Mohd Amin Member: Rosbi Mamat
Field of Research	Engineering Sciences
Project Summary	This project has achieved its objectives to design and build wheeled mobile robots for collaborative task; to develop a collaborative task decision making capability using behaviour-based robotics; and to develop multi-agent (multi-robot) collaborative strategies based on decentralised control architecture.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Remote Protein Homology Detection Using Artificial Intelligence Algorithm
Project Number	01-01-06-SF0228
Project Leader and Team Members	Leader: Safie Mat Yatim Member: Ruhaidah Samsudin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has achieved its objectives to develop a computational model, to develop an intelligent algorithm for the model and to test and verify the algorithm.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Tools for Component-oriented Programming of Embedded Real-time Software
Project Number	01-01-06-SF0232
Project Leader and Team Members	Leader: Dayang Norhayati Abang Jawawi Members: Rosbi Mamat, Radziah Mohamad, Shahliza Ab Halim, Siti Zaiton Mohd Hashim and Safaai Deris,
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This project has achieved its objectives to develop a computational model, to develop an intelligent algorithm for the model and to test and verify the algorithm. Component-oriented programming (COP) is an infrastructure to enables programs to be constructed from pre-built reusable software components: component model, connection model, and deployment model. The project aimed to develop tools for a COP infrastructure based on a PErsasive Component Systems (PECOS) component. A hybrid approach was used to support the infrastructure and enable a systematic and detailed modelling approach for component-based development of embedded real-time (ERT) systems. During application engineering, components created in a component engineering process can be used to deploy a number of domain applications. To support this, two basic tools were developed for the COP environment: a graphical composition environment to connect and adapt existing components, and automatic code generation tools based on the graphical composition. This project has successfully developed the graphical composition environment tool to support a connection model of the COP infrastructure in a component engineering process. In this project the software structure code template was developed using the automatic code generation tool. The code generated has been tested on an autonomous wheelchair testbed; the COP infrastructure (based on a PECOS model) can be implemented, and successfully addresses both functional and non- functional properties of ERT software.</p>



<p>Publications/Products/ Outcomes</p>	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohd Zulkifli Zaki and Dayang Norhayati Abang Jawawi. 2009. A Review on Component-Based Development Methodologies for UML Profiles for MARTE. <i>1st APSEC 2009 Workshop & Tutorial and Software Engineering Postgraduates Workshop (SEPoW 2009)</i>, 30 Nov 2009, Penang. 2. Suzila Sabil and Dayang Norhayati Abang Jawawi. 2009. Mapping Metamodel of MARMOT Method into PECOS Component Infrastructure. <i>1st APSEC 2009 Workshop & Tutorial and Software Engineering Postgraduates Workshop (SEPoW 2009)</i>, 30 Nov 2009, Penang. 3. Suzila Sabil and Dayang Norhayati Abang Jawawi. 2009. Integration Of Pecos Into Marmot For Embedded Real-Time Software Component-Based Development. <i>4th International Conference On Software Engineering Advances (ICSEA 2009)</i>, Sep 2009, Porto. 4. Suzila Sabil and Dayang Norhayati Abang Jawawi. 2009. Marmot And Pecos Hybrid Approach For Embedded Real Time Software Development. <i>5th International Conference On Information & Communication Technology And Systems (ICTS 2009)</i>, Aug 2009, Surabaya.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor Darul Takzim. Office: 07-553 2354 H/p: 012-766 2874 dayang@utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Software Tool for Performance Evaluation of Mobile Ad-hoc Networks Using Taguchi Method
Project Number	01-01-06-SF0234
Project Leader and Team Members	Leader: Muhammad Hisyam Lee Members: Shaharuddin Salleh and Bahrom Sanugi
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This project aims to characterise the network parameters that impact the performance of the DSR protocol, to quantify the effects of the network parameters that influence the performance of the DSR protocol, to determine the most influential parameters effecting the performance of the DSR protocol including the interactive effects of the influential parameters and</p> <p>to develop software tool to measure the performance for the DSR protocol based on Taguchi approach.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Muhammad H. Lee, Hazura Mohamed, and Mazalan Sarahintu. 2008. Using Taguchi's Approach in Determine and Rank Factors that Affect the Performance of Dynamic Source Routing Protocol in Mobile Ad Hoc Networks. <i>Journal of Applied Probability and Statistics</i> 3(1): 115-124. 2. Muhammad Hisyam Lee, Izman Sudin, Goh Eng Ken, and Azami Zaharim. Parameters Optimisation of Rotary Ultrasonic Machining of Glass Lens for Surface Roughness Using Statistical Taguchi's Experimental Design. <i>Proceedings of the 13th WSEAS International Conference on APPLIED MATHEMATICS (MATH'08)</i>, 15 – 17 December. 3. Hazura Mohamed, Muhammad Hisyam Lee, Mazalan Sarahintu, Shaharuddin Salleh, Bahrom Sanugi. 2008. Simulation Analysis of Ad Hoc On-Demand Distance Vector Routing Protocol Performance in Mobile Ad Hoc Network Using Taguchi Design Approach. <i>Journal of Fundamental Sciences</i> 4: 387-394.



<p>Publications/Products/ Outcomes</p>	<ol style="list-style-type: none"> 4. Hazura Mohamed, Muhammad Hisyam Lee, Mazalan Sarahintu, Shaharuddin Salleh and Bahrom Sanugi. 2008. The Use of Taguchi Experimental Design to Determine Factors Affecting the Performance of Destination Sequence Distance Vector Routing Protocol in Mobile Ad Hoc Networks, Journal of Mathematics and Science. 5. Muhammad Hisyam Lee, Mazalan Sarahintu, Hazura Mohamed, Bahrom Sanugi, Stephan Olariu, Azami Zaharim. Performance Evaluation of Routing Protocols for Mobile Ad Hoc Networks Using Statistical Taguchi's Experimental Design. <i>Proceedings of the 13th WSEAS International Conference on APPLIED MATHEMATICS.</i>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor. Office: 07-553 4236 H/p: 019-700 7779 mhl@utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Node Protection Against Malicious Accusation Attack in Mobile Ad-hoc Network (MANET)
Project Number	01-01-06-SF0239
Project Leader and Team Members	Leader: Md Asri Ngadi Member: Mohd Murtadha Mohamad
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The project has successfully developed a secure algorithm to protect nodes in MANET environment against malicious accusation attack. The objectives were achieved; •to develop a secure method that provides a measure of protection against malicious accusation attacks in mobile ad-hoc network, •to develop a secure algorithm to protect nodes against malicious accusation attack in mobile adhoc network and to develop a secure prototype of Mobile Ad-hoc Network(MANET) that protect nodes in MANET against malicious accusation attacks.
Publications/Products/Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Satria Mandala, Md. Asri Ngadi and A.Hanan Abdullah. Intrusion Detection of Mobile Ad-Hoc Network (MANET): A Literature review. <i>The International Conference Quality In Research (QIR) X</i>, Jakarta - Indonesia, December 2007. 2. Satria Mandala, M.A. Ngadi, Abdul Hanan Abdullah, Abdul Samad Ismail. 2010. A variant of Merkle Signature Scheme to Protect AODV Routing Protocol, <i>IWCMC 2010</i>. 3. Satria Mandala, Abdul Hanan Abdullah, M.A Ngadi, Abdul Samad Ismail. Double Digital Signatures to Protect AODV Routing Protocol, <i>WiMo 2010</i>. 4. R.H. Khokhar, S. Mandala & M.A. Ngadi. A Review Current Routing Attacks In Mobile Ad-Hoc Networks. <i>The International Journal of Computer Science and Security (IJCSS)</i>, Vol. 2 No. 3, (pp 18-29). 2008.



	5. M.F. Ngatman, J.M. Sharif & M.A. Ngadi. Comprehensive Study of Transmission Techniques for Reducing Packet Loss and Delay in Multimedia over IP. <i>International Journal of Computer Science and Network Security (IJSNS)</i> , Vol. 8 No. 3, 2008 (SCOPUS).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor. Office: 07-553 2384 H/p: 016-778 7871 dr.asri@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Visualising Orientation of Ion Dynamics in Bioinformatics Datasets
Project Number	01-01-06-SF0241
Project Leader and Team Members	Leader: Johan Mohamad Sharif Member: Mohd Shahir Shamsir Omar
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project represents the movement of ions. The object should uncover the spatial and temporal events. It is also visualised a time scale when used key colour scheme
Publications/Products/Outcomes	Publications: 1. Streamlines as a collaborative tools for time series events in time varying glassy ion dynamics visualisation
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Multimodal Interaction for Web Based Digital Photo Retrieval: Toward Improving Users' Search Performance
Project Number	01-01-06-SF0244
Project Leader and Team Members	Leader: Nor Azman Ismail Member: Ali Selamat, Daut Daman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The target of this project is to design a model of Speech/ Graphical user interface (SGUI) for web based digital photo retrieval system. It also developed a prototype of Speech/ Graphical user interface (SGUI) for web based digital photo retrieval system to measure users' search performance.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Brain Mapping Using Topological Graphs Obtained by Surface Segmentation
Project Number	01-01-06-SF0245
Project Leader and Team Members	Leader: Daut Daman Members: Norhayati Daut and Ismail Mat Amin.
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project investigates how human brain can be mapped to iso surface and construct surface segmentation using topological graph. This project also develops and tests prototype software.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Level Of Detail (LOD) Technique in 3D Computer Graphics Application
Project Number	01-01-06-SF0246
Project Leader and Team Members	Leader: Nor Anita Fairos Ismail Members: Tuty Asmawaty Abdul Kadir and Suryanti Aw
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The project objectives were to determine Out-Of-Core simplification parameter for consideration in developing Level of Detail (LOD) Algorithm and to develop Level of Detail (LOD) Algorithm using Out-Of-Core simplification technique and tools for Computer Graphics Application using proposed technique
Publications/Products/Outcomes	Publications: 1. Out of Core Simplification with Appearance Preservation for Computer Game Applications. <i>UKSIM2009 IEEE</i> .
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Visualisation Ttool for an Old Fortran Based Engineering Software Program
Project Number	01-01-06-SF0247
Project Leader and Team Members	Leader: Nadzari Shaari Members: Adi Maimun Abdu and Norhayati Dau
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The study investigated the problems of an old engineering FORTRAN-based software in order to suit current need in graphical presentation. It also devised an algorithm for FORTRAN software conversion and developed a graphical visualisation tool kit so that old FORTRAN engineering software can be reusable in the current software platform.
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Phone Number	Office: 07-553 2317 H/p: 013-369 2511
e-Mail	nadzaris@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of an Intelligent Data Retrieval Optimisation Technique for Temporal Data in Hydrological Information Systems
Project Number	01-01-06-SF0249
Project Leader and Team Members	Leader: Zahabidin Jupri Member: Mohd Shafry Mohd, Mohd
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objective of this project is to determine retrieval parameter that is required to develop data retrieval optimisation technique. It also developed intelligent data retrieval optimisation and Hydrological Information System Database to evaluate the propose technique
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Computer Aided Diagnostic System for Major Lung Diseases
Project Number	01-01-06-SF0253
Project Leader and Team Members	Leader: Norliza Mohd Noor Member: Syed Abdul Rahman Sye and Omar Mohd Rijal
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project is to develop system was able to discriminate/ detect between disease present and disease absent, namely PNEU-NL, PTB-NL and LC-NL. The major lung disease considered in this study are pneumonia (PNEU), pulmonary tuberculosis (PTB) and lung cancer (LC). Normal lungs of healthy individuals (NL) were added in the study to represent the disease absent group. The feature extraction techniques were successfully developed using wavelet texture analysis. The techniques utilised chest radiograph (X-ray) only.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. N. M. Noor, O. M. Rijal, A. Yunus, S. A. R. Abu-Bakar and G. C. Peng. Selecting texture measures for selection of pneumonia. <i>The Proceedings of 9th IASTED International conference on Visualization, Imaging, and Image Processing, ACTA Press: Anaheim 2009</i>, pp. 19-24. 2. Using Statistical Features to Verify the Gold Standard for Pulmonary Tuberculosis Detection, <i>Int J CARS</i> (2008) 3 (Suppl 1): S426-428. 3. N. M. Noor, O. M. Rijal, S. A. R. Abu-Bakar, Mohd Iqbal and G. C. Peng. Andrews' Curve and Texture ellipsoid for the Detection of Pneumonia Using Chest X-ray. <i>The Proceedings of 13th Inter. Conf. on Computers. WSEAS Press, (2209)</i>, pp. 492-497. 4. O. M. Rijal, Mohd Iqbal, A. Yunus and N. M. Noor,. Some critical remarks on the initial detection of lung ailments using clinical data and chest radiography. <i>The Proceedings of 13th Inter. Conf. on Computers. WSEAS Press, (2209)</i>, pp.470-475.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Developing a Framework for 3D Cadastre System
Project Number	01-01-06-SF0259
Project Leader and Team Members	Leader: Muhammad Imzan Hassan Members: Mohamad Nor Said and Alias Abdul
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The model developed in this research can be used in the development of Malaysian 3D Cadastre that is a part of the Multi-purpose Cadastre project driven by Malaysian National Mapping Agency (NMA) and Jabatan Ukur dan Pemetaan Malaysia (JUPEM).
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Muhammad Imzan Hassan, Mohd. Hasif Ahmad Nasruddin, Alias Abdul Rahman, Ili 'Aainaa Yaakop. 2008. An Integrated 3d Cadastre – Malaysia As An Example. <i>International Society for Photogrammetry and Remote Sensing (ISPRS)</i>. 3-11 July 2008. Beijing, China. 2. Mohd. Hasif Ahmad Nasruddin, Muhammad Imzan Hassan, Alias Abdul Rahman. 2008. Developing 3D Cadastre Registration System. <i>International Symposium and Exhibition on Geoinformation (ISG)</i>. 13-15 October 2008. Kuala Lumpur, Malaysia. 3. Mohd Hasif Ahmad Nasruddin. 2008. Registration Model for 3D Cadastre Object. In: <i>Geoinformatics Postgraduate Seminar 2008, 26 February 2008</i>. Faculty of Geoinformation Science and Engineering, Universiti Teknologi Malaysia, Johor. 4. Mohd Hasif and Abdul Rahman, Alias. 2007. Registration of 3D Spatial Objects for 3D Cadastre. In: <i>Joint International Symposium and Exhibition on Geoinformation and International Symposium and Exhibition on Gps/Gnss 2007</i>, 5-7 November 2007, Persada Johor International Convention Centre, Johor Bahru.

Publications/Products/ Outcomes	5. Muhammad Imzan Hassan. 2008. Malaysian 3D Cadastre: Legal and Organizational Aspect. In: <i>Geoinformatics Postgraduate Seminar 2008. 26 February 2008</i> . Faculty of Geoinformation Science and Engineering, Universiti Teknologi Malaysia, Johor.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and Development of 3D Navigation System for 3D GIS
Project Number	01-01-06-SF0264
Project Leader and Team Members	Leader: Ivin Amri Musliman Members: Muhammad Imzan Hassan, Mohamad Nor Said
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project investigated and studied 3D navigation for real world environment through literature and current technology. It also designed and developed a framework model for 3D navigation that based on mobile computing environment. The 3D navigation system that was developed could be integrated and implemented with wireless communication system for information broadcast.
Publications/Products/Outcomes	Publications: 1. Modeling Visibility through Visual Landmarks in 3D Navigation using Geo-DBMS. <i>Springer Lecture Notes Series on Geoinformation and Cartography for 3D Geoinfo 2009 Workshop</i> , University of Ghent, Belgium. 2. GPS NMEA Integration with GIS for Navigation. <i>Research Monograph 2009</i> .
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Developing 3D Data Management for 3D Spatial Objects in Large Area
Project Number	01-01-06-SF0266
Project Leader and Team Members	Leader: Alias Abdul Rahman Members: Ivin Amri Musliman and Muhammad Imzan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project studied the relevant three dimensional data management for three dimensional spatial objects through current literature. The objectives are to design a conceptual and logical framework for the three dimensional data management of the spatial objects and to develop and implement the three dimensional data management system for large area based on the conceptual and the logical model.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Data Structuring for 3D Object. <i>Joint International Sysposium & Exhibition on Geoinformation and GPS/GNSS 2007</i>, Johor Bahru. 2. Geo-DBMS: Data Management of 3D Spatial Objects. <i>International Sysposium & Exhibition on Geoinformation 2008</i>, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Developing 3D Navigation System for Virtual Environment Based on 3D Game Engine
Project Number	01-01-06-SF0269
Project Leader and Team Members	Leader: Alias Abdul Rahman Member: Muhammad Imzan Hassan and Ivin Amri Mu
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project investigated the capabilities of 3D game engine and other related tools for 3D GIS purposes. This project objectives; to create 3D virtual environment of spatial objects (3D buildings) with real terrain and texture and to develop 3D navigation system by integrating the 3D building models (and other special features).
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Sharkawi, K.H and A. Abdul-Rahman. 2007. Indoor and Outdoor Navigation System based on 3D Game Engine. <i>International Symposium and Exhibition on Geoinformation 2007 (ISG/GNSS 07)</i>, Johor Bahru. 2. Sharkawi, K.H, and Abdul-Rahman, A. 2009. 3D Game Engine for 3D Navigation of Indoor Building Directories. <i>ISG 2009</i>, Kuala Lumpur, Malaysia. 3. Abdul-Rahman, A, Sharkawi, K.H and M.U. Ujang. 2008. 3D Navigation System For Virtual Reality Based On 3D Game Engine. <i>ISPRS 2008</i>, Beijing, China.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Developing 3D Network Analysis for Disaster Management
Project Number	01-01-06-SF0271
Project Leader and Team Members	Leader: Ivin Amri Musliman Member: Alias Abdul Rahman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project investigated and studied the Dijkstra's algorithm and infuse for the 3D network spatial analysis. It also designed and developed the 3D Dijkstra's algorithm for the disaster management in 3D building environments.
Publications/Products/Outcomes	Publications: <ol style="list-style-type: none"> 1. Muhamad Uznir Ujang and Alias Abd Rahman. Incorporating 3D Game Engine for 3D Network Analysis. <i>Joint International Symposium and Exhibition on Geoinformation and International Symposium on GPS/GNSS 2007</i>, Johor Bahru, Malaysia, 5-7 November. 2. Khairul Hafiz Sharkawi, Muhamad Uznir Ujang and Alias Abdul Rahman. 3D Navigation System for Virtual Reality based on 3D Game Engine. <i>The International Society for Photogrammetry and Remote Sensing</i>, Beijing, China, 3-11 July. 3. Muhamad Uznir U. Spatial Network Analysis for 3D Navigation System Based on 3D Game Engine. <i>Joint International Symposium and Exhibition on Geoinformation and International Symposium on GPS/GNSS 2008</i>, Putra World Trade Centre, PWTC, Kuala Lumpur, 13-15 October.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Integration of Textual and Image Analysis for Intelligent Web Content Filtering Technique
Project Number	01-01-06-SF0288
Project Leader and Team Members	Leader: Mohd Aizaini Maarof Member: Ali Selamat and Siti Mariyam Shamsudin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The goal of this research to develop feature extraction algorithm from textual analysis and image processing for pornography web content filtering. Beside that it also implemented the designed algorithm in intelligent web content filtering framework and develop a web content filtering tool with integration of textual and image analysis.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Zhi-Sam Lee, Mohd Aizaini Maarof, Ali Selamat, Siti Mariyam Shamsuddin. Simulation of Pornography Web Sites (PWS) Classification Using Principal Component Analysis with Neural Network. International Journal of Simulation: Systems, Science and Technology (IJSSST), Vol. 9, No.2: (pp.43-55), Nottingham Trent University, United Kingdom, May 2008. 2. Lee Zhi Sam, Mohd Aizaini Maarof, Ali Selamat and Siti Mariyam Shamsuddin. Pornography Web Pages Classification with Principal Component Analysis and Independent Component Analysis, Advanced Computer Network and Security, Penerbit UTM Press, Vol. (1), No. 1: (pp. 31-50). December 2008. 3. Lee Zhi Sam, Mohd Aizaini Maarof, Ali Selamat, Siti Mariyam Shamsuddin. 2007. Pornography Web Pages Classification with Textual Content Analysis Using Entropy Term Weighting Scheme for Small Class Dataset. Journal Teknologi Maklumat, Fakulti Sains Komputer & Sistem Maklumat, Universiti Teknologi Malaysia. 4. Zhi-Sam Lee, Mohd Aizaini Maarof, Ali Selamat, Siti Mariyam Shamsuddin. 2008. Enhance Term Weighting Algorithm as Feature Selection Technique for Illicit Web Content Classification. <i>The Eighth International Conference on Intelligent Systems Design and Applications (ISDA)</i>, November 26-28, 2008, Kaohsiung City, Taiwan – Best Paper Award.

	<p>5. Zhi-Sam Lee, Mohd Aizaini Maarof, Ali Selamat, Siti Mariyam Shamsuddin. 2008. Enhance Term Weighting Algorithm as Feature Selection Technique for Illicit Web Content Classification. <i>The 4th Postgraduate Annual Research Seminar 2008 (PARS' 08)</i>, 30th June - 3rd July 2008, Faculty of Computer Science & Information Systems, UTM Skudai, Johor, Malaysia - Best Paper Award.</p> <p>Others:</p> <p>1. eyeNOONTM: Parental Control Software 2011</p>
Awards/Certificates	<p>1. 37th International Exhibition of Inventions, Geneva, Switzerland 2009: Bronze Medal</p> <p>2. Malaysia Technology Expo 2009 (MTE 2009) : Gold Medal</p> <p>3. Industrial and Technology Expo 2008 (INATEX 2008): Bronze Medal</p>
IP Status	<p>Patent: Method and System for Classification of a Web Page (PI 20094732 – 9th November 2009)</p> <p>Copyright : © 2008 Universiti Teknologi Malaysia. All Rights Reserved)</p> <p>Trademark : eyeNOON</p>
Additional Information	<p>Industrial Linkages: CyberSecurity Malaysia</p> <p>Commercialisation: eyeNOON Parental Control Software 2011 (UTM)</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Pengarah, Pusat Pengurusan Penyelidikan, Universiti Teknologi Malaysia (UTM), Skudai, 81310 Johor Bahru, Johor. Office: 07-553 2002 H/p: 019-788 6130 aizaini@utm.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of a Tool Using Bayesian Network Technique for Constructing Gene Network from Microarray Gene Expression Data
Project Number	01-01-06-SF0300
Project Leader and Team Members	Leader: Safaai Deris Member: Suhaila Zainudin and Dayang
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project aims to develop a tool using Bayesian network for constructing gene network from microarray gene expression data. It also investigates and analyzes the problems of gene network construction in characterising attributes of the problems in order to develop a model for the problems.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Suhaila Zainudin and Safaai Deris. From Gene Expression to Gene Network : A Review of Techniques. Proceedings of the International Symposium on Bio-inspired Computing, Johor Bahru, 5-7 September, 2005. 2. Suhaila Zainudin and Safaai Deris. Towards Estimating Gene Network Using Structure Learning, Proceedings of the Conference on Computational Intelligence, (pp 436-441), San Francisco, USA, 20-22 November, 2006. 3. Suhaila Zainudin and Safaai Deris. Using Probabilistic Graphical Network to Estimate Gene Network, Proceedings of the Third International Conference on Artificial Intelligence in Engineering and Technology, (pp 114-119), Kota Kinabalu, Sabah, 22-24 November, 2006.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Home-based Health Care Monitoring Over Wireless Biomedical Sensor Network
Project Number	01-01-06-SF0306
Project Leader and Team Members	Leader: Rozeha A Rashid Members: Norsheila Fisal and Mazlina
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The main objective of the project is to simulate real home health care sensor networks and to produce a working prototype of a home-based health care monitoring system over an efficient power and bandwidth, secure and reliable wireless sensor network.
Publications/Products/Outcomes	Publications: 1. Home-based Healthcare Monitoring over Wireless Biomedical Sensor Network, PECIPTA 09, Gold Medal.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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e-Mail	rozeha@fke.utm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Metamodeling Tool for Optimisation of Control Systems
Project Number	01-01-06-SF0308
Project Leader and Team Members	Leader: Shahrum Shah Abdullah Members: Mohd Zaki Daud and Mohd Fauzi Othman
Field of Research	Engineering Sciences
Project Summary	<p>The idea of experiment design has been used to develop an active learning neural network. However, the network was found not to be very effective for metamodeling since the time it takes to compute the location of one additional data is quite substantial compared to running the simulation of the actual system itself. Hence, most of the time, it is better to obtain more actual data than to run experiment design to guess at the location of the new data. In other words, it is almost always better to sample more actual data than obtaining less actual data by using experiment design. The radial basis function artificial neural networks was found to be most effective for metamodeling due to its fast training time and so was used in almost all the case studies. The metamodeling toolbox very useful to optimise the controller parameters of the test systems. A graphical user interface (GUI) has been developed to provide ease of use of the system. However, the GUI only works for a limited number of variables that needs to be optimised.</p>
Publications/Products/Outcomes	Publications: 1. Mohamed Ali, M. S.; Abdullah, S. S.; and Osman David, C.. Controllers Optimization for a Fluid Mixing System Using Metamodelling Approach. International Journal of Simulation Modelling, Vol. 8, No. 1, March 2009.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Ontology and Problem-solving Method for Dynamic Scheduling in Agile Manufacturing
Project Number	01-01-06-SF0309
Project Leader and Team Members	Leader: Safaai Deris Members: Rohayanti Hassan and Zalmiyah Za
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The aim of this project is to construct an ontology and Problem-Solving Method (PSM) for dynamic scheduling in agile manufacturing problems. Goal of this research will be achieved through the following objectives: to develop a model for the dynamic scheduling in order to solve agile manufacturing problems, to develop algorithms for the model in order to solve agile manufacturing problems and to develop software for algorithms in order to test and validate the results.
Publications/Products/Outcomes	Publications: 1. Knowledge-based system for scheduling in dynamic manufacturing. <i>COMET08 Ontology and PSM for manufacturing - ACST08</i>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Mobile Visualise System for Medical Dataset Using Grid-enabled Visualisation Pipeline
Project Number	01-01-06-SF0311
Project Leader and Team Members	Leader: Muhammad Shafie Abd Latiff Members: Kamalrulnizam Abu Bak and Nora
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This project focuses on the real time visualisation pipeline architecture on the grid. The resources discovery and selection techniques for real time visualisation pipeline grid as an backend process.</p> <p>The work presented in this research contributes to two broad areas which are Grid computing and scientific visualisation. The first covers the orchestration of grid services and specifically presents a new technical form of resources discovery and selection for visualisation pipeline. The second is related to visualisation pipeline construction on the grid, particularly presents a new technical architectural solution for analyzing complex datasets using remote clients connected to the grid.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Automatic Visualisation Pipeline Formation for Medical Dataset on Grid Computing Environment. <i>International Journal of Mathematical, Physical and Engineering Science</i>. Vol. 1, No.3, 2008. 2. Workload Distribution of Isosurface Extraction with support of Resources Selection for Grid Enabled Visualisation. <i>IEEE International Workshop on Digital inforTainment and Visualisation (IWDTV2008)</i>. Malaysia. 2008. 3. Aboamama Atahar Ahmed, Muhammad Shafie Abd Latiff, Kamalrulnizam Abu Bakar, Zainul Ahmad Rajion. 2007. Adaptive Resources Selection Framework for Grid Enabled Visualisation Pipeline. <i>International Journal of Computer Science and Network Security</i>, Vol 7 No 12, (pg 1144-123), December, 2007, IJCSNS Seo.

	<p>4. Visualisation Pipeline for Medical Datasets on Grid Computing Environment. <i>The 2007 International Conference on Computational Science and Applications. IEEE Computer Society.</i> Malaysia, 2007.</p> <p>5. Aboamama Atahar Ahmed, Muhammad Shafie A.Latiff, Kamarulnizam Abu Bakar, Zainul Ahmad Rajion. 2007. Automatic Visualisation Pipeline Formation for Medical Datasets on Grid Computing Environment, <i>IV International Conference on Computer, Electrical, and Systems Science and Engineering CESSE 2007</i>, Ve.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor. Office: 07-553 2006 H/p: 013-761 9221 shafie@utm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Threat Identification Tools (TIT) for Medical Online System: a Combination Approach; Genetic Algorithm, Cox Regression and Bayesian Statistics
Project Number	01-01-06-SF0317
Project Leader and Team Members	Leader: Rabiah Ahmad Members: Zeti Darleena Eri and Nurulhud
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>The goal of this research is to use evolutionary computation termed as genetic algorithm (GA) with conventional statistical tools for survival analysis known as Cox regression to identify threats in medical online system. On top of that, the potential tool that is going to be developed in this research is able to calculate and forecast survival rate of particular system. This information is useful for designing a plan in future. The main objectives in this research are; to develop threat analysis tool using Genetic Algorithm technique and combine with Cox Proportional Hazard Regression, to identify security threats that potentially exists in medical online system and to calculate a survival rate for the system and propose possible solution to each threats for medical online system (e.g., either to replace current system with the new system)</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Rabiah Ahmad, Ganthan Narayana Samy, Nuzulha Khilwani Ibrahim, Peter A. Bath, Zuraini Ismail. Threats Identification in Healthcare Information Systems using Genetic Algorithm and Cox Regression. <i>Fifth International Conference on Information Assurance and Security (IAS-2009)</i>. IEEE. 2. Ganthan Narayana Samy, Rabiah Ahmad, Zuraini Ismail. Threats to Health Information Security. <i>Fifth International Conference on Information Assurance and Security (IAS-2009)</i>. IEEE Computer Society. Xi'an, China, August 18-20, 2009. 3. Ganthan Narayana Samy, Rabiah Ahmad and Zuraini Ismail. Security Threats Categories in Healthcare Information Systems. <i>14th International Symposium on Health Information Management Research – ISHIMR</i>, 2009.

	<ol style="list-style-type: none"> 4. Rabiah Ahmad, Ganthan Narayana Samy, Nuzulha Khilwani Ibrahim, Peter A. Bath, Zuraini Ismail, Azizah Abdul Manaf, and Mohd Ridzuan Ahmad. Threats and Failure Analysis Toolkit (TFAT) for Healthcare System. <i>14th International Symposium on Health Information Management Research – ISH</i>. 5. Ganthan Narayana Samy, Rabiah Ahmad, Zuraini Ismail. Security Threats in Healthcare Information Systems: A Preliminary Study. <i>In Proceedings of the 13th International Symposium on Health Information Management Research – ISHIMR, 2008</i>.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.</p> <p>Office: 03-2615 4746 H/p: 017-379 1974 rabiah@citycampus.utm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Biodiversity Database System Using Spatio-temporal Object-relational Data Techniques
Project Number	01-01-06-SF0327
Project Leader and Team Members	Leader: Daut Daman Member: Muhamad Radzali Mis
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The target of this project is to determine and identify the characteristics of Malaysian Biodiversity Data. This project has designed Spatio-Temporal Object-Relational Data Model in order to represent Malaysia Biodiversity Data
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Smart Mobile Telemedicine in Wireless Mesh Network
Project Number	01-01-06-SF0336
Project Leader and Team Members	Leader: Eko Supriyanto Member: Ismail Ariffin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has successfully implemented wireless mesh system with QoS routing performance for smart mobile telemedicine. This project includes Wireless Mesh Router, Wireless Mesh transmitter, Medical Data Interface and Medical Data Assistant. A smart mobile telemedicine especially for prenatal telemonitoring is already implemented and tested in wireless mesh network
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. E.supriyanto et.all. Simulation of Emergency Prenatal Telemonitoring System in Wireless Mesh Network. <i>Third International Conference on Modeling, Simulation, and Applied Optimization</i> , 2009.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Developing Brain-Computer Interface (BCI) Using Scalp Electrical Signal (EEG)
Project Number	01-01-06-SF0340
Project Leader and Team Members	Leader: Norlaili Mat Safri Member: Anita Ahmad and Sevia Mahdaliza Id
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has developed brain-computer interface (BCI) device with workable drive signal and algorithm. Apart from that, a software that can capture/display brain activities in real-time also is also developed. Currently one company, IMR 69 Enterprise is keen to be involved in the R&D of the BCI product.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Norlaili Mat Safri, Siti Hajar Aminah Ali, Siti Zuraimi Salleh, and Nobuki Murayama. Modeling information pathway of motor control using coherence analysis. <i>2nd Asia International Conference on Modelling & Simulation, (AMS 2008)</i> : (pp 917-922), Kuala Lumpur Malaysia, 13-15 May 2008. 2. Siti Zuraimi Salleh, Norlaili Mat Safri, Siti Hajar Aminah Ali. Parameter extraction for control of a one dimensional movement by brain signal. <i>6th Student Conference on Research and Development (SCORed 2008)</i>, (pp. 115/1-115/4), UTM Malaysia, 26-27 November. 2008.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Underground Wireless Sensor Network
Project Number	01-01-06-SF0345
Project Leader and Team Members	Leader: Norsheila Fisal Member: Sharifah Hafizah Syed Ari
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The main focus of this project is to design a new and efficient communication protocols for wireless underground sensor network (WUSN). The objectives of this project is to design and develop a cross-layered protocol stack that will assure WUSNs operate efficiently and reliably, to develop an efficient WUSN protocol that operates underlow power consumption, uses minimum memory usage and allow multihop communication and to implement the cross layer protocol for WUSN in real network test bed.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Real-Time Secure Wireless Sensor Network
Project Number	01-01-06-SF0347
Project Leader and Team Members	Leader: Norsheila Fisal Members: Rozeha A Rashid and Norashidah Md
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project designed a routing protocol that will provide real-time data transfer for WSN and developed security in the proposed real-time routing. The proposed secure real-time routing protocol should achieve high delivery ratio while utilizing low packet overhead and low power consumption.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. A Real-Time Routing Protocol with Load Distribution in Wireless Sensor Networks. <i>Computer Communications May 2008, elsevier.</i> 2.3 <i>International Conference Proceeding paper.</i>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Optical Free Space Feedforward Linearisation System
Project Number	01-01-06-SF0360
Project Leader and Team Members	Leader: Sevia Mahdaliza Idrus Members: Abu Bakar Mohammad, Abu Sahmah Mohd Supaat, Norazan Mohd Kassim and Razali Ngah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The optical free space feedforward linearisation technique was characterised theoretically. The laser diode nonlinearity was characterised and reported by Taylor Series. The model of the optical free space feedforward linearisation system are done using Taylor Series and the Optisystem model. The prototype have been designed and developed.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. M. Khalid, S.M. Idrus and S. Alifah. Non-Linearity Compensation in Laser diode by Instigating the Feed-Forward Linearisation System in Free Space Optical Link (FSO). <i>Proceeding of 6th Student Conference on Research and Development (SCoReD 2008)</i>, Johor Baharu, 26-27 November 2008. 2. Emad Fathi Mohamed Aon, Sevia M. Idrus. Laser Non-Linearity Compensation for Radio over Fiber (ROF). <i>Proceeding of Telematic and Optic (TOP) Exhibition Proceeding</i>, UTM Johor Bahru, 2009. 3. S. Alifah, S. M. Idrus, N. M. Kassim. The Feedforward Linearisation Of Optical Transmitter For Radio Over Fiber Links. <i>Proceeding of Telematic and Optic (TOP) Exhibition Proceeding</i>, UTM, Johor Bahru, 2009. 4. S. Allifah, S.M. Idrus, N.M. Kassim. A Review for Development of Feedforward Linearisation System on Radio over Fiber Links. <i>Proceeding of 2008 International RF and Microwave Conference (RFM2008)</i>, Kuala Lumpur, 2-4 December 2008 5. S. Alifah, S.M. Idrus, and N. M. Kassim. Simultaneous Noise Reduction and Linearity Improvement of Optical Feedforward Transmitter for Radio over Fiber Systems. <i>Proceeding of 5th International Symposium on High Capacity Optical Networks and Enabling Technologies (HONET)</i>, Penang, 18-20 November 2009.



<p>Awards/Certificates</p>	<ol style="list-style-type: none"> 1. International exhibition (PECIPTA 2009), received Bronze Medal for product: Wideband Radio over Fiber Feedforward Transmitter’. 2. Gold Medal, Industrial Art and Technology Exhibition 2010 (INATEX2010), Johor Baharu, 5-7 Aug 2010: Product: DSP Based Adaptive Feedforward Linearised Optical Transmitter. 3. Silver Medal, The International Exposition of Research and Invention of Institution of Higher learning 2009 (PECIPTA 2009), Kuala Lumpur, 8-10 October 2009, Product: Linear and Low Noise Optical Transmitter Design for the Optical Wireless Communication Systems.
<p>IP Status</p>	<ol style="list-style-type: none"> 1. Malaysian Patent Application , ‘Optical Free Space Feed Forward Linearisation System’, Malaysian Patent Application No. PI2008 3597, 22 Sept. 2008. 2. Malaysian Patent Application , ‘Wideband Radio Over Fiber Feedforward Transmitter (WRoFFT) Model’, No.PI 20094232 3. Malaysian Patent Application, ‘DSP based Adaptive Feedforward Linearised Optical Transmitter (DSP-AFLOT)’, pass novelty search, RMC Ref: UTM.01.07/27.13/1Jld89-e(88) 4. Malaysian Pattern Application, ‘Double Loop Linearisation System for Laser Nonlinearity Compensation’, pass novelty search, RMC Ref: UTM.01.07/27.13/1Jld90-e(80). 5. UTM Copyright ©2010 Universiti Teknologi Malaysia- All Right Reserved,’ Wideband Radio Over Fiber Feedforward Transmitter (WRoFFT) Model’ 6. UTM Copyright ©2010 Universiti Teknologi Malaysia- All Right Reserved, ‘Self Alignment Outdoor Optical Wireless Receiver’, UTM Copyright, July 2008.

Additional Information	<p>International Linkages: UTM-Osaka Prefecture University MOU, for 5 years University Research Collaboration, signed on 11 June 2010.</p> <p>Industrial Linkages: MOU UTM-TM R&D signed on 8 August 2011. Collaboration with industry such as TM R&D Sdn Bhd, for development of the optical wireless communication, in which the product would be the transmitter of the system. Whereby, the industry partner working on the other component of the system</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.</p> <p>Office: 07-553 5451 H/p: 019-720 0403 sevia@fke.utm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Digital Camera Calibration Software Using Bundle Adjustment Method
Project Number	01-01-06-SF0361
Project Leader and Team Members	Leader: Anuar Ahmad Members: Mushairry Mustaffar and Zulkepli
Field of Research	Engineering Sciences
Project Summary	The main focus of this project is to develop digital camera calibration software and to test and analyse the developed software.
Publications/Products/Outcomes	Publications: 1. Published 2 papers in International Symposium on Geoinformation & Exhibition 2009 (ISG2009), PWTC, Kuala Lumpur.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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e-Mail	anuar@fksg.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Brainwaves EEG Recognition System for Speech Disability Person
Project Number	01-01-06-SF0365
Project Leader and Team Members	Leader: Rubita Sudirman Member: Yusmeera Yusof
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has developed brainwaves EEG recognition system for speech disabled person. It also designed and developed Time Frequency Analysis for feature extraction for speech production. The recognition system was designed based on Hidden Markov Model for speech production.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Study of Electromagnetic Interference on EEG Signal Due to Power Line Noise, <i>International Engineering Convention, 11-13 May 2009, Damascus.</i> 2. Classification of EOG Eye Movement. <i>IASTED International Conference on Computer Simulation and Modelling, 13-15 Sep 2009.</i> 3. Spain Electromagnetic Interference Effect on EEG Signal using Notch Filter. <i>IEEE International Conference on Simulation and Modelling, 25-26 May 2009, Bali & Bandung.</i>
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	To Develop a Malay Speech Synthesis System for Standard Platform Compatibility and Speech Compression
Project Number	01-01-06-SF0366
Project Leader and Team Members	Leader: Sheikh Hussain Shaikh Salleh Member: Rohaiza Muda and Muhammad Arif Ab
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has developed a Malay Corpus based Database. Besides that, it has also developed a Unit Selection Algorithm for Malay Speech Synthesizer and Implemented Pitch Synchronize Overlap Add algorithm in waveform modifying module for speech synthesizer.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Tian-Swee Tan, Sh-Hussain Salleh. 2008. Unit Selection. <i>Brunei 3rd International Conference on Engineering and Technology (BICET 2008)</i>, 3-5 November 2008, Brunei Darussalam. 2. Tian-Swee Tan, Sh-Hussain, Zuraidah Mohd Dom, Mohd Ridzuan. 2008. Concatenation Smoothing for Malay Text to Speech using Synchronize overlap-added Method. <i>South East Asia Technical University Consortium 2008 (SEATUC 2008)</i>, 26-27 Feb 2007, Bandung, Indonesia. 3. Tian-Swee Tan, Sh-Hussain Salleh, Kim-Mey Chew, Sheau-Chyi Lim. 2008. Photo-realistic text -driven Malay Talking Head with multiple expressions. <i>ICCCE 2008) International Conference on Computer and Communication Engineering (ICCCE08)</i>, 13-15 May 2008, Kuala Lumpur, Malaysia.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor. Office: 07-550 2371 hussain@fke.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	High Performance Heat Transfer Visualisation Involving Phase Change Simulation for Rubber Manufacturing Industry
Project Number	01-01-06-SF0377
Project Leader and Team Members	Leader: Norma Alias Members: Norsarahaida Saidin and Shaharu
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The target of this research to derive a strong numerical method in visualising the phase change simulation for rubber product. The objectives of this project are to determine temperature history during moulding and compressing process using the alternative parallel algorithms, to identify the validity and reliability of the parallel computation on rubber materials and to develop software and subroutine development for temperature prediction of rubber products manufacturing for automotive, aerospace and other industries using numerical simulations approach.
Publications/Products/Outcomes	Publications: 1. Temperature Behavior Visualisation on Rubber Material Involving Phase Change Simulation Parallelisation of Temperature Distribution Simulations for Semiconductor and Polymer Composite Material on Distributed Memory Architecture, V. Malyshkin (Ed). PaCT 2009, LNCS 5698, (pp. 392–398), 2009.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of a Hierarchical Heterogeneous Bounding Volumes Tool for Detecting Object Interference in Urban Simulation
Project Number	01-01-06-SF0384
Project Leader and Team Members	Leader: Abdullah Bade Members: Norhaida Mohd Suaib and Siti Mariy
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project was proposed as a framework of hierarchical representation in urban simulation. The objectives of this project is to develop the prototype of Bounding-Volume Hierarchies (BVH) and Urban Simulation, to implement Spatial Object Median Splitting (SOMS) technique and to conduct testing and evaluation of the proposed technique.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Sulaiman, H.A, Bade.A, Sunar.M.S, Daman. D.. Bounding volume Hierarchies for detecting collision in Urban Simualtion. Proceeding of Computer Games & Allied Technology. <i>International Conference & Symposium On Computer Games, Animation, Multimedia, Edutainment and Security</i>, Singapore. 2008. 2. Suaib, N. M., Bade, A., and Mohamad, D. 2008. Collision Detection Using Bounding-Volume for avatars in Virtual Environment applications. <i>The 4th International Conference on Information & Communication Technology and Systems, August 2008</i>, Institut Teknologi Sepuluh Nopember (ITS), Surabaya, Indonesia. 3. Hamzah Asyrani Sulaiman, Abdullah Bade, Daut Daman. 2008. Bounding-Volume Hierarchies for Detecting Object Interference in Urban Simulation. <i>Workshop on Interactive Digital Media (IDM '09)</i>. Faculty of Computer Science & Information System, UTM, 14 May 2009.

	<p>4. Norhaida Mohd Suaib, Abdullah Bade, Daut Daman, Hamzah Asyrani Sulaiman 2008. Bounding Volume Hierarchy For Avatar Collision Detection: Design Considerations. <i>The 5th Postgraduate Annual Research Seminar (PARS '09)</i>. Faculty of Computer Science & Information System, UTM. 15 – 18 June 2009.</p> <p>5. Hamzah Asyrani Sulaiman, Abdullah Bade, Daut Daman, Norhaida Mohd Suaib. 2008. Collision Detection using Bounding-Volume Hierarchies in Urban Simulation. <i>The 5th Postgraduate Annual Research Seminar (PARS '09)</i>. Faculty of Computer Science & Information System, UTM. 15-18 June 2009.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor. Office: 07-553 2324 abade@utm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Intelligent Multimodal Software Agents for Visually Impaired Users on Web Content Navigation System
Project Number	01-01-06-SF0386
Project Leader and Team Members	Leader: Ali Selamat Members: Hishammuddin Asmuni and Rabiah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has designed and developed a multimodal intelligent software agent in assisting visually impaired individuals for accessing complex on-line data organisations from web based environments i.e. Google Map using Google MAP API allowing users to view the action location of tourism hotspot. Using Microsoft Agent as the core component in the spoken dialogue system, including speech synthesis and speech recognition.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Muhammad Tarmizi Lockman, Ali Selamat. Embedded smart card system verification and validation process. <i>IEEE International Workshop on Digital infoTainment and Visualisation (IWDTV2008)</i> June 16 – 18, 2008, University Malaysia Terengganu, Malaysia. 2. Ali Selamat and Muhammad Tarmizi Lockman. Multi-Agent Verification of RFID System, LNCS “Challenges in Computational Collective Intelligence”, <i>1st International Conference on Computational Collective Intelligence - Semantic Web, Social Networks & Multiagent Systems</i>, 5 -7 October, 2009 Wroclaw Poland. 3. Muhammad Tarmizi Lockman, Ali Selamat. Verification & Validation RFID for Tourist Information System, <i>The 4th Postgraduate Annual Research Seminar 2008 (PARS' 08)</i>, 30th June - 3rd July 2008, Faculty of Computer Science & Information Systems, UTM Skudai, Johor, Malaysia.

<p>Publications/Products/ Outcomes</p>	<ol style="list-style-type: none"> 4. Siti Dianah Abdul Bujang & Ali Selamat. Verification of Mobile SMS Application with Model Checking Agent. <i>The Eighth International Conference on Intelligent Systems Design and Applications (ISDA)</i>, November 26-28, 2008, Kaohsiung City, Taiwan. 5. Seyed Hossein Siadat and Ali Selamat, Location-Based System for Mobile Devices using RFID. <i>Second Asia International Conference on Modelling & Simulation</i>, Kuala Lumpur, Malaysia 13 –15 May 2008, DOI 10(1109/AMS.2008) 44, 2008 IEEE, pp. 291-296. 6. Siti Dianah Abdul Bujang and Ali Selamat. An approach of model checking agent using spin for the verification of mobile SMS application. <i>IEEE International Workshop on Digital InfoTainment and Visualisation (IWDTV2008)</i> June 16 – 18, 2008, University Malaysia Terengganu, Malaysia. 7. Exhibition at Malaysian Technological Expo 2009 (MTE2009 - PWTC, Feb 18 -20, 2009) “SCAN -ME - Smart Shopping Tool For The Blind”.
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor. Office: 07-553 8099 aselamat@utm.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A Biologically Inspired Computational 3D Articulated Figure Animation
Project Number	01-01-06-SF0387
Project Leader and Team Members	Leader: Norhaida Mohd Suaib Members: Siti Mariyam and Suriati Sadimon
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The main objective of this project is to generate realistic movement for 3D articulated figure based on motion captured data using biologically-inspired computing technique. In order to arrive to this objective, these are the sub-objectives that need to be achieved; to develop an effective bio-inspired animation algorithm, to develop a prototype of bio-inspired 3D articulated figure animation and to test and evaluate the result.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Bounding Volume Hierarchy Improvement for Avatar Collision Detection in Virtual Environment: Learning from Ray Tracing and Deformable Objects. <i>The 1st workshop on Interactive Digital Media in Malaysia (IDM'09)</i>. Johor Bahru, Malaysia, May 14, 2009. 2. Daman. D, Bade. A, Suaib. N. Character Animation (Ed). <i>Real-Time Graphics: Theory and Applications (2008) Vol 2</i>, (pg. 45). Johor: Universiti Teknologi Malaysia. ISBN 978-983-52-0615- 3 . 3. 3D Articulate Figure Animation in Computer Games, <i>Multimedia and Allied Technology '08 (CGAT'08)</i>, Singapore, 28 - 30 April 2008. 4. Collision Detection Using Bounding Volume For Avatars In Virtual Environment Applications. <i>The 4th International Conference on Information & Communication Technology and Systems (ICTS) 2008</i>, Surabaya, Indonesia. 5 August 2008. 5. On Faster Bounding Volume Hierarchy Construction for Avatar Collision Detection. 2009. <i>International Conference on Graphic and Image Processing (ICGIP 2009)</i>, Kota Kinabalu, Malaysia, 13-15 Nov 2009.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Early Warning Detection of the Risk of Rupture of the Abdominal Aortic Aneurysm Using the Fluid-structure Interaction Technique
Project Number	01-01-06-SF0400
Project Leader and Team Members	Leader: Kahar Osman Members: Mohammed Rafiq and Nazri Kamsah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Developed new and cost effective technique to determine the possibility of aneurysm in blood vessel. The technique can be further developed into a software provided more funding.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ishkrizat Taib, Kahar Osman, Mohamad Rafiq Abdul Kadir, Mazwan Mahat. Computational Analysis of The Expandable IntraVascular Stent Used in Treatment in Aneurysm. 2. Mohammed Rafiq Abdul Kadir, Ishkrizat Taib, Kahar Osman and Muhd Hafiz Abdul Hamid. Blood Flow Simulation of Stented Aneurysm Model. <i>Conference of Biomedical Engineering 2008</i>. 3. M. Mazwan Mahat, Kahar Osman, Mohammed Rafiq Abdul Kadir, Ishkrizat Taib. Analysis on the Flow Phenomena in Stented Aneurysm. <i>International Conference of Biomedical Engineering Surabaya 2008</i>. 4. Ishkrizat Taib, Kahar Osman, Mohammed Rafiq Abdul Kadir, M. Mazwan Mahat. Numerical Modelling Of Abdominal Aortic Aneurysm Growth. <i>International Conference of Biomedical Engineering Surabaya 2008</i>. 5. Ishkrizat Taib, Kahar Osman, Mohammed Rafiq Abdul Kadir and M. Mazwan Mahat. Analysis of Steady Flow for Stented and Non-Stented Aneurysm. <i>International Meeting on Advances in Thermo Fluid 2008</i>.

	6. Mohammed Rafiq Abdul Kadir, Iskhrizat Taib, Nazri Kamsah & Kahar Osman. Computational Analysis of Stented Abdominal Aortic Aneurysm Model. <i>World Engineering Congress, 2007.</i>
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Integrated Traffic Management for Enclosed Area Security System Using Hybrid Networking Technology
Project Number	01-01-06-SF0403
Project Leader and Team Members	Leader: Kamalrulnizam Abu Bakar Member: Suhaidi Hassan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	All project objectives are fulfilled with the design and development of a secure dedicated tunnel on hybrid networking technology to transmit security signal and multimedia data from security devices to control panel. It includes traffic management and optimal application layer protocol for the proposed network. In order to evaluate and test the performance of the network, we have developed a small scale prototype of integrated security system for an enclosed area. The result indicated that the proposed network has significantly improved the performance of security system in an enclosed area. Output of this research is a new solution to transmit sensor based data/ signal and multimedia data from security devices to security control panel or between the devices.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Novel Framework of Integrated Security and Safety System Using Hybrid Network Technology. <i>11th International Conference on Computer Modeling.</i>
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of a New Technique for Automated Fingerprint Enhancement and Restoration
Project Number	01-01-06-SF0428
Project Leader and Team Members	Leader: Ghazali Sulong Members: Dzulkifli Mohammad and Daut Daman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has developed a new technique of fingerprint image enhancement and restoration. It also developed a new technique of fingerprint image reconstruction and an effective fingerprint image thinning algorithm.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of an Automated Redocumentation Process to Support Software Development and Evolution
Project Number	01-01-06-SF0429
Project Leader and Team Members	Leader: Suhaimi Ibrahim Members: Norbik Bashah Idris and Mohd. Nazri
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	To reverse engineer the source code of an object-oriented software to some abstract levels. The recovered artifacts are then analysed and inserted to internal database. The last step is software documentation generated in RTF file. All data in the SDD is taken from the database. This ability is intended to provide all related information to software maintenance team in order to handle or maintain the legacy system. The method was used in a redocumentation tool, called sddGen (SDD Generator) and experimented by some users (students with some working experience).
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Syed Gholam Hassan Tabatabaei, Wan Nasir Wan Kadir, Suhaimi Ibrahim. An Evaluation of Current Approaches for Web Service Composition. <i>Third International Symposium on Information Technology 2008(ITSIM'08)</i>, 26-29 Ogos, 2008, Kuala Lumpur, Malaysia. 2. Sayed Gholam Hassan Tabatabaei, Wan Nasir Wan Kadir, Suhaimi Ibrahim. Semantic Web Service Discovery and Composition Based on AI Planning and WebService Modeling Ontology. <i>Proceedings of the IEEE Asia-Pacific Service Computing Conference (IEEE APSCC 2008)</i>, 9-12 Dec, 2008 Yilan, Taiwan. 3. Syed Gholam Hassan Tabatabaei, Wan Nasir Wan Kadir, Suhaimi Ibrahim. Web Service Approaches to Support Dynamic E-Business System. <i>Proceedings of the International Business Information Management Conference (10th IBIMA)</i>, 30 Jun-2 July, 2008 Kuala Lumpur, Malaysia.

	<p>4. Masarat Ayat, Mohammad Sharifi, Shamsul Sahibudin and Suhaimi Ibrahim. CMDB Implementation Approaches and Considerations in SME/SITU Companies. <i>3rd Asia Modeling Symposium (AMS2009)</i>, 25-26 May, 2009, Indonesia.</p> <p>5. Masarat Ayat, Mohammad Sharifi, Shamsul Sahibudin and Suhaimi Ibrahim. Adoption Factors and Implementation Steps of ITSM in the Target Organizations. <i>3rd Asia Modeling Symposium (AMS2009)</i>, 25-26 May, 2009, Indonesia.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.</p> <p>Office: 03-2615 4452 H/p: 013-382 4324 suhaimiibrahim@utm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Change Impact Analysis Tool to Support Software Maintenance
Project Number	01-01-06-SF0430
Project Leader and Team Members	Leader: Suhaimi Ibrahim Members: Norbik Bashah Idris and Mohd. Naz
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The achieved objectives of the project are to study and capture the structural artifacts from the legacy software. It also to develop and integrate multiple techniques to support potential impacts and to develop a prototype system to manage change impact. We managed to apply the newly visualised concept for change impact analysis, by establishing the method of reverse engineering. The method was used in an impact analysis tool, called CHIAV and experimented by some users.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Showole Aminat, Shamsul Sahibuddin, Suhaimi Ibrahim. Industrial Application Development with Open Source Approach: A Review. <i>Third International Conference on Software Engineering Advances (ICSEA'08)</i>, IEEE Computer Society, 26-31 October, Malta. 2. Showole Aminat, Shamsul Sahibuddin, Suhaimi Ibrahim. Prospects of Open Source Adoption in Education Projects in Nigeria. <i>International Conference on Journal of Arts & Sciences (ICSEA'08)</i>, Germany, 1-4 Dec 2008. 3. Sayed Gholam Hassan Tabatabaei, Wan M.N. Wan Kadir and Suhaimi Ibrahim. AIMO - An Effective Approach to Support Semantic Web Service Discovery and Composition. <i>International Journal of Computational Science (IJCS)</i>, Vol. 3, No. 2, (pp. 133-150), 2009, Hong Kong. 4. 4. Mahmood Niazi, Suhaimi Ibrahim, Muhammad Ali Babar. An Empirical Study Identifying High Perceived Value Practices of CMMI Level 2. <i>Proceedings of the International Conference on Product Focused Software Development and Process Improvement (PROFES'08)</i>, Springer LNCS, 23-25 June 2008, Rome Italy.

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Computational Method for Protein Sequence Annotation Using Gene Ontology and Intelligent Techniques
Project Number	01-01-06-SF0435
Project Leader and Team Members	Leader: Muhamad Razib Othman Members: Safie Mat Yatim, Zalmiyah Zakaria and Zuraini Ali Shah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Protein sequence annotation is important for the preservation and reuse of knowledge, for content-based queries, and for the understanding of its function. In this project, a Gene Ontology (GO) based protein sequence annotation method is developed. The method comprises two intelligent components. The first component combines parallel genetic algorithm with the split-and-merge algorithm. The second component incorporates parallel genetic algorithm with the semantic similarity measure algorithm. The proposed method has the capability of annotating anonymous protein sequences with higher precision and recall by taking less processing time compared to other GO-based protein sequence annotation methods.
Publications/Products/Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Roslan R., Othman R.M., Shah Z.A, Kasim S., Asmuni H., Taliba J., Hassan R., and Zakaria Z. 2010. Incorporating Multiple Genomics Features with the Utilization of Interacting Domain Patterns to Improve Protein-Protein Interactions Prediction. Information Sciences, 180(20): pp. 3955-3973. 2. Roslan R., Othman R.M., Shah Z.A., Kasim S., Asmuni H., Taliba J., Hassan R., and Zakaria Z. 2010. Utilizing Shared Interacting Domain Patterns and Gene Ontology Information to Improve Protein-Protein Interaction Prediction. Computers in Biology & Medicine, 40(6): pp. 555-564.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Clustering System for Protein Tertiary Structure Prediction Using Machine Learning Algorithms
Project Number	01-01-06-SF0436
Project Leader and Team Members	Leader: Rohayanti Hassan Members: Zuraini Ali Shah and Safie Mat
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The goal of this project is to develop a clustering system to predict protein tertiary structure using machine learning algorithms. The aim of this project to study and built a model for clustering system in order to predict protein tertiary structure. It also determine and construct a hybrid algorithm by combining machine learning algorithms for the clustering system in order to intelligently predict protein tertiary structure and develop a software for the clustering system in order to assess its performance to predict protein tertiary structure
Publications/Products/ Outcomes	Publications: 1. Hassan R. and Saad P. Hybrid clustering SVM for protein local structure prediction. PhD Proposal. 2. Hassan R., Saad P., Shah Z.A., Zakaria Z., Asmuni H. and Rahim S.M.M. Incorporating enriched protein residue score information in hybrid SOM k-means and support vector machines based clustering for protein local structure prediction, Information Sciences (Elsevier).
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengaroh, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Friend-assisted Secure Autonomous Mobile Ad-Hoc Networks
Project Number	01-01-06-SF0437
Project Leader and Team Members	Leader: Shukor Abd Razak Members: Md Asri Ngadi and Abdul Hanan Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project analysed and highlighted the deficiencies of existing security measures that were proposed for MANET environments. The need for a secured autonomous security measure for such a network is important. It also proposed and designed secure autonomous security mechanism based on the analysis of capabilities and limitations of existing security mechanisms previously designed for MANET environments.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Shukor Abd Razak, Normalia Samian, Mohd Aizaini Ma'arof, Steven Furnell, Nathan Clarke, Phil Brooke. A Friend Mechanism for Mobile Ad Hoc Network. <i>Journal of Information Assurance and Security</i>, Vol. 4 (5): (pp. 440-448), 2009. 2. Shukor Razak, Normalia Samian, Aizaini Maarof. A Friend Mechanism for Mobile Ad Hoc Networks. <i>Proceedings of the 2008 The Fourth International Conference on Information Assurance and Security</i>, 2008, (pp. 243-248), IEEE Computer Society. 3. Shukor Razak, Normalia Samian, Aizaini Maarof, Towards Identifying Features of Trust in Mobile Ad Hoc Network. <i>Proceedings of the 2008 Second Asia International Conference on Modelling & Simulation (AMS)</i>, 2008, (pp. 271-276), IEEE Computer Society 4. Tameem Eissa, Md Asri Ngadi, Shukor Razak. A Review of Authentication Techniques in MANET. <i>Proceedings of the IEEE SCORed</i>, 2008.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Mobile Ad-Hoc Network Multi Hop Routing Algorithm
Project Number	01-01-06-SF0438
Project Leader and Team Members	Leader: Shukor Abd Razak Member: Mohd. Aizaini Maarof and Abdul Hanan Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives are to investigate existing routing algorithms proposed for Mobile Ad Hoc Networks, to develop a routing algorithm that enables multi hop communications between nodes and to investigate the performance of the proposed routing algorithm
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Hassan Chizari, Majid Hosseini, Shaharuddin Salleh, Shukor Abd Razak and Abdul Hanan Abdullah. EF-MPR, a New Energy Efficient Multi-Point Relay Selection Algorithm for MANET. <i>Journal of Supercomputing</i>, DOI: 10.1007/s11227-010-0470-7, 2010 (IF: 0.687). 2. Hassan Chizari, Majid Hosseini, Shukor Abd Razak. Multi Point Relay Selection Using GA. <i>Proceedings of the IEEE Symposium on Industrial Electronics and Applications, ISIEA</i>, 2009, pp. 957-962. 3. Majid Hosseini, Hassan Chizari, Shukor Razak. An Overview of Mobile Ad Hoc Network Testbed. <i>Proceedings of the IEEE SCORed</i>, 2008.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of an Automated Tool to Support Effective Requirement Change Propagation
Project Number	01-01-06-SF0439
Project Leader and Team Members	Leader: Nor Bahiah Ahmad Members: Suhaيمي Ibrahim and Wan Mohd
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has proposed an automated change propagation approach for requirement changes. A change propagation prototype tool based on the proposed approach was developed. And the practicability of the automated change propagation approach was also evaluated.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. A cursory Review on Software Verification Approaches. <i>Malaysia Software Engineering Conference (MySEC'08)</i>, 16-17 December, 2008, Kuala Terengganu, Malaysia. 2. Metamodel for Simplifying Requirement Change Propagation towards Resilient Software Evolution. <i>The 4th Postgraduate Annual Research Seminar 2008 (PARS' 08)</i>, 30th June - 3rd July 2008, UTM Skudai. 3. Simplifying Change Propagation for Volatile Requirement. Book Chapter in <i>Advances in Software Engineering: Research & Practice</i>, Skudai Johor, Malaysia, 2008. 4. A Review on Change Propagation Approaches in Evolvable Software. <i>Postgraduate Annual Research Seminar (PARS '07)</i>, FSKSM, UTM Skudai. 5. ReChAP: An Approach for Simplifying Requirement Change Propagation to Resilient Software Evolution. <i>The 5th Postgraduate Annual Research Seminar 2009 (PARS' 09)</i>, 15th- 19th June 2009, UTM Skudai. 6. Comparative Evaluation of Change Propagation Approaches towards Resilient Software Evolution. <i>IEEE The Third International Conferences on Software Engineering Advance (ICSEA'08)</i>, October 26-31, 2008- Sliema, Malta.



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Multi-agent Software Copyright Code Clone Detection Tool Using Machine Learning Algorithms
Project Number	01-01-06-SF0440
Project Leader and Team Members	Leader: Ali Selamat Members: Radziah Mohamad and Hishammud
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project has analysed and developed the multi-agent code cloning detection techniques for software copyrights source codes using machine learning algorithms. The document on the multi agent code cloning detection techniques is completed. To design and develop multi-agent code cloning detection tool based on software copyrights source codes used in web based applications. The design as well as the testing of the prototype on the multi agent code cloning detection techniques for plagiarism detection problems is also completed.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Norfaradilla Wahid. Code Clone Detection Using String Based Matching Technique. MSc. Thesis, Faculty of Computer Science & Information Systems, Universiti Teknologi Malaysia, Skudai, Johor. 2. Imam Much Ibnu Subroto and Ali Selamat. Plagiarism Detection from Internet using Words ngrams Fingerprints, Brunei International Conference on Engineering and Technology, BICET , November 3-4, 2008. 3. Plagiarism Detection on the Student Assignment from Internet using Words n-grams Fingerprints, 4th Postgraduate Annual Seminar (PARS'2008), Faculty of Computer Science & Information Systems, UTM, July 4-5, 2008.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design Framework of Multi Agent Software Based on Patterns
Project Number	01-01-06-SF0441
Project Leader and Team Members	Leader: Radziah Mohamad Member: Safaai Deris and Dayang Norhayat
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project defined a process for pattern-oriented development of multi agent software. It also developed a design framework for agent-based multi-robot software using the above process and experimentally evaluate and measure the performance
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Radziah Mohamad and Safaai Deris. Pattern-Oriented Design Approach For Multi Agent Software Development: A Conceptual Model. <i>Advances in Software Engineering: Research and Practice</i>, Penerbit, UTM, 2008. 2. Radziah Mohamad, Dayang Norhayati Abang Jawawi. Pattern-Oriented Framework For Agent-Oriented Multi Robot System. <i>Proceedings of the 5th International Conference on Information & Communication Technology and Systems</i>. Surabaya, Indonesia, August 2009.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of a Novel Hybrid Approach for Offline Handwriting Recognition of Guessed Words in Dedicated Environment
Project Number	01-01-06-SF0443
Project Leader and Team Members	Leader: Dzulkifli Mohammad Members: Sarudin Kari and Ghazali
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project was aimed to develop a database of dedicated words in specialised environment and also develop a recognition scheme of handwriting characters of sub-word.
Publications/Products/Outcomes	Journals: <ol style="list-style-type: none"> 1. Dzulkifli Mohamad, Amjad Rehman and Tanzila Saba. Skewed Line Detection and Removal Preserving Handwritten Strokes: A New Approach. Journal of College Science in India (accepted). 2. Amjad Rehman, Dzulkifli Mohamad, and Fajri Kurniawan. Line and Skew Removal From Off-line Cursive Handwritten Words. Journal of Research, Vol. 24, No. 2, Dec. 2008, pp. 29-33. 3. Fajri Kurniawan, Amjad Rehman, and Dzulkifli Mohamad. Contour Vs Non-Contour based Word Segmentation from Handwritten Text Lines. An experimental analysis. Accepted for publication in JDCTA. 4. Amjad Rehman, Dzulkifli Mohamad, and Fajri Kurniawan. Off-line Cursive handwriting Segmentation, A Heuristic Rule-Based Approach. Journal of Institute of Mathematics & Computer Sciences(Computer Science Series), Vol.19, No.2(2008), pp. 135-140.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Multi-agent Crawling Systems for Mapping of Web E-business Networks Using Machine Learning Algorithm
Project Number	01-01-06-SF0445
Project Leader and Team Members	Leader: Md Hafiz Selamat Member: Ab Razak Che Hussin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>This project has analysed the multi-agent crawling system for e-business social networks related to Wilayah Pembangunan Iskandar on the Web using machine learning algorithm. The document on multi-agent crawling system for e-business social networks related to Wilayah Pembangunan Iskandar on the Web using machine learning algorithm is completed. The design and development the algorithms of multi-agent crawling system for e-business community social networks related to Wilayah Pembangunan Iskandar were gathered from the Web. And the prototype of multi-agent crawling system for e-business community social networks has been developed.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Siti Nurkhadijah Aishah Ibrahim, Ali Selamat , Md. Hafiz Selamat. Parallel Crawler and Optimisation for E-business Social Networks. <i>The 3rd International Symposium on Information Technology 2008 (ITSim2008)</i>, 26 – 29 August 2008, Kuala Lumpur, Malaysia. 2. N. M. Nasir, A. Selamat, H. Selamat, M. Z. A. Rozan. The Dominant of Malaysian Political Blogger Through Social Networks. <i>The 3 rd South East Asian Technical University Consortium (SEATUC) Symposium</i>, February 2009, pp. 228-234. 3. Parallel Crawler and Optimisation for E-business Social Network Visualisation. <i>4th Postgraduate Annual Seminar (PARS'2008)</i>. Faculty of Computer Science & Information Systems, UTM, July 4 -5, 2008.

	<ol style="list-style-type: none"> 4. Siti Nurkhadijah Aishah Ibrahim, Ali Selamat, Mohd Hafiz Selamat. Query Optimisation in Relevance Feedback using Hybrid GA-PSO for Effective Web Information Retrieval. <i>Third Asia International Conference on Modelling & Simulation</i>, Bandung 25-26 May, Bali 29 May 2009. 5. A. N. M. Nasir, A. Selamat, H. Selamat. Artificial Immune System for Recommend Relevant Information through Political Weblogs. <i>11th International Conference on Information Integration and Web-Based Applications and Services, iiWAS2009</i>, 14-16 Dec 09, Kuala Lumpur. 6. Muhammad Nasir Ahmad Nadzri, Ali Selamat. Summary: Literature Review About Artificial Immune System For Finding Relevant Information Through Political Weblog. <i>Postgraduate Annual Seminar 2009 (PARS'2009)</i>, Faculty of Computer Science & Information Systems, UTM, June 15-18, 2009.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor. Office: 07-553 2423 H/p: 013-779 1007 mhafiz@utm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Bioeffects Reduction in Wireless Biosensor Network (WBSN) for Physiological Monitoring
Project Number	01-01-06-SF0446
Project Leader and Team Members	Leader: Liza Abdul Latiff Member: Norashidah Md Din
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project have developed new algorithm el-MAC, a lightweight enhanced medium access control protocol. The simulation work done using JAVA programming and developed the test bed and compare results to the simulation.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	An Intelligent User Agent for Assessing the Trustworthiness of E-commerce Website
Project Number	01-01-06-SF0451
Project Leader and Team Members	Leader: Ab Razak Che Hussin Member: Halina Mohamed
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project identify trust attributes and its relationship with consumer trust perception to e-Commerce website. Its also proposed a model for assessing the trustworthiness of e-Commerce website and develop a prototype based on proposed model for assessing the trustworthiness of e-Commerce website.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	A Bio-inspired Algorithm for Optimising Accuracy in Decision Making
Project Number	01-01-06-SF0452
Project Leader and Team Members	Leader: Halina Mohamed Dahlan Member: Mahadi Bahari and Ab Ra
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project was aimed to investigate state-of-the-art optimisation solution in decision making process using Evolutionary Computing (EC) approach. The development of EC procedure to derive priorities (ECPDP) in Analytic Hierarchy Process (AHP) is completed and a prototype of web-based decision support systems using ECPDP has been developed.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	The Development of Low Cost 3D Visualisation Tools for MRI Data
Project Number	01-01-06-SF0455
Project Leader and Team Members	Leader: Daut Daman Member: Dzulkifli Mohammad
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objective of this project was to model and construct a 3D image from a 2D MRI data. It has also developed tools to visualise the 3D constructed MRI data and a low cost prototype visualisation software.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Generating Private and Public Keys from Biometric Fingerprint Data Using Fuzzy Extractors
Project Number	01-01-06-SF0456
Project Leader and Team Members	Leader: Dzulkifli Mohammad Members: Md Asri Ngadi and Ghazali
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project developed a new fingerprint matching system and generate a public and private key. Cryptography traditionally relies on uniformly distributed and precisely reproducible random strings for its secrets. Person's fingerprint is clearly not a uniform random string, nor does it get reproduced precisely each time it is measured. The aim of this project is thus, to generate strong keys from biometrics data - targeted fingerprint, for reliably and securely authentication.
Publications/Products/Outcomes	Publications: 1. Extracting Fingerprint Local Features. <i>4th International Conference On Information & Comm. Technology and Systems (ICTS) 2008</i> , August 5, 2008, Surabaya.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Optimisation of Fuzzy Modeling Using Parallel Bioinspired Algorithm for Breast Cancer Classification
Project Number	01-01-06-SF0458
Project Leader and Team Members	Leader: Hishammuddin Asmuni Member: Safie Mat Yatim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project investigated and analysed chromosome representation for parallel and distributed bioinspired algorithm. A parallel bioinspired algorithm for optimisation of fuzzy modeling has been developed. The adaptability of the developed algorithm was tested and validated with application to breast cancer classification case study.
Publications/Products/Outcomes	Publications: 1. Fuzzy Cooperative Genetic Algorithm: Optimisation Fuzzy Model By Incorporating Cooperative Coevolutionary Method. Journal paper submitted to Information Science.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of an Online Personal E-Jotter for Synchronous Communication
Project Number	01-01-06-SF0469
Project Leader and Team Members	Leader: Nazli Yahaya
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The OCLS will be employed first in the university's part-time program and then packaged for licensing to other potential clients like distance learning institutions within and possibly outside Malaysia. The system may be appealing to institutions that organised part-time programs and institutions that conducted distance education programs.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nazli Yahaya, Roslina Ibrahim, Widad Othman. Prior, Shared and Constructed Knowledge from Online Collaborative Interactions. <i>7th Hawaii International Conference on Education HICE Proceedings ISSN#1541-5880</i>, (pp. 2115-2118), 2009. 2. Nazli Yahaya, Norazila Mohamad Razali. An Online Collaborative Learning System: Designing for Evaluation of Students' Learning. <i>Jurnal Teknikal dan Kajian Sosial, Universiti Teknologi Malaysia v7 n1</i>, (pp. 15-22), 2008. <p>Others:</p> <p>An Online Collaborative Learning System - http://www.ppmutmspace.utm.my/ocls/index.php</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Design and development of millimeter-wave antenna for HAPS application
Project Number	01-01-06-SF0470
Project Leader and Team Members	Leader: Mohamad Kamal Abdul Rahim Members: Sharul Kamal, Sharifah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The aim of this project was to design and develop a millimeter-wave antenna design for HAPS. It has successfully developed a prototype millimeter-wave antenna for Extremely High Frequency band and the antenna is operating at 2.4 , 5.8 and 11 GHz.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Simulated Fractals Shape For Unit Cell Reflectarray. <i>Asia-Pacific Microwave Conference (APMC 2009).</i> 2. Analysis of Minkowski Shape For Unit Cell Reflectarray. <i>International Conference on Antennas, Propagation and Systems (INAS 2009).</i> 3. Circular Polarization Array Antenna. <i>International Conference on Antennas, Propagation and Systems (INAS 2009).</i> 4. Simulation of Fractal Shape Geometry for Reflectarray Antenna Design. <i>International Conference ISAP 2009.</i>
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) Radio Communication Engineering Department UTM Skudai 81310 Johor Bahru
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	3D Scene Management to Reduce the Computational Cost of an Immersive Driving Simulator System
Project Number	01-01-06-SF0472
Project Leader and Team Members	Leader: Mohd Shahrizal Sunar Members: Sarudin Kari and Mohd
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project aimed to create 3D scene management to reduce the computational cost of an immersive driving simulator. The investigation on analysis and formulation an appropriate technique for 3D scene management algorithm was carried out. And the driving simulator with the developed technique for 3D scene management should be integrated.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Secure Mobile Ad-Hoc Network (MANET) with Critical Nodes Detection and Intrusion Detection System
Project Number	01-01-06-SF0482
Project Leader and Team Members	Leader: Abdul Hanan Abdullah Member: Johan Mohamad Sharif
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project was proposed to develop an algorithm to determine conditions under which critical nodes on a MANET should be monitored extensively. Besides that, it developed a novel approach for conserving the limited resources of the MANET Intrusion Detection System (IDS) and a prototype to execute both of the algorithm and the IDS on the MANET.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Satria Mandala , M.A Ngadi, Abdul Hanan Abdullah, and Abdul Samad Ismail. A Variant of Merkle Signature to Protect AODV Routing Protocol. The Second International Conference on Wireless & Mobile Networks, Ankara Turkey; Communications in Computer and Information Science ISSN:1865-0929 Springer 2010. 2. Satria Mandala1a, Rashid Hafeez Khokhar, Md. Asri bin Ngadi , Abdul Hanan Abdullah. Wireless Security: A Review of Researches Achievement today. The International Graduate Conference on Engineering and Science, UTM Skudai, December 2008. 3. Rashid Hafeez Khokhar, Md Asri Ngadi, Satria Mandala. A Review of Current Routing Attacks in Mobile Ad hoc Networks. International Journal of Computer Science and Security, volume (2) issue (3). 4. Satria Mandala, Md. Asri Ngadi, A. Hanan Abdullah. A Survey on MANET Intrusion Detection. The International Journal of Computer Science and Security. ISSN:1985-1533 Volume 2 Issue 1, Feb 2008.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengerang, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Development of Multimode Interference (MMI) Coupler for Variable-ratio Power Splitter and Optimised Switching
Project Number	01-01-06-SF0488
Project Leader and Team Members	Leader: Abu Sahmah Mohd Supa'at Members: Mohd Haniff Ibrahim
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The target of this project was to model and develop Multimode Interference (MMI) coupler for variable-ratio power splitter and optimised switching.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Abdulaziz M. Al-Hetar, Abu Sahmah M. Supa'at, A.B. Mohammad, I. Yulianti. Crosstalk improvement of a thermo-optic polymerwaveguide MZI–MMI switch. <i>Optics Communications</i> 281, (pp. 5764-5767), 2008. 2. Abdulaziz M. Al-hetar, Abu Sahmah M. Supa'at, A. B. Mohammad, and I. Yulianti. Thermal analysis for ridge and buried waveguides with a metal heater. <i>International RF and Microwave Conference, RFM2008</i>, Kuala Lumpur, Malaysia. 2-4 Dec. 2008. 3. Abu Sahmah M. Supa'at, Sevia M. Idrus, A. B. Mohammad, Ian Yulianti, Abdulaziz M. AlHetar. Parabolic Heater for Low Crosstalk Digital Optical Switch. <i>International Journal of Electrical Engineering Research</i>, 2009. 4. M. Al-Hetar, A. S. M. Supa'at, and A. B. Mohammad. A Ridge waveguide for Thermo-optic Application. <i>Progress In Electromagnetics Research Letters</i>, Vol. 6, (pp.1-9), 2009. 5. Abdulaziz M. Al-Hetar, I. Yulianti, Abu Sahmah M. Supa'at, A.B. Mohammad. Thermo-optic multimode interference switches with air and silicon trenches. <i>Optics Communications</i> 281, (pp. 4653–4657), 2008. 6. Abdulaziz M. Al-Hetar, Abu Sahmah M. Supa'at, A.B. Mohammad, I. Yulianti. Multimode Interference Photonic Switches”, <i>Optical Engineering</i>, 47(11), (pp. 1-6), 2008.

	<p>7. Abdulaziz M. Al-hetar, Abu Sahmah M. Supa'at, A. B. Mohammad, and I. Yulianti. Thermo-optic switch based on Multimode Interference. <i>Semiconductor Electronics, 2008. ICSE 2008. IEEE International Conference</i>. 25-27 Nov. 2008.</p> <p>8. A.S Mohd Supa'at, M.H. Ibrahim, A.B. Mohammad, N.M. Kassim and N.E. Ghazali. A Novel Thermo-optic Polymer Switch Based on Directional Coupler Structure. <i>American Journal of Applied Sciences</i>, 5(11): (pp. 1552-1557), 2008.</p>
Additional Information	<p>International Linkages:</p> <p>1. ChemOptics Inc. Korea Fabrication in Korea</p> <p>2. Tongkah Perdana Sdn Bhd (Malaysia), partnership for fabrication</p> <p>Industrial Linkages:</p> <p>Telekom Research and Development Sdn Bhd</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM)</p> <p>Universiti Teknologi Malaysia (UTM), Pengarah,</p> <p>Pusat Pengurusan Penyelidikan,</p> <p>81310 Skudai,</p> <p>Johor.</p> <p>Office: 07-553 5243</p> <p>H/p: 019-712 4642</p> <p>abus@fke.utm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Photonic Antenna for WLAN Backhaul Networks
Project Number	01-01-06-SF0496
Project Leader and Team Members	Leader: Razali Ngah Members: Sharul Kamal Abdul
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project was aimed to identify requirement of WLAN backhaul network using Radio over Fiber technology, and to design and develop a photonic antenna for the WLAN backhaul network. Analytical and system simulations have produced a requirement for WLAN backhaul using radio over fiber technology. Low profile antenna has been designed, fabricated, and integrated with optoelectronics.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Teguh Prakoso, Razali Ngah, Tharek Abdul Rahman, and Z. Ghassemlooy. A Capacity Analysis of Outdoor-Backhaul Network Using WLAN and Radio over Fiber Technology. <i>IEEE International Conference on Antennas, Propagation, and Systems (INAS 2009)</i>, 3-5 Dec. 2009, Johor Bahru, Malaysia. 2. Nurul Huda binti Ismail, Razali Ngah, Teguh Prakoso, Tharek Abdul Rahman,, and Z.Ghassemlooy. Wireless Local Area Network Bridging Using Radio over Fiber Technology. <i>IEEE International Conference on Antennas, Propagation, and Systems (INAS 2009)</i>, 3-5 Dec 2009, Johor Bahru, Malaysia. 3. Teguh Prakoso, Razali Ngah, Tharek Abdul Rahman, and Z. Ghassemlooy. A high gain active photonic antenna for high speed backhaul link: A system analysis. <i>17th International Conference on Telecommunications (ICT2010)</i>, 4-7 April 2010, Doha Qatar. 4. N.F Nanyan, R. Ngah, T. Prakoso, Y. Rahayu, and T.A Rahman. An Active Downlink Photonic Antenna. <i>1st International Conference on Photonics 2010 (ICP2010)</i>, 5th - 7th July 2010, Langkawi, Kedah, MALAYSIA.
Additional Information	Industrial Linkages: NCRIlab, School of Computing, Engineering & Information Sciences, University of Northumbria

Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), Pengarah, Pusat Pengurusan Penyelidikan, 81310 Skudai, Johor.
Phone Number	Office: 07-553 6107 H/p: 019-778 1966
e-Mail	razalin@fke.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Intelligent Distributed Video Surveillance Through Behavioral Recognition
Project Number	01-02-02-SF0024
Project Leader and Team Members	Leader: Yap Vooi Voon Members: Varun Jeoti, Lee Sheng Chyan, Lo Hai Hiung and Patrick Sebastian
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The design of tracking algorithm for tracking a specific target in an array of cameras is achieved. The tracking algorithms investigated were some current and proposed method for video surveillance tracking
Additional Information	International Linkages: Middlesex University, UK
Contact Institution/Entity Address	Universiti Teknologi Petrona(UTP) Director, Research Enterprise Office, Universiti Teknologi PETRONAS (UTP), Bandar Seri Iskandar, 31750 Tronoh, Perak Darul Ridzuan.
Phone Number	Office: 05-368 7846 H/p: 017-622 9167
e-Mail	vooiv@petronas.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Biologically Inspired Middleware and Theory Formulation for Self-healing Ubiquitous Systems
Project Number	01-02-02-SF0037
Project Leader and Team Members	Leader: Azween Abdullah Members: Sellappan Palaniappan.
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	All the objectives as planned were achieved successfully. This project aimed to develop the theory for self-healing systems and develop a method on how to engineer software systems that have similar high stability and efficiency often found in biological system. Thus, devise novel self-learning defense strategies for self-healing software systems by mapping and simulating the mechanics of the biological healing systems.
Contact Institution/Entity Address	Universiti Teknologi Petrona(UTP) Director Research Enterprise Office, Universiti Teknologi PETRONAS (UTP), Bandar Seri Iskandar, 31750 Tronoh, Perak Darul Ridzuan.
Phone Number	Office: 05-368 7507 H/p: 016-530 7355
e-Mail	azweenabdullah@petronas.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Biologically Inspired Protocol Specification Language for Securing Hybrid Mobile Ad-Hoc Networks
Project Number	01-02-02-SF0038
Project Leader and Team Members	Leader: Azween Abdullah Member: Sellappan Palaniappan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The main objectives of the project was to design the nature inspired security protocols that will enable one to specify required security in a hybrid ad hoc network with an efficiency similar to that which exists in the immune system. The viability and efficiency of the algorithms by developing a prototype to simulate the required security issues that has an influence on QoS and robust routing has been developed. A new security protocol for telecommunications is being developed for further enhancement.
Contact Institution/Entity Address	Universiti Teknologi Petrona(UTP) Director, Research Enterprise Office, Universiti Teknologi PETRONAS (UTP), Bandar Seri Iskandar, 31750 Tronoh, Perak Darul Ridzuan.
Phone Number	Office: 05-368 7507 H/p: 016-530 7355
e-Mail	azweenabdullah@petronas.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Automated Hybrid Intelligent Agriculture Decision Support for Forecasting Weather and Palm Oil Production
Project Number	01-01-07-SF0001
Project Leader and Team Members	Leader: Fadzilah Siraj Members: Hamirul'Aini Hambal, Azizi Zakaria, Nooraini Yusoff, Mohd Zabidin Husin, Mazni Omar and Azham Hussain
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	This project proposed to predict the weather condition ahead of time using forecasting model and to propose automated intelligent agricultural decision support system (AIADSS) by integrating weather forecasting model with palm oil production.
Contact Institution/Entity Address	Universiti Utara Malaysia (UUM) Dekan, Jabatan Penyelidikan dan Inovasi, Universiti Utara Malaysia (UUM), 06010 Sintok, Kedah Darul Aman.
Phone Number e-Mail	Office: 04-928 5700 fad173@uum.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (ICT)

Project Title	Construction and Development of Ematrix for Mobile and Multimedia Development Methodologies
Project Number	01-01-07-SF0002
Project Leader and Team Members	Leader: Norshuhada Shiratuddin Members: Shahizan Hassan, Aliza Sarlan and Mohamed Ali Saip
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The main aim of this project was to construct and develop an eMatrix for mobile and multimedia development methodologies. It is design to produce a matrix that is able to guide developers in choosing appropriate mobile and multimedia methodologies for their application development. Besides that, the project aimed to develop an eMatrix with an interface agent that is able to suggest best suited methodologies for different type of applications.
Awards/Certificates	<ol style="list-style-type: none"> 1. Best National Innovation Award, Malaysia Technology Expo 2008. 2. Gold Medal, Malaysia Technology Expo 2008. 3. Gold Medal, International Invention, Innovation and Technology Exhibition 2008.
Contact Institution/Entity Address	Universiti Utara Malaysia (UUM) Dekan, Jabatan Penyelidikan dan Inovasi, Universiti Utara Malaysia (UUM), 06010 Sintok, Kedah Darul Aman.
Phone Number	Office: 04-928 5700 H/p: 012-580 6116
e-Mail	shuhada@uum.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –CIF (INDUSTRY)

Project Title	Development of Processing Plant for Agarwood Oil
Project Number	C0016
Project Leader and Team Members	Leader: Kamahudin Ang Sew Siang
Field of Research	Agricultural Sciences
Project Summary	Project objective was to design and develop agarwood extraction system based on the innovation developed on the distillation system (150% increase inefficiency), fuel transporting system, as well as a building that complies to the safety specifications.
Publications/Products/Outcomes	The modernisation of chain system and distribution has increased the revenue of forest agarwood source to 30% for local rural industry.
Contact Institution/Entity Address	JKKK RPS KEDAIK, Kuala Rompin, Pahang Jawatankuasa Kemajuan dan Keselamatan Kampung (JKKK), Rancangan Pengumpulan Semula (RPS) Kedaik, Jabatan Hal Ehwal Orang Asli Daerah Rompin, 26800 Kuala Rompin, Pahang.
Phone Number	Office: 09-4530798 H/p: 013-9396993
e-Mail	kamah@tm.net.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	WiFi Outdoor Antenna for Hot Zone
Project Number	E0057
Project Leader and Team Members	Leader: Nurmala Irdawaty Hassan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	<p>Project objective was to develop and manufacture WiFi outdoor antenna for hot zone using orthogonal frequency division multiplexing (OFDM) technology. Under ITU ruling, WiFi frequency is free to use and does not belong to anybody, as opposed to GSM and PCS. The system developed in this project used wireless computers to link to the server. The newly developed WiFi technology could transmit one WiFi frequency at 2.4 GHz. In addition, the technology developed in this project could also transmits two frequencies with 20 MHz frequency spacing simultaneously using 2 different types of antennas for the long range and wide angle coverage. The coverage of the WiFi antenna developed in this project will be the fastest in the world.</p>
Publications/Products/ Outcomes	The product is the first in the world to transmit and receive 2.4 GHz wifi or WiMAX frequencies with 2 channels and a spacing of 20 MHz that will be a benchmarked of the product.
Contact Institution/Entity Address Phone Number e-Mail	Nurmala Irdawaty Hassan 21 Jalan Radin 2, Seri Petaling, 57000 Kuala Lumpur. H/p: 016-3715005 nurmala.irdawaty@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	Doughnut and <i>Keria</i> Machine
Project Number	E0061
Project Leader and Team Members	Leader: Haris Hassan
Field of Research	Agricultural Sciences
Project Summary	Project objective was to design a portable doughnut, <i>keria</i> , <i>cha kueh</i> and <i>vadai</i> making machines. The developed portable machine is equipped with a single stroke plunger using a piston fixed with two different diameter discs where the bigger disc creates the pressure to push the dough into the smaller disc and cut the dough in doughnutshape.
Publications/Products/ Outcomes	The first portable machine in the world for doughnut, <i>keria</i> , <i>cha kueh</i> and <i>vadai</i> making. The assembly only takes approximately 15 minutes and the machine can produce 180 unit doughnuts per hour.
Contact Institution/Entity Address	Haris Hassan 21 Jalan Radin 2, Seri Petaling, 57000 Kuala Lumpur.
Phone Number e-Mail	H/p: 012-3012773 haris_2305@hotmail.com





COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	Street Lighting Bulbs Using Light Emitting Diode (LED) and Laser Diode (LD)
Project Number	E0062
Project Leader and Team Members	Leader: Hafiz Hassan
Field of Research	Engineering Sciences
Project Summary	Project objective was to develop LED lighting for home and street lightings. LED can provide a low cost light source which is even cheaper than the energy saving bulb. LED light source shall be made available to all Malaysians since it can lasts at least 18 times longer and consume only about 10% electricity compared to the current energy saving bulb.
Publications/Products/Outcomes	The project outcome is a prototype of low cost light source using LED for street and home lighting.
Contact Institution/Entity Address Phone Number e-Mail	Hafiz Hassan 21, Jalan Raden2, Sri Petaling, 57000 Kuala Lumpur. H/p: 016-3715005 hafizhimself@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	"GREENPAK" Individual Septic Tank-innovative Use of Upflow Anaerobic Sludge Blanket (UASB) Principle
Project Number	E0089
Project Leader and Team Members	Leader: Alui Ahmad
Field of Research	Applied Sciences and Technologies
Project Summary	Project objective was to develop prototype for a individual septic tank, GREENPAK™, utilising the up-flow anaerobic sludge blanket (UASB) digestion principle. The developed septic tank is more efficient and economical where lower maintenance cost and smaller footprint are needed as compared to products currently available in the market.
Publications/Products/Outcomes	GREENPAK™ gives less sludge and desludged is only necessary to perform every 3 years compared to 2 years for the systems of competitors.
Awards/Certificates	1. Malaysia Technology Expo (MTE) 2006: 1 Silver Medal
IP Status	1. Malaysia Patent filed (PI 20092839): A System for Wastewater Treatment
Contact Institution/Entity Address Phone Number e-Mail	Green & Smart Sdn. Bhd. 40-2, Jalan Tun Sambanthan 3, Brickfields, 50470 Kuala Lumpur. Office: 03-2260 1477 H/p: 012-611 2534 greens@po.jaring.my gs123@streamyx.com



COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	Preparation of Aerosol Spray Containing Haruan Extract That Can Produce Synthetic Skin (film) for Burned Medication
Project Number	E0105
Project Leader and Team Members	Leader: Saringat Bai@Baie
Field of Research	Medical and Health Sciences
Project Summary	Project objective was to develop a pharmaceutical aerosol spray containing haruan extract and fusidic acid as active ingredients that could be used as synthetic skin (film) for the treatment of burns and wounds. The pressurised filling aerosol propellant containing environmentally friendly chemicals will lead the way to the formulation of other aerosol products in the future.
Publications/Products/Outcomes	The project outcome is a marketable aerosol spray formulation and a new medical product that can replace conventional plaster and antiseptic that are generally used for burns and wounds treatments.
Awards/Certificates	<ol style="list-style-type: none"> 1. Bio Inno Awards, KLCC 2010: 1 Gold Medal 2. 39th Salon International Des Inventions Geneve 2011: 1 Silver Medal
Additional Information	Linkages: Major Interest Sdn. Bhd., Sungai Petani. Commercialisation: The developed technology was licensed to Major Interest Sdn. Bhd.
Contact Institution/Entity Address Phone Number e-Mail	Saringat Bai @Baie School of Pharmaceutical Sciences, Universiti Sains Malaysia, 11800 Minden, Pulau Pinang. Office: 04-657 5985 H/p: 012-407 7702 saringat@usm.my saringat2002@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	Lubricant Capsule for Motorcycle Chain
Project Number	E0166
Project Leader and Team Members	Leader: Lillian@Lilia Gungat
Field of Research	Material Sciences
Project Summary	Project objective was to develop a lubricant capsule for the motorcycle chain or similar machines. This product is a clean, practical as well as an economical approach for the application of oil or lubricant to the motorcycle chain in the form of capsules.
Publications/Products/Outcomes	Clean and economical lubricant capsule for motorcycle chain or similar machines.
Contact Institution/Entity Address	Lillian@Lilia Gungat & Teo Jeck Hoe@Fenddy D/A Universiti Malaysia Sabah, Sekolah Kejuruteraan & Teknologi Maklumat, Beg Berkunci 2073, 88999 Kota Kinabalu, Sabah.
Phone Number	Office: 088-320 000 ext 3092 H/p: 013-879 9749
e-Mail	jecebenny@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	Portable Incinerator
Project Number	E0177
Project Leader and Team Members	Leader: Ayob Man Members: Sahidan Saidin, Mohd Rosli and Aziz Hasan
Category	Applied Sciences and Technologies
Project Summary	Project objective was to build a portable incinerator (grounded flame mobile incinerator) that can be used anywhere by respective user to dispose unwanted materials by incineration approach.
Publications/Products/ Outcomes	The developed technology has been used in the Marijuana Disposal Exhibition by the Royal Malaysian Customs Department as well as the disposal of the secondary school Islamic studies books in Perlis.
Contact Institution/Entity Address	ABM Mix Trading No. 40, Jalan Senapi Daud, Kubang Gajah, 02600 Arau, Perlis.
Phone Number	Office: 04-986 4906 H/p: 019-434 2677
e-Mail	abm-incinerator@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	Development of aSecurity Document Based on Biometrics Fingerprints by Utilising Inkless Technology
Project Number	E0182
Project Leader and Team Members	Leader: Shahrizal Othman Members: Mustapha Ali, Sufiyan Yasa, Raja Aiman, Mohd Saiful Potri and Khalid Ibrahim
Category	Material Sciences
Project Summary	Project objective was to develop a security-based documentation system for the identification and prevention of fraud and theft incidents. The biometrics fingerprinting system would enable imbedding, storing and sustaining of human fingerprint within a short time by utilising inkless technology. The fingerprint document equips with safety features such as coated area for fingerprints, special ink container, identification number as well as barcode to avoid forgery of documents.
Publications/Products/ Outcomes	This project has successfully produced a document on the basis of biometric fingerprinting.
Contact Institution/Entity Address	Galitix Technologies Sdn. Bhd. 22, Lorong (B)9, Kampung Pandan, 55100 Kuala Lumpur.
Phone Number	Office: 03-9286 2284 H/p: 019-264 9400
e-Mail	galitix@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	Ergonomic Dermatological Intelligent Soap Applicator
Project Number	E0184
Project Leader and Team Members	Leader: Sharahwanaun Muthusamy
Category	Medical and Health Sciences
Project Summary	Project objective was to develop an ergonomic dermatological intelligent soap applicator (EDISA) to reduce instances of recurrent skin infections resulting from poor skin hygiene due to inefficient body wash. EDISA is a fun devise for soap application that provides a much more effective way of skin cleaning while at the same time it would specifically encourage children to take shower more frequently.
Publications/Products/Outcomes	Initial proof of concept, model and prototype of EDISA has been developed.
Contact Institution/Entity Address	Sharahwanaun Muthusamy 6 Jalan 2/132, Taman Gasing Indah, 46000 Petaling Jaya, Selangor.
Phone Number	Office: 03-7784 3255 H/p: 012-326 3255
e-Mail	sharahwanaun@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	Development of Reinforced Oil Palm Wood for Flooring and Decking
Project Number	E0198
Project Leader and Team Members	Leader: Sim Yee Fuan Members: Lim Cheah Chooi, Choo Koh Boon, Menandi Shummugam, Ooi Teik Huat, Chan Wai Fen and Tan Yau Hiang
Category	Environment and Natural Resources
Project Summary	Project objective was to develop and commercialise a wood-plastic composite as a new source of material primarily for flooring and decking. This newly developed product will be promoted in the medium and high-end markets.
Publications/Products/ Outcomes	A resin impregnated oil palm flooring was developed in this project. The product has a great potential as the flooring and decking and the quality is comparable to the flooring made of hardwood species such as <i>kempas</i> , <i>merbau</i> and <i>balau</i> . Hence, the development of this product would alleviate the pressure of the Malaysia rain forest since oil palm trunks is available in abundance in Malaysia that can be used to replace the demand on hardwood species such as <i>kempas</i> , <i>merbau</i> and <i>balau</i> .
Awards/Certificates	<ol style="list-style-type: none"> 1. International Invention, Innovation & Technology (ITEX) 2010: Malaysia Innovative Products Award 2. Anugerah Inovasi Cemerlang Negeri Selangor 2010; 1st Prize – Industrial Usage Creation Category 3. Malaysian Technology Expo (MTE) 2010: For Invention and Innovation of Raising Impregnated Oil Palm Flooring
Additional Information	Commercialisation: Product was sold in domestic market and exported to India and United States of America. Gross Sales:RM500,000.00
Contact Institution/Entity Address	Polypalm Wood Products Sdn. Bhd. Wisma Unimech, 4934, Jalan Chain Ferry, 12100 Butterworth, Pulau Pinang.
Phone Number	Office: 04-332 8823 H/p: 012-474 2042
e-Mail	palmwoods@gmail.com paddy.goh@unimechgroup.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	Solder Paste Mixer for the Semiconductor/Electronic Industries
Project Number	E0200
Project Leader and Team Members	Leader: Tan Kean Lee
Category	Engineering Sciences
Project Summary	Project objective was to develop a mixer for the optimum production of well-mixed solder paste for semiconductor/electronic industry. The productivity of the semiconductor/electronic industry could be increased substantially by adopting the developed mixer where well-mixed and more consistent bonding strength of solder paster could be produced in a shorter cycle time. The high quality of solder paster will improve or enhance the reliability and final quality of the semiconductor or electronic assembly.
Publications/Products/Outcomes	A solder paste mixer that would improve the productivity of the semiconductor or electronic assembly has been developed.
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent filed (PI 20063460); Shaker Array Solder Paste Mixer and Softener 2. International Patent filed (PCT/MY2008/000050); Shaker Array Solder Paste Mixer and Softener
Contact Institution/Entity Address Phone Number e-Mail	Chien Li Metal Industries 16B Jalan Permatang Damar Laut, Bayan Lepas, 11960 Pulau Pinang. Office: 04-626 6120 H/p: 019-472 7701 kltan@ld-micro.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	Development of Environmental Friendly Technology for Recycling of Used Tyres
Project Number	E0257
Project Leader and Team Members	Leader: Abdul Rahman Abdul Rashid
Category	Applied Sciences and Technologies
Project Summary	Project objective was to develop an environmentally friendly technology to recycle used tyres. The technology was developed by adopting the principles of pyrolysis process in which used tyres was safely disposed, processed, and further transformed into marketable products such as black carbon, burning fuel and metals that have been successfully sold to 12 other companies nationwide. With the invention of this technology, the company has also employed 20 workers for the recycling of the used tyre to economically viable products.
Publications/Products/Outcomes	The environmentally friendly technology developed in this study has successfully converted the used tyre to economical viable products, such as burning fuel, black carbon, metals and methane gas that can be used in the vaporisation process.
Contact Institution/Entity Address	Teguh Majumas Sdn. Bhd. CM07, Mezzanine Floor, Plaza Suria, Jalan PJU 10, Damansara Damai, 47830 Petaling Jaya, Selangor.
Phone Number e-Mail	H/p: 017-3355959 teguhmajumas@cabanova.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	Twin Rotor Screw Compounding Extruder Machine
Project Number	E0264
Project Leader and Team Members	Leader: Mohamad Saleh Mohd Ghazali Members: Ng Chee Keong, Liew Kok Wah, Azman Ariffin and Mohd Fairuz Azizi
Category	Material Sciences
Project Summary	Project objective was to build and assemble twin rotor screw compounding extruder machine in Malaysia. The design of twin rotor and chamber was based on the vast experiences of company in designing and fabricating of rotor. The company has also work closely with customers for the additional features of various compounding process methods and extruder for the ease of service and maintenance. As the compounding market business is more competitive, the twin rotor extruder is more suitable for customers that need to increase their production capacity with good product quality.
Publications/Products/ Outcomes	This project places the company in the third position in the world to compete in plastic resin process industry. The developed machine has helped customers in their production capacity to compete well and to capture more market with better quality product. With better quality and competitive price of compounding polymer, the production cost of the end user, such as automotive, packaging, household and communication industries can be reduced substantially.
Contact Institution/Entity Address	Micromagna Machinery Sdn. Bhd. B-07-09, Perdana Selatan, Taman Serdang Perdana (Seksyen 1), 43300 Seri Kembangan, Selangor.
Phone Number	Office: 03-8941 8311 H/p: 012-297 6558 (En. Zackry)
e-Mail	machinery@micromagna.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	Design and Implementation of Carbonaceous Organic Matter (BOD) and Nitrate
Project Number	E0279
Project Leader and Team Members	Leader: Paramassivam Perianan
Category	Applied Sciences and Technologies
Project Summary	Project objective was to design carbonaceous organic (BOD) and nitrate (NO ₃ ⁻) oxidation sewage treatment plant with minimum equipment and best innovation of process unit arrangement to cater for less than 1000 (PE) Population Equivalent.
Publications/Products/Outcomes	The system is now constructed at the quarters of the Sungai Besi Police Headquarter.
IP Status	1. Malaysia Patent granted (MY 09-00054-0101); UnderWaste Water Treatment
Contact Institution/Entity Address	Techno Green Services Sdn. Bhd. No.10-2, Jalan 8/23E, Taman Danau Kota, 53300 Setapak, Kuala Lumpur.
Phone Number e-Mail	H/p: 017-382 1965 paramcpd@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	Development of Transparent Soap Injection System
Project Number	E0321
Project Leader and Team Members	Leader: Safril Saban
Category	Material Sciences
Project Summary	<p>Project objective was to develop transparent soap injection system to replace the extrusion and stamping process that are generally used in soap bar production. In this injection technology, the transparent soap could be produced at optimum quality and productivity. An efficient and productive manufacturing system for the production of transparent soap bar has been developed in which the Good Manufacturing Practice (GMP) and Halal could be complied easily. The successful development of this machine (Transparent Soap Injection System) would not only cater the need of the company but also the need of other soap manufacturing plants who are interested to acquire the same soap manufacturing system.</p>
Publications/Products/Outcomes	The developed technology could be used to produce aromatic soap products.
IP Status	1. Registration Number with MYIPO 10009390101 dated 20 July 2010; Injection Machine For Transparent Soap and Food Industry
Contact Institution/Entity Address	Sirius Excel Sdn. Bhd. No 493, Jalan Haruan 4/4, Oakland Commercial Centre, 70300 Seremban, Negeri Sembilan.
Phone Number	Office: 06-601 7810 H/p: 019-622 7497
e-Mail	admin@siriusxcel.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –EIF (INDUSTRY)

Project Title	Conversion of hydrocarbon gases into Euro V high performance green technology commercial diesel oil from fractional de-polymerisation process of thermoplastic.
Project Number	E0336
Project Leader and Team Members	Leader: Shamsul Bahar Mohd Nor Members: Suryadiansyah, Mohd Khir Hamzah and Norliza Muhammad
Category	Applied Sciences and Technologies
Project Summary	<p>Project objective was to design and develop an efficient and an economical system to convert hydrocarbon gases obtained from a fractional de-polymerisation process of thermoplastic (waste plastics) into commercial viable Euro V high performance green technology commercial diesel oil as a new source of renewable/alternative energy. Plastics play a very important role in our daily lives. Throughout the world the demand for plastic, particularly plastic packaging, material continues to grow rapidly. Previous waste management methods such as landfill disposal, incineration, and recycling have failed to dispose plastic waste efficiently. The newly developed system provides an integrated plastic waste processing system which offers an alternative to landfill disposal, incineration, and recycling as a viable, economical, and environmentally-responsible waste management solution. The developed <i>SahamUtama</i> plant is very robust by design and can easily handle plastic that is contaminated with other kinds of waste such as metals, glass, dirt, water, etc. The system can also tolerate up to 25% of other waste in the input plastic waste stream. The key advantage of the system is that the plastic wastes do not need to be pre-sorted, cleaned or dried prior to processing, which in turn would significantly reduce the overall cost of operation and yet high grade and low sulfur content of fuel oil output could be obtained easily.</p>
Publications/Products/ Outcomes	<p>The plastic to oil conversion system is an innovative, proprietary process to convert plastic waste into renewable energy namely diesel oil. The processing plant is in modular design. A single module can produce up to 80% of fuel oil from every ton of typical plastic waste. Plant capacity can be ranging from 5 tons to 15 tons of plastic wastes processed daily. Overall plant capacity can be easily scaled up by adding additional modules.</p>



Additional Information	<p>Linkages: Syngas Sdn. Bhd. to market the processing system.</p> <p>Spin-off: Setting up of Syngas Sdn. Bhd. to operate and market the plastic to oil conversion plant and system.</p>
Contact Institution/Entity Address	Saham Utama Sdn. Bhd. Lot 14358, Jalan Perusahaan 22, Kg Idaman, Pandamaran, 42000 Pelabuhan Klang, Selangor.
Phone Number	Office: 03-3168 1312 H/p: 019-212 1705
e-Mail	SahamUtama@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –TECHNOFUND (INDUSTRY)

Project Title	Development of Hydrometallurgical Extraction Technology for Toxic Aluminium Dross Waste, Treatment to Zero Level Safe Disposal, Recovery and Conversion to Commercial Grade Aluminium Oxide Powders
Project Number	TF0808D099
Project Leader and Team Members	Leader: Muslim Ahmad Members: Norlida Baharun and Sunara Purwadaria
Field of Research	Engineering Sciences
Project Summary	A joint collaboration was established with Universiti Sains Malaysia, in pioneering the hydrometallurgical extraction technology. Toxic aluminium dross was chosen as the raw material as it was in abundance due to the country rapid industrialisation. Aluminium dross samples were taken from aluminium recyclers in Air Keroh and Batu Pahat for investigations. Investigation, research and development was conducted to neutralise toxic aluminium dross; to convert aluminium dross to useful commercial products. Ongoing research and development now focus on refined commercial grade aluminium oxide powder in a nanotechnology platform.
Publications/Products/ Outcomes	i) Applicability of hydrometallurgical extractive technique in the treatment of toxic aluminium dross. ii) Recovery and conversion of toxic aluminium dross into a viable commercial grade aluminium oxide powders.
Contact Institution/Entity Address	Ultimate Engineering Technique (M) Sdn. Bhd. Lot A19&20, Kompleks Kawasan Industri Kecil, Mara, Off Km13, Jalan Batu Caves, 68100 Batu Caves, Kuala Lumpur.
Phone Number	H/p: 012 283 3458
e-Mail	ult_eng@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS –TECHNOFUND (INDUSTRY)

Project Title	Solder Paste Mixer and Softener for the Semiconductor/ Electronic Industry
Project Number	TF0908D103
Project Leader and Team Members	Leader: Tan Kean Lee Members: Rosnani Mohammad, Azahar Md Yusoff and Lee Den Yew
Category	Engineering Sciences
Project Summary	The team has developed and commercialised a mixer and softener that can provide the best mixing and softening of solder paste. This will provide improvement towards end product reliability especially in the semiconductor/electronic industry. The product has qualified for both Malaysian and Global patent. This indicated that the concept is unique. The packaging design of the softener was extended to bottle and catridge type for better marketing.
IP Status	Malaysian Patent filed(PI20063460) Global Patent filed (PCT/MY2008/000050)
Contact Institution/Entity Address Phone Number e-Mail	LD Micro Precision Sdn. Bhd. 16B Jalan Permatang Damar Laut, 11960 Bayan Lepas, Pulau Pinang. Office: 04-626 6120 kltan@ld-micro.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –TECHNOFUND (INDUSTRY)

Project Title	Conversion of Plastic, Cellulose, Organic and Solid Sanitary Wastes to Petroleum Products through Closed System, Depolymerisation Refining Process (CSTDRP)
Project Number	TF0609D126
Project Leader and Team Members	Leader: Ali Mohamad Mamat Members: Hamka Suleiman, Abdul Halil Abdul Mutalib and Muhammad Zubaidi Ahmad
Field of Research	Environmental Sciences
Project Summary	<p>The main objective of the project was to manufacture renewable energy resources as replacement fuels based on newly invented technologies. Feedstock of plastics, celluloses (wood wastes, EFBs, newspapers), organics (such as vegetables, waste foods, solid sanitary waste, etc.) were thermally heated not exceeding 500°C, vaporised in a closed individual system at atmospheric pressure. The vapour was then condensed to form fossil petroleum products, gas (NG, LPG, Fuel Gas), Bio-fuels and coke. Subsequently, the liquid produced was further fractionised in a refinery processes to produce fossil-fuels based product, Bio-fuels based products. The results shows that GBS green crude is a superior grade crude exceeded only by Tapis crude. Crude type produced in Malaysia are highlighted in the Marpol Report in the Malaysia section. The expected production of crude oil from the 250 t/day MSW reprocessing system using the Greenbase CSTDRP Technology is about 50 t/day.</p>
Contact Institution/Entity Address	Greenbase Sepadu Sdn. Bhd. Suite 06-01, 6th Floor, Heritage House, 33, Jalan Yap Ah Shak, 50300 Kuala Lumpur.
Phone Number e-Mail	H/p: 012-282 0767 ali@greenbase.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –TECHNOFUND (INDUSTRY)

Project Title	Palm Palletising System
Project Number	TF0109D002
Project Leader and Team Members	Leader: Chia Song Kun Members: Beh Seng Kee, Chia Seong Fatt, Khoo Ng Hiong and Chia Juak Sui
Category	Applied Sciences and Technologies
Project Summary	<p>QL Palm Pellet Sdn. Bhd. (QLPP) has developed a cost-effective technology that converts palm oil biomass such as empty fruit bunches (EFB), palm trunks, leaves and mesocarp fibres, into commercial-grade biomass pellet fuel. The laboratory scale proof-of-concept has proven the technology and its economic feasibility with great success. The end products, i.e. biomass pellets, were also evaluated and accepted as energy fuel substitute for power and heat generation. QLPP progress to construct a pre-commercialisation pilot plant to conduct technology integration and operation testing. QLPP has conducted large-scale, integrated testing and fine-tuning the overall system performance. Throughput is optimised at 4 t/hr (with current set up) for pellet with moisture content around 10% ready to be used as fuel replacement for coal, diesel, etc. QLPP has developed a cost model through pilot testing ready to be used for commercialisation purpose. In addition to the primary objectives, QLPP has also tested on pellet production using oil palm frond (OPF). Pellets produced are of good appearance with moisture content around 20%. After airing under sunlight condition, the pellet moisture content reduced to 11% . OPF pellets are suitable for animal feed. The OPF trial indicated that the palm pellet system has shown technical feasibility in production OPF pellets with further fine tuning.</p>
Publications/Products/Outcomes	Palm-palletising System (PPS)
Contact Institution/Entity Address	QL Palm Pellet Sdn. Bhd. No. 16A, Jalan Astaka U8/83, Bukit Jelutong, 0150 Shah Alam, Selangor.
Phone Number	Office: 03-7801 2288 H/p: 012-286 9812
e-Mail	skchia@ql.com.my/ jschia@ql.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –TECHNOFUND (INDUSTRY)

Project Title	New Conductive Soil Treatment Material Sourced Locally "Raremix Model CSTM-01"
Project Number	TF0108D010
Project Leader and Team Members	Leader: Annuar Mohd Ramli Members: Fakhurulrazi Mahtar, Nabihah Hashim, Mohd Nazaruddin Muhamad Nor, Mohammed Sabri Nasir and Mohd Ismadi Ismail
Field of Research	Engineering Sciences
Project Summary	<p>RAREMIX is a trademark of Telekom Malaysia Research & Development (TMR&D) for conductive soil treatment material or also known as grounding additive filler. TMR&D has started doing research in grounding additive filler since 2006 and has successfully produce the formulation for RAREMIX in laboratory scale. Based on its performance at field trial, RAREMIX had also shown the potential in improving grounding effectiveness regardless of soil conditions by reducing grounding resistance value comparable to other available product in the market. Other than that, RAREMIX can affectively act as a cathodic protection system by covering the metal parts which will create conduction between the metal and this material. Thus, it will reduce electrolytic reaction and prevent the metal from corroding. RAREMIX showed a good performance and almost at par with the benchmarked product, SE, as a local grounding additive filler. Even though RAREMIX had lower performance in term of compression strength and hardness properties, this RAREMIX conductive soil treatment material condition was acceptable because after both products were tested with thermal cyclic, no significant changes were found such as cracks between the respective grounding additives fillers and copper tape. Both RAREMIX as well as SE still maintained their physical shape and had a constant surface Contact with copper tape.</p>
Contact Institution/Entity Address	Telekom Research & Development Sdn. Bhd. TM R&D Innovation Centre, Lingkar Teknokrat Timur, 63000 Cyberjaya.
Phone Number	Office: 03-8944 1820 H/p: 013-344 3472/ 019 342 8305
e-Mail	rizal@tmrnd.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –TECHNOFUND (INDUSTRY)

Project Title	Design and Development of Hybrid Front End Module for Proton MPV Project
Project Number	TF0808D089
Project Leader and Team Members	Leader: Dashuki Mohd Members: Asmin Saidin, Abd. Rashid Md. Sariani, Seoung-Mook, Chun, Won Sang Chai and Dong Yong Kim
Category	Engineering Sciences
Project Summary	<p>The new "Front Carrier Assembly" was designed and developed using a combination of engineering polymers and metals. The Pilot production plant was designed for a fully automated system. The project had involved 7 major activities; 3D Design and Analysis of Weak Point; Prototype Making Based on Design and Analysis; Analysis on Full Assembly Based on Car Condition; Testing on Prototype Pilot Part: Mould Design and Flow Analysis for Commercial Tooling; Equipment for Pilot Run and Commercial; Design of Checking Figures simulating "Exora" body condition. The project had successfully reduced the number of components by introducing thin front carrier assembly. The manufacturing process was simplified by eliminating robots at the assembly station. It was proven that by using the front end module concept, the time to replace major parts (engine works) can be substantially reduced.</p>
Contact Institution/Entity Address	Ace Polymers (M) Sdn. Bhd. Bahagian Penyelidikan & Pembangunan, Lot1570, Kg Jaya Industrial Area, 47000 Sg. Buloh, Selangor.
Phone Number e-Mail	Office: 03-6157 9299 acep@salwan.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –TECHNOFUND (INDUSTRY)

Project Title	Development of Palm-based Polyol for Polyurethane Sealants and Adhesives
Project Number	TF0206D050
Project Leader and Team Members	Leader: Azhdrel Azha Hashim Members: Salmiah Ahmad, Hazimah Abu Hassan, Hong Seng Soi, Parthiban Siwayanan, Kamarudin Md Ali, Goh Cer Wen, Yap Eng Aik, Tee Swee Wah, Asnawi Peiman and Fidelis Gimpeh
Field of Research	Material Sciences
Project Summary	R&D on palm based polyol for polyurethane applications; with the view to substitute the existing polyether and polyester derived from petroleum. A 2-tonne pilot plant was built and fully installed with automation system controlled by using a newly developed control software.
Publications/Products/Outcomes	Polyol compound Rovpol 2200 and Rovpol 2201
IP Status	Malaysian Patent filed (PI 20055231)
Contact Institution/Entity Address	Rovski Industries Sdn. Bhd. Lot 651, Jalan Subang 3, Off Jalan Persiaran Subang, 47610 Subang, Selangor.
Phone Number	Office: 03-5633 2908 H/p: 017-366 1722
e-Mail	azhdrel@rovski.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –TECHNOFUND (INDUSTRY)

Project Title	Development of Pilot Scale Production of Poly Metal Chlorides from Industrial Waste
Project Number	TF0106D046
Project Leader and Team Members	Leader: Suresh Kumar K. Chinnan Members: Mohamed Kheireddine Aroua, Abdul Aziz Abdul Rahman, Kesavan Palanyandy and Balasubramaniam Karpan
Category	Engineering Sciences
Project Summary	The purposed of the project is to offer a better system for disposal of metal hydroxide sludge. The project involved a recycling process, in which sludge is reacted with hydrochloride and aluminium source additive to produce PAC like coagulant. A pilot plant was built to produce the poly metal chlorides based as demand placed by clients including Samsung Electronics.
Publications/Products/ Outcomes	Pilot plant to produce polymetal chloride
Contact Institution/Entity Address	Koshin Kitmula Malaysia Sdn. Bhd. Lot No. 3992&3993, No: 20&21, Lorong 3/1, Senawang Industrial Estate, 70450 Senawang, Negeri Sembilan.
Phone Number	Ofiice: 06-677 5950/ 06-677 5319/ 06-675 1548 H/p: 016-660 9028
e-Mail	Koshink@streamyx.com koshintm@tm.net.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –TECHNOFUND (INDUSTRY)

Project Title	Water Soluble Polymers Manufacturing
Project Number	TF0208D014
Project Leader and Team Members	Leader: Omar Abd Kadir Members: Azhar Anuar, Mohd Fauzi Mohd Yunus, Azlan Affin and Raid Saleh Ali Shatat
Field of Research	Material Sciences
Project Summary	<p>This project covered the development of industrial grade water-soluble polymers and consequently the setting up commercial manufacturing facility for such products. The main products involved are emulsion polyacrylamide based anionic, non-ionic and cationic flocculants, polyamine based organic coagulant and various water and process additives such as melamine based spray booth paint detackifier, polyacrylate based dispersant and paper wet strength agent. The project required an establishment of 3 pilot polymerisation vessels for the major processes which will be divided, namely for emulsion polyacrylamide (EPAM polymerisation), polyamine (EPI/DMA) and sodium polyacrylate polymerisation, and a low duty reaction vessel to produce lightly polymerised melamine and melamine/ acrylamide based products.</p> <p>Major markets would be industrial wastewater treatment for various industries, oilfield (production and drilling), papermaking, sugar (pending food grade and halal approval) and drinking water treatment plant (pending NSF certification). The entity has designed, installed and commissioned a pilot plant in Bentong Pahang, from which product has already been sold. The pilot plant in Bentong includes 4 primary pieces of process equipment with sizes of 3 to 5 t. These were each custom-designed for one of the four main product ranges, those being emulsion polyacrylamide for water treatment, polymines, melamine formaldehyde paint detackifier and sodium polyacrylate. The melamine formaldehyde has been produced twice in January 2009. The product was according to specification and has resulted in two sales, the first one at 400 kg and the second at 1200 kg for PROTON. The emulsion polyacrylamide plant has been commissioned in January, and a consignment containing 25 kg product has been sold to PROTON.</p>



Publications/Products/ Outcomes	Pilot plant to produce emulsion polyacrylamide for water treatment; polyamines; melamine formaldehyde paint detackifier; dodium polyacrylate. Product emulsion polyacrylamide was supplied to PROTON.
Contact Institution/Entity Address	Global Network Technology Sdn. Bhd. Global Network Technology Sdn. Bhd., NSERC Specialty Chemicals & Super Critical Fluid Extraction Complex, Lot 10097 & Lot 1009, Kawasan Perindustrian Bentong, 28700 Bentong, Pahang.
Phone Number	Office: 09-220 1340
e-Mail	akmomar@usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Micromachining of Advanced Ceramics by Conventional and Non-conventional Methods
Project Number	03-02-07-SF0006
Project Leader and Team Members	Leader: Moola Mohan Reddy Members: Khaled, Osama, Lau Shiew Wei, Bashir Mohamad Bali Mohamad, Ramesh Singh, Mohd Hamdi Abd Shukor, Zeya Oo Curtin and Chua Han Bing
Field of Research	Fabricated Metal Products
Project Summary	Project objectives were to establish a feasible set of operational parameters for micromachining of advanced ceramics using conventional (micromechanical) and non-conventional (photolithographic etching) methods and to compare the performance of these two micromachining methods against productivity and machined surface integrity. Various advanced ceramics were tested. The effect of operational parameters such as spindle speed, feed rate and axial depth of cut were studied using conventional method. For non-conventional method, etching time, temperature and type of acid were considered. Surface roughness model has been developed for each material by using both methods.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Ting, H. T., Abou Ei Hossein, K. A., and Chua Han Bing G. 2008. Review of micromachining of ceramics by etching. <i>Trans. Nonferrous Met. Journal of Soc.</i> 19:100. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ting, H.T., Abou Ei Hossein, K.A. and Chua H. B., 2008. Review of micromachining of ceramics by etching. Proceeding of Hymap 2008, <i>The 1st International Symposium on Hybrid Materials and Processing</i>, 27-29 Dec. 2008, Busan, Korea. 2. Reddy, M.M., Gorin, A., Abou-El-Hossein, K.A., 2009. Development of Cutting Force Model for Machinable Glass Ceramic Process by End Milling. <i>The 2nd CUTSE International Conference</i>, 24–25 Nov. 2009, Curtin Sarawak, Miri. 3. Reddy, M.M., Abou-El-Hossein, K.A., Hamdi, M., Gorin, A., Rajamohan, G., 2009. Development of Surface Roughness Model of Machinable Glass Ceramic



	<p>Processed by Micro End Milling. <i>Advanced Technology Congress International Conference (ATCI 2009)</i>, 7 Aug. 2009, International Islamic University Malaysia, Gombak.</p> <p>4. Ting, H.T., Abou-El-Hossein, K.A., & Chua, H.B., 2008. Application of Design of Experiment for Modeling of Etching of Ceramics. <i>EnCon 2008, 2nd Engineering Conference on Sustainable Engineering Infrastructures Development and Management</i>, 18-19 Dec. 2008 Kuching.</p>
Additional Information	<p>Linkages: Universiti Malaya (Micromachining tests); Nelson Mandela Metropolitan University, SA (choosing range of parameters)</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>CURTIN Pengarah R&D, Universiti Teknologi Curtin (CURTIN), Kampus Cawangan Sarawak, Jalan Riam, CDT 250, 98009 Miri, Sarawak. Office: 085-443939 H/p: 016-851 6727 mohan.m@curtin.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (INDUSTRY)

Project Title	Electro-osmosis and Electro-stabilisation Experiments on Soft Soils of North Sarawak
Project Number	03-02-07-SF0007
Project Leader and Team Members	Leader: Shenbaga Rajaratnam Kaniraj Jeyachandran Member: Hieng Ho
Field of Research	Geotechnical Engineering
Project Summary	Project objectives were to investigate the potential for the use of electro-osmosis and electrokinetics in improving the consolidation process and to study the strength characteristics of soft soils in Sarawak, including clayey soils, organic soils and peaty soils.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Kaniraj, S.R. and Huong, H.L. 2010. Electro-osmotic consolidation studies on peat of North Sarawak. <i>Indian Geotechnical Conference</i> , 18-20 Feb. 2010, Guntur, India. 2. Kaniraj, S.R. and Huong, H.L. 2008. Electro-osmotic consolidation experiments on a North Sarawak peat. <i>Indian Geotechnical Conference</i> , 17-19 Dec. 2008, Bangalore, India.
Additional Information	Linkages: Emas Kiara Industries Bhd, Selangor (provided the electric vertical drains for the electro-osmotic consolidation experiments).
Contact Institution/Entity Address	CURTIN Pengarah R&D, Universiti Teknologi Curtin (CURTIN), Kampus Cawangan Sarawak, Jalan Riam, CDT 250, 98009 Miri, Sarawak.
Phone Number	Office: 085-443940 H/p: 019-845 1832
e-Mail	kaniraj@curtin.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Smart Automotive Mounting System
Project Number	03-03-12-SF0006
Project Leader and Team Members	Leader: Asyraf Ismail Members: John Kingston, Judith Picken and Hamid Reza Ahmadi
Field of Research	Ground Transport
Project Summary	<p>Project objectives were to increase the working knowledge of LGM laboratories in the design and development of smart engine mountings and other advanced automotive vibration control systems. This is aimed at providing full support to the Malaysian automotive component manufacturers in the development of the next generation of active engine mounts and automotive vibration control system such as suspensions. Design equations for passive hydromounts have been developed and verified. The role of different parameters of design on the response of the mount were identified. A prototype adaptive hydromount proving the concept was designed, manufactured and tested. The dynamic behaviour of the mount was compared with theoretical predictions. Commercially available magnetorheological fluid (MRF) are mainly based on hydrocarbon oils. These are not compatible with natural rubber and hence are not practical for use in hydromounts. A new MRF based on glycol was developed which overcomes this difficulty. A new testing rig for measuring the viscosity of MRFs in the presence of magnetic field was developed. The rig was used to characterise the new MRF. Other short term properties of the fluid were also assessed. The dynamic properties of the magnetically controllable elastomers (MCE) was measured with and without the presence of the magnetic field. It was established that at low strain amplitudes, typical to vibration isolation applications, MCE provide a large change in the property when the strength of the magnetic field is altered from high to low, making their use reasonable for adaptive tuned mass vibration absorbers. The new adaptive mount was proven in concept using a simulation rig. There is of interest from at least one Malaysian rubber component manufacturer, supplying to the automotive industry, to collaborate with LGM laboratories to manufacture the first prototype mount suited to installation in motor vehicles. Knowledge on different strategies to control vibration ranging from passive to adaptive or semi-active to active control be available to interested Malaysian rubber components manufacturer.</p>

Publications/ Products/ Outcomes	Products: A laboratory scale prototype adaptive mount and magnetorheological fluid.
IP Status	In the mode of applying for magnetorheological fluid (MRF) product.
Additional Information	Linkages: Jaguar Cars Ltd (to identify areas of research in smart engine mounting systems); Institute of Sound and Vibration Research, Southampton University (smart noise and vibration control systems).
Contact Institution/Entity Address Phone Number e-Mail	Lembaga Getah Malaysia (LGM) Ketua Pengarah, Lembaga Getah Malaysia (LGM), 148, Jln Ampang, 50450 Kuala Lumpur. Office: 03-6156 1121 ext 533 H/p: 013-354 8145 asyraf@lgm.gov.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Computer Aided Engineering Design of Rubber Components
Project Number	03-03-12-SF0013
Project Leader and Team Members	Leader: Shamsul Kamaruddin Members: Norazura Alia Mohd Hassan, John Kingston, Hamid Reza Ahmadi, Alan Muhr, Kamarudin Ab Malek and Julia Gough
Field of Research	Materials Performance and Processes/Analysis
Project Summary	Project objectives were to improve the design of rubber products manufactured in Malaysia, primarily through the use of finite element analysis (FEA); to improve the capability of FEA codes to model important features of rubber, namely, modelling the dynamic stiffness, modelling of fracture and fatigue, modelling of components which buckle, modelling cord-reinforced rubber and modelling heat build-up; to improve the design of rubber bushes and annular shear units, which are widely used in the automotive industry, including the consequences of swaging. A software has been produced to provide a quick estimate of the stiffness of bushes and shear mountings.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Alan Muhr, H. 2008. On criteria for mechanical fatigue of elastomers. <i>Euromech 2008</i> , 8-10 Sept 2008, Dresden, Germany. Product: The bush stiffness prediction software
Additional Information	Linkages: Manufacturers of Abaqus FEA software (an improved model for dynamic stiffness in Abaqus).
Contact Institution/Entity Address	Lembaga Getah Malaysia (LGM) Stesen Penyelidikan RRIM Sg Buloh, Lembaga Getah Malaysia, 47000 Sg Buloh, Selangor.
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e-Mail	kshamsul@lgm.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Rubber/Clay Nanocomposites for Improved Product Lifetime
Project Number	03-03-12-SF0014
Project Leader and Team Members	Leader: Nik Intan Nik Ismail Members: Stuart Cook, Pond, Laurence Oleksik, David Lowe, Andrew Chapman and Robin Davies
Field of Research	Nanotechnology
Project Summary	<p>Project objectives were to control the extent of separation and dispersion of the layers in nanoclay fillers (referred to as exfoliation) in NR (natural rubber)-based vulcanisates; to establish a procedure for estimating the extent of exfoliation of nanoclay fillers in NR-based vulcanisates; to improve the fatigue lifetime of NR-based vulcanisates in particular for application in automotive products. In this project, fatigue lifetimes were significantly improved. The effect of nanoclays on sulphur vulcanisation was elucidated and controlled. Coupling agents were used to improve rubber-clay interaction and enhance the benefits of organoclays. The nanoclay composites were characterised by transmission electron microscope (TEM), network visualisation, X-ray diffraction and crosslink density measurements. Extensive physical testing was carried out, demonstrating the benefits of nanoclays. Nanoclays were modified in situ during mixing with NR.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Lowe, D.J., Chapman, A.V., Cook, S. and Busfield, J.J.C. 2008. A comparison of NR/organo-montmorillonite and NR/organo-sepiolite nanocomposites, <i>International Rubber Conference (IRC)</i> 2008, 21-23 Oct. 2008, Kuala Lumpur. 2. Lowe, D.J., Chapman, A.V., Cook, S. and Busfield, J.J.C. 2007. Rubber nanocomposites reinforced with organoclays, <i>172nd Technical Meeting, Rubber Division of the American Chemical Society</i>, 16-18 Oct. 2007, Cleveland OH, USA. <p>Products: Natural rubber nanocomposites based on montmorillonite and sepiolite clays.</p>



Contact Institution/Entity Address	Lembaga Getah Malaysia (LGM) Stesen Penyelidikan RRIM Sg Buloh, Lembaga Getah Malaysia, 47000 Sg Buloh, Selangor.
Phone Number	Office: 03-6156 1121 H/p: 019-358 1608
e-Mail	nikintan@lgm.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Optimisation of Chemical Dispersions for Latex Product Formulary Studies
Project Number	03-03-12-SF0015
Project Leader and Team Members	Leader: Manroshan Singh Jaswan Singh Members: Evelyn Lim Hui Mei, K. Vivayganathan and Ng Kok Poon
Field of Research	Resource-based Technology
Project Summary	Project objective was to develop and improve the formulations of current chemical dispersions and emulsions for the Latex Products Formulary as a useful reference material to the latex products industry.
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Manroshan, S., Amir Hashim, M.Y., Booten, K. 2008. Biobased surfactant as a colloid stabilizer in 50% zinc dibutyldithiocarbamate dispersion. <i>Journal of Rubber Research</i> 11: 134-146. 2. Manroshan, S. 2009. Dispersion studies: Part 1 - Dispersion optimization through dispersant requirement. BTK Internal Report Reference No: BTK/USTL/2009/05, IRPEC, BTK, LGM Sg. Buloh, Selangor. 3. Manroshan, S. 2009. Dispersion studies: Part 2 - Effect of milling on dispersion properties. BTK Internal Report Reference No: BTK/USTL/2009/06, IRPEC, BTK, LGM, Sg. Buloh, Selangor. 4. Manroshan, S. 2009. Dispersion studies: Part 3 - Effect of dispersions on the vulcanization and properties of natural rubber latex films. BTK Internal Report Reference No: BTK/USTL/2009/07, IRPEC, BTK, LGM, Sg. Buloh, Selangor.
Contact Institution/Entity Address	Lembaga Getah Malaysia (LGM) Stesen Penyelidikan RRIM Sg Buloh, Lembaga Getah Malaysia, 47000 Sg Buloh, Selangor.
Phone Number	Office: 03-6156 1121 H/p: 019-559 4426
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Environmentally Friendly and Nitrosamine-free Latex Preservative System
Project Number	03-03-12-SF0021
Project Leader and Team Members	Leader: Vivaygananthan K. Kathireson Members: Zameri Mohamed and Ng Kok Poon
Field of Research	Resource-based Technology
Project Summary	Project objective was to develop an alternative latex preservative system that is environmentally-friendly, ZnO and nitrosamine - free and conforms to regulatory limits and requirements in latex and products.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Vivayganathan, K. and Amir Hashim, M.Y. 2010. Preservation systems in natural rubber latex concentrate, <i>Rubber Plas</i>, 9-11 Sept. 2010, Thailand. 2. Vivayganathan, K., Amir Hashim, M.Y. and FaridahHanim. 2008. <i>Proceedings of International Rubber Conference</i>, 20-23 Oct. 2008, Kuala Lumpur. <p>Products: Environmentally Friendly Low Ammonia Composite Preservative Systems</p>
Awards/Certificates	ITEX 2010: 1 Silver Medal. Kuala Lumpur Convention Centre, 14-16 May 2010
IP Status	Patent Application filed : PI 20094277, Malaysia
Contact Institution/Entity Address	Lembaga Getah Malaysia (LGM) Stesen Penyelidikan RRIM Sg Buloh, Lembaga Getah Malaysia, 47000 Sg Buloh, Selangor.
Phone Number	Office: 03-6156 1121 H/p: 017-330 4843
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Minimising Chemical Hazards, Cytotoxicity and Genotoxicity of Rubber Chemicals and Natural Rubber Latex Products
Project Number	03-03-12-SF0023
Project Leader and Team Members	Leader: Mok Kok Lang Members: Nor Fadilah Rajab, Tajul Anuar Yaakob and Siti Nor Qamarina Manaf
Field of Research	Advanced Materials
Project Summary	Project objective was to determine the safe use of rubber chemicals via cytotoxicity and genotoxicity studies leading to the development of new latex formulations with minimal extractable chemical residues to enhance its biocompatibility. Natural rubber (NR) latex biomaterial with enhanced biocompatibility and minimal chemical residues was obtained via post-product processing.
Publications/Products/ Outcomes	Products: Biocompatible Natural Rubber Latex Material
Additional Information	Linkages: Universiti Kebangsaan Malaysia (advisory consultation in the set-up of genotoxicity test facility); Universiti Kebangsaan Malaysia (the use of its fluorescence microscope for comet assay)
Contact Institution/Entity Address	Lembaga Getah Malaysia (LGM) Stesen Penyelidikan RRIM Sg Buloh, Lembaga Getah Malaysia, 47000 Sg Buloh, Selangor.
Phone Number e-Mail	Office: 03-6156 1121 klmok@lgm.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Sucrose-free Chocolate Using Polyols
Project Number	03-03-13-SF0020
Project Leader and Team Members	Leader: Wan Aidah Wan Ibrahim
Field of Research	Food Science and Nutrition
Project Summary	<p>The high intake of sugar in long term is always associated with unhealthy problems/diseases such as overweight, obesity and diabetes. Sugarfree confections usage have shown significant growth, in excess of 20% annually in many markets worldwide. There are many types of sugar replacers in the market and the major focus is on polyols (sugar alcohols). Polyols are suitable for diabetics and are toothfriendly as they are scarcely converted into acids by oral microorganisms. Polyols can be applied in chocolate recipes to replace sugar (sucrose) but application of these polyols in conventional chocolate making process require adjustment to the processing parameters such as temperature, fat content and storage conditions. Improper manufacturing conditions could result in product thickening, which is due to moisture absorption and the release of bound moisture. Such chocolate will not have good workability desired for the specific product application. In this research, the recipes for sucrose free chocolates containing isomalt, maltitol and erythritol were successfully developed.</p>
Publications/Products/ Outcomes	<p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. Wan Aidah Wan Ibrahim. 2009. Physical stability of sugarfree milk chocolate Malaysian. <i>International Cocoa Conference</i>, 11-12 May 2009, Berjaya Times Square Hotel & Convention Center Kuala Lumpur. <p>Products: Sugar Free Chocolate</p>
Additional Information	Linkages: Malaysian Cocoa Board (product development and analyses); Vinlim Trading (supplier of raw ingredients (polyols)).
Contact Institution/Entity Address	Lembaga Koko Malaysia (LKM) Pusat Penyelidikan Hiliran Koko, Lembaga Koko Malaysia, Lot 3, Jln P/9B, Seksyen 13, 43650 Bandar Baru Bangi, Selangor.
Phone Number e-Mail	Office: 03-8926 7800 aidah@koko.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Two-stage Heat Pump Drying of Malaysian Fruits
Project Number	03-02-12-SF0001
Project Leader and Team Members	Leader: Law Chung Lim Members: Chuah Teong Guan and Wan Ramli Wan Daud
Field of Research	Chemical Engineering
Project Summary	<p>Drying is one of the most common preservation methods to prolong the shelf life of agricultural and bio-origin products. Therefore, the need to develop efficient and cost effective drying processes remains important. Agricultural and pharmaceutical products are bio-origin, thus they are heat sensitive. High temperature processing will destroy or change the chemical and biochemical properties of the products. In the process of dehydration and formation of powder, low temperature is preferable. Here, heat pump dryer is one of the low temperature dryers besides freeze dryer. To further improve the dried product quality, a two-phase heat pump drying system has been developed in this work. Prototype of a hybrid dehumidifier-dryer has been fabricated and commissioned. Drying characteristics and kinetics as the product quality of ciku and chempedak have been determined. Drying efficiency of the hybrid dehumidifier-dryer has been evaluated. Duration of application of dehumidifier air and hot air has been evaluated with reference to drying kinetics and product quality.</p>
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Chong ChienHwa, Law Chung Lim, Michael Cloke, LuqmanChuah Abdullah and Wan RamliWan Daud, 2008, Drying kinetics, texture, colour and determination of effective diffusivities during sun drying of chempedak, <i>Drying Technology</i>, 26(10): 1 2 8 6 - 1293. 2. ChienHwa Chong, Chung Lim Law, Michael Cloke, ChingLikHii, LuqmanChuah Abdullah and Wan Ramli Wan Daud. (2008). Drying kinetics and product quality of dried chempedak. <i>Journal of Food Engineering</i>, 88(4): 522-527. <p>Products: Hybrid heat pump drier</p>



Awards/Certificates	ZdenekBurianec Memorial Award (The Best “PRES” Poster Competition)
Additional Information	<p>Linkages: Universiti Kebangsaan Malaysia (technical evaluation of drying system and product quality); Universiti Putra Malaysia (analysis of moisture diffusion of drying); National University of Singapore(writing the projects); Wroclaw University of Environmental and Life Sciences, Poland (2-stage drying research and evaluation of product quality); Jant Services S/B (economic analysis and market feasibility study of dried ciku and chempedak); Nam FohYoong Trading (information fresh ciku).</p> <p>Commercialisation: Scale up of the unit operation is required. Plan to apply TechnoFund to scale up the prototype.</p>
Contact Institution/Entity Address Phone Number e-Mail	<p>Nottingham Department of Chemical and Environmental Engineering, University of Nottingham (Malaysia Campus), Broga Road, 43500 Semenyih, Selangor.</p> <p>Office: 03-8924 8169 H/p: 013-388 9233 Chung-Lim.Law@nottingham.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fabrication of Nanoscaffolds for Bone Tissue Engineering
Project Number	03-02-12-SF0002
Project Leader and Team Members	Leader: Siew Shee Lim Members: Lee Lai Yee and Lim Chin Keong
Field of Research	Medical Biotechnology
Project Summary	Two types of nanoparticles served as scaffolds were synthesised namely orthorhombic calcium titanate and titanium dioxide nanotubes through hydrothermal method. Calcium sulphate and calcium carbonate were also synthesised through microemulsion method. The yield of calcium titanate and titanium dioxide nanotubes is much higher than that of calcium sulfate and calcium carbonate. The size of calcium titanate nanoparticles falls in the range of 300 nm-500 nm, whereas the outer diameter of titanium dioxide nanotubes is about 10 nm. The recovery rate of wounded bone has linear correlation with the surface area of scaffolds. These titanium dioxide nanotubes not only facilitate higher surface area which greatly promote bone recovery rate, but also sustain the supply of synthetic bone scaffolds.
Contact Institution/Entity Address	Nottingham Faculty of Engineering, Department of Chemical and Environmental Engineering, Block C, Jalan Broga, 43500 Semenyih, Selangor.
Phone Number	Office: 03-8924 8180 H/p: 012-230 3911
e-Mail	siewshee.lim@nottingham.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Hybrid Pseudocapacitors Based on Nanoscale Materials for Pulse Applications
Project Number	03-02-12-SF0011
Project Leader and Team Members	Leader: S.R.S. Prabakaran Members: Michael Cloke and Svenja Hanson
Field of Research	Advanced Materials
Project Summary	The objectives were successfully met with useful benefits in terms of low cost production of nano-oxide materials with mesoporous structure. The developed materials such as NiO and NiCo ₂ O ₄ have been tested successfully for single electrode pseudocapacitive characteristics. The materials provided 212 F/g and 150 F/g of specific capacitance against Ag/AgCl electrode and SCE reference electrodes. Eventually, these materials have been used against PICA Activated carbon as positive and negative electrode materials respectively as asymmetric hybrid cell and tested its performance for energy and power values in terms of pulse power capabilities. A prototype of coin and prismatic cells have been tested.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Prabakaran, S.R.S., Nathan, T. and Cloke, M. 2008. Electrode properties of Mn₂O₃ nanospheres synthesized by combined sonochemical/solvothermal method for use in electrochemical capacitors. <i>Journal of Nanomaterials</i> 1 Art. No. 948183. 2. Nathan, T., Cloke, M. and Prabakaran, S.R.S. 2008 Electrochemical performance of asymmetric capacitors based on Mn₂O₃ nanospheres/mesoporous carbon. <i>Journal Solid State Electrochemistry</i> V 2008, 8. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nathan, T., Cloke, M. and Prabakaran, S.R.S. 2008. Synthesis and electrochemical characterization of Mn₂O₃ nanospheres for hybrid supercapacitors. IMTCE 2008 6th International Materials Technology Conference & Exhibition, 24-27 Aug. 2008, Kuala Lumpur. <p>Products:</p> <p>New transition metal oxides: Bulk nanomaterials preparation technology</p>

Additional Information	Linkages: LRCS, Universite De Picardie Jules Verne, Amiens, France (Dr Mathieu Morcrette) Nature of collaboration: Use of their experimental facilities; Universite Paul Sebetier, Toulouse (Prof. Patric)
Contact Institution/Entity Address	Nottingham Faculty of Engineering, University of Nottingham, Jln Broga, 43500 Semenyih, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Property Integration Techniques for Waste Minimisation
Project Number	03-02-12-SF0018
Project Leader and Team Members	Leader: Foo Chwan Yee Members: Ramlan Abdul Aziz, Mahmoud M. El-Halwagi, Raymond R. Tan and Tan Yin Ling
Field of Research	Chemical Engineering
Project Summary	Project objectives were to minimise the waste generation in chemical manufacturing processes; to develop an optimal resource conservation network for chemical manufacturing process; to design an integration waste minimisation and treatment network; and to develop a prototype software for waste minimisation for chemical manufacturing process.
Publications/Products/Outcomes	<p>Publication:</p> <ol style="list-style-type: none"> 1. Ng, D.K.S., Foo Chwan Yee, Rabie, A. and Mahmoud M. El-Halwagi. 2008. Simultaneous synthesis of property-based water reuse/recycle and interception networks for batch processes. <i>AIChE Journal</i> 54: 2624-2632. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Tan, Y.L., Pau, C.H., Ng, D.K.S., Foo, D.C.Y. and Tan, R.R. 2008. Automated targeting for property integration. <i>AIChE Annual Meeting 2008</i>, 16-21 Nov. 2008, Philadelphia, USA. 2. Ng, D.K.S., Foo, D.C.Y. Tan, R.R., El-Halwagi, M.M. 2009. Automated targeting for total property-based network. <i>16 European Symposium on Computer Aided Process Engineering (ESCAPE-19)</i>, 14-17 June 2009. Cracow, Poland. 3. Ng, D.K.S., Foo, D.C.Y., Tan, R.R., Pau, C.H. and Tan, Y.L. 2009. Automated targeting for bilateral property-based resource conservation network. <i>Seventh International Conference on the Foundations of Computer-Aided Process Design (FOCAPD 2009)</i>, 7-12 June 2009, Beaver Run Resort, Breckenridge Colorado, USA. 4. Pau, C.H., Tan, Y.L., Ng, D.K.S. and Foo, D.C.Y. 2007. Property integration networks with regeneration placement. <i>Curtin University of Technology Sarawak Engineering Conference (CUTSE) 2007</i>, 28 Nov. 2007, Sarawak.

	<p>5. Lovelady, E.M., El-Halwagi M.M., Chew, I, M.L., Ng, D.K. S. and Foo, D.C.Y. 2009. A property-integration approach to the design and integration of eco-industrial parks. <i>Seventh International Conference on the Foundations of Computer-Aided Process Design (FOCAPD 2009)</i>, 7-12 June 2009, Beaver Run Resort, Breckenridge Colorado, USA.</p> <p>Products: WaterNet Software</p>
Awards/Certificates	<p>1. WaterInno Awards 2009: 1 Silver Medal</p> <p>2. Water Malaysia 2009 Conference & Exhibition Water Malaysia 2009</p>
Additional Information	<p>Linkages: De La Salle University Manila, Philippines; Texas A&M University, USA; Universiti Teknologi Malaysia (UTM), Curtin University of Technology Sarawak; Malay-Sino Chemicals.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Nottingham Department of Chemical and Environmental Engineering, University of Nottingham (Malaysia Campus), Broga Road, 43500 Semenyih, Selangor. Office: 03-8924 8130 H/p: 012-709 1414 Dominic.Foo@nottingham.edu.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Magnetic Nanocomposites Templated from Surfactant System: Synthesis, Characterisation and Potential Application as Photocatalyst
Project Number	03-02-12-SF0019
Project Leader and Team Members	Leader: Khiew Poi Sim
Field of Research	Advanced Materials
Project Summary	ZnO/CoFe ₂ O ₄ hybrid nanocomposites have been successfully synthesised using surfactant based organometallic method and have been characterised using a series of advanced techniques such as TEM, XRD, XPS, VSM, UV-Vis spectroscopy. The photocatalytic properties of the as-synthesised and regenerated nanoparticles on the organic dye (methylene blue and phenol red) have been fully identified as well. Based on the analysis results, the as-synthesised ZnO/CoFe ₂ O ₄ hybrid nanocomposites were found to be highly reactive on the photodecomposition of the organic dye and are suitable as an efficient photocatalyst material in waste water treatment system. The unique magnetic behaviour of the nanocatalyst material is crucial for recovery after the treatment process.
Publications/Products/Outcomes	<p>Publication:</p> <ol style="list-style-type: none"> 1. Chiu, W.S., Radiman, S., Abd-Shukor, R., Abdullah M.H. and Khiew P.S. 2007. Tunable coercivity of CoFe₂O₄ nanoparticles via thermal annealing treatment. <i>Journal of Alloys and Compounds</i> 459: 291-297. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Chiu, W.S., Khiew, P. S., Radiman, S., Abd-Shukor R., Abdullah, M.H. and Huang, N.M. 2007. Magnetic iron oxide (Fe₃O₄). nanocrystals: synthesis, characterization and self-assembly. <i>6th ASEAN Microscopy Conference</i>, 10-12 Dec. 2007, Impiana Cherating Hotel, Pahang. 2. Khiew, P.S., Chiu, W.S., Tan, T.K., Isa, D., Radiman S., Abd-Shukor, R., Huang, N.M. and Lim, H.N. 2008. Optical and structural properties of copper sulphide nanoparticles derived from hexagonal phase of lyotropic liquid crystal, <i>Malaysian Science and Technology Congress 2008</i>, 16-17 Dec. 2008, KLCC, Kuala Lumpur.

	<ol style="list-style-type: none"> 3. Tan, T.K., Khiew, P.S., Chiu, W.S., Radiman, S., Abd-Shukor, R., Huang, N.M. and Lim, H.N. 2008. Comparison of ZnO and TiO₂ nanoparticles on the photocatalytic degradation of methylene blue, Malaysian Science and Technology Congress 2008 (MSTC 2008). 16-17 Dec. 2008, KLCC, Kuala Lumpur. 4. Khiew, P.S., Chiu, W.S., Tan, T.K., Isa, D., Radiman, S., Abd-Shukor, R., Huang, N.M. and Lim, H.N. 2008. soft chemistry synthesis of nanostructured materials, 17th EMSM Scientific Conference and 18th Annual General Meeting, 18-20 Dec. 2008, Holiday Inn Glenmarie Hotel, Shah Alam, Selangor. 5. Chiu, W.S., Khiew, P.S., Isa, D., Cloke, M., Radiman S., Abd-Shukor, R., Abdullah, M.H. and Huang, N.M. (2008). Synthesize of 2-dimensional ZnO nanopellets by pyrolysis of zinc oleate. 2nd International Conference and Exhibition of Composite Materials and Nanostructures (IC2MS'08), 5-7 Aug. 2008, Melaka. <p>Products: Zinc Oxide/Iron Oxide Nanocomposite Material</p>
Awards/Certificates	<ol style="list-style-type: none"> 1. International Invention, Innovation & Technology (ITEX) 2010: 1 Gold Medal 2. WaterInno Awards 2009: 1 Silver Medal 3. Malaysia Technology Expo (MTE) 2009: 1 Bronze Medal 4. Nuclear Malaysia Innovation Award 2009: 1 Bronze Medal
IP Status	Patent Filling Number: PI 20093869, Filling Date: 16 September 2009.
Additional Information	Linkages: Universiti Kebangsaan Malaysia - to provide several research equipments essential for the research work.
Contact Institution/Entity Address Phone Number e-Mail	Nottingham Faculty of Engineering, University of Nottingham Malaysia, Jalan Broga, 43500 Semenyih, Selangor. Office: 03-8924 8179 H/p: 016-632 9571 PoiSim.Khiew@nottingham.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Gasification Behaviour and Hydrogen Generation Potential of Agriculture Wastes in Malaysia
Project Number	03-02-12-SF0032
Project Leader and Team Members	Leader: Svenja Hanson Member: Gan Suyin
Field of Research	Process Design Engineering
Project Summary	Project objectives were to add to the options available for the production of hydrogen in a post fossil fuel economy, in which hydrogen is the main energy carrier; to examine the potential of some common Malaysian agricultural wastes to yield hydrogen by gasification; to characterise the different wastes on their suitability for gasification and predict their hydrogen yields; and to use the data to design a gasifier tailor-made for Malaysian agricultural waste.
Publications/Products/ Outcomes	Design of pyrolyzers that can turn agricultural waste into chars that make good feedstocks for gasifiers. The data are valuable to model the process as a whole and predict H ₂ yields.
Additional Information	Linkages: University of Nottingham, UK (analysis of samples)
Contact Institution/Entity Address	Nottingham Faculty Engineering, University of Nottingham Malaysia, Jalan Broga, 43500 Semenyih, Selangor.
Phone Number	Office: 03-8924 8128 H/p: 012-907 2572
e-Mail	svenja.hanson@nottingham.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development and the Effects of Radiation on Microbial Fuel Cell in Generating Bioenergy from Agriculture Wastewater
Project Number	03-03-01-SF0001
Project Leader and Team Members	Leader: Jong Bor Chyan Members: Muhamad Lebai Juri, Mat Rasol Awang, Pauline Liew Woan Ying, Ahmad Zainuri Mohd Dzomir and Leo Kwee Wah
Field of Research	Energy Technology
Project Summary	The primary objective of this research is to generate bioenergy (electricity) from the oil palm processing wastewater. The success of such conversion will not only provide an alternative energy but have a significant impact in reducing the environmental problem caused by the oil palm processing industry. The recent advancements in the field of microbial fuel cells (MFCs) provide promising technology to obtain energy and treat high organic content wastewater at the same time. Besides electricity generation, the microbial fuel cell process is able to reduce chemical content of wastewater. From this research, microbial fuel cell system was successfully developed from microbial consortium from POME and the effects of ionising radiation on bioenergy generation was also studied.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ahmad Zainuri Mohd Dzomir, Jong Bor Chyan, Liew Pauline Woan Ying, Leo Kwee Wah, Mat Rasol Awang and Muhamad Lebai Juri. 2008. Radiation survival of bacterial community in POME after treatment by gamma irradiation. <i>Proceedings of 30th Symposium of Malaysian Society for Microbiology</i>, 16-19 Aug. 2008, Kuantan, Pahang. 2. Jong Bor Chyan, Liew Pauline Woan Ying, Ahmad Zainuri Mohd. Dzomir, Leo Kwee Wah, Mat Rasol Awang, and Muhamad Lebai Juri. 2008. Enrichment and performance of electrochemically active bacteria from palm oil mill effluent in a mediator-less microbial fuel cell. <i>Proceedings of 30th Symposium of Malaysian Society for Microbiology</i>, 16-19 Aug 2008, Kuantan, Pahang. <p>Products:</p> <ol style="list-style-type: none"> 1. Digital fuel cell data acquisition system 2. Microbial fuel cell for bioenergy from POME



Awards/Certificates	Hari Inovasi Nuklear Malaysia 2009, Pingat Perak
Additional Information	Commercialisation: The microbial fuel cell system can be used to enhance the treatment of agriculture processing wastewater to fulfill the requirement of DOE standard.
Contact Institution/Entity Address Phone Number e-Mail	NUCLEAR Malaysian Nuclear Agency, Bangi, 43000 Kajang, Selangor. Office: 03-8925 0510 jongbc@nuclearmalaysia.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Preparation of Natural Rubber Based Nano-sized Materials Using Sol-gel Technique
Project Number	03-03-01-SF0010
Project Leader and Team Members	Leader: Dahlan Mohd Member: Mahathir Mohamed
Field of Research	Advanced Materials
Project Summary	<p>Project objectives were to prepare nano-sized natural rubber-based hybrid coating materials by sol-gel technique; to explore the possibility of producing ENR-Si ceramer with toughening effects, and to use it in radiation curing of surface coating. The sol-gel technique was used to reinforce natural rubber system such as liquid epoxidised natural rubber acrylate (LENRA) without any drawbacks normally associated with carbon black to create a new product is called ENR silica hybrid composite or ENR-Si ceramer. This new hybrid compound is radiation-curable and offers a great potential for natural rubber in nanotechnology and as new renewable masterbatch for other processes.</p>
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Mahathir Mohamed, Dahlan Hj Mohd, Ibrahim Abdullah and Eda Yuhana Ariffin 2009. Spectroscopic Studies of organic-inorganic composite film cured by low energy electron beam. <i>Nuclear Science Journal of Malaysia</i>.21: 43-52. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mahathir, M., Dahlan, M. and Ibrahim, A. 2010. <i>Structure and properties of LENRA/Silica composite</i>. Seminar R&D 2010, 12-15 Oct. 2010, Agensi Nuklear Malaysia. 2. Mahathir Mohamed, Ibrahim Abdullah, Dahlan Hj Mohd and Eda Yuhana Ariffin 2010. Structure and properties of liquid epoxidised natural rubber acrylate (LENRA)/Silica composite. <i>International Conference on Enabling Science and Nanotechnology (ESciNano 2010)</i>, 1-3 Dec. 2010, Kuala Lumpur Convention Center. 3. Eda Yuhana Ariffin, Azizan Ahmad, Dahlan Hj Mohd and Mahathir Mohamed. 2009. The effect of MW on LENRA/Silica hybrid composites. <i>Proceeding of Malaysian Polymer Intern. Conference (MPIC 2009)</i>, 21-22 Oct. 2009, IOI Resort, Putrajaya.



	<p>4. Dahlan Hj Mohd and Mahathir Mohamed. 2009. <i>Teknologi Hijau: Penyediaan Resin Komposit Baru Bersaiz Nano Berasaskan Getah Asli</i>. AIPA MAMPU, 5 Aug. 2009, Putrajaya.</p> <p>Products: Reinforced natural rubber-based coating materials</p>
Additional Information	<p>1. International Innovation Fair Show 2010, Seoul, Korea: 1 Silver Medal.</p> <p>2. Malaysia Tech. Expo, MTE 2009, Kuala Lumpur: 1 Gold Medal.</p> <p>3. Poster Presentation, Invention & Innovation Competition 2008, Malaysian Nuclear Agency: 1 Silver Medal.</p>
Additional Information	Linkages: My Synergy Sdn. Bhd.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>NUCLEAR Malaysian Nuclear Agency, Bangi, 43000 Kajang, Selangor. Office: 03-8925 0510 H/p: 013-221 5733 dahlan@nuclearmalaysia.gov.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Natural Rubber/Polypropylene/Clay NanoComposite for Automotive Application
Project Number	03-03-01-SF0011
Project Leader and Team Members	Leader: Jamaliah Sharif
Field of Research	Polymeric Materials
Project Summary	Project objectives were to determine the blend ratio and processing parameter for the preparation of PP/NR blend clay nanocomposites; the optimum clay and other additives concentration; the optimum irradiation dose and the nanocomposite properties according to standards.
Publications/Products/Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Jamaliah Sharif, Norhaiza Othman, Nor Azowa Ibrahim and Wan Md Zin Wan Yunus. 2006. Effect of organoclay on the properties of PP/NR blends. <i>Materials and Design. Journal of Applied Polymer Science</i> 100: 353-362. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nurhaizah Osman, Nor Azowa Ibrahim, Jamaliah Sharif and Wan Md Zin Wan Yunus. 2008. Distribution of clay inPP/NR blends. <i>International Conference of Young Chemist 2008</i>, 18-20 June 2008, USM,Pulau Pinang. 2. Jamaliah Sharif, NurzulaikhaRosli, Nurul Nadia and Tantiyani Othman. 2008. Preparation and characterization of polypropylene/clay Nano composites. <i>Seminar R&D 2008</i>, 26-29 Aug. 2008, AgensiNuklear Malaysia, Bangi. <p>Products: PP/NR/clay compound</p>
Awards/Certificates	<ol style="list-style-type: none"> 1. HarilnovasiNuklear Malaysia 2009: 1 Silver Medal 2. Malaysian Technology Expo 2010: 1 Bronze Medal
Additional Information	<p>Linkages: Malaysian International trading Corporation SdnBhd (MITCO) (marketing the product).</p> <p>Commercialisation: Collaborator trying to promote the compound to industry.</p>



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Novel Moisture Based Polymer Processing Prototype for Production of Bio-composite Material
Project Number	03-03-01-SF0016
Project Leader and Team Members	Leader: Mohd Faizal Abdul Rahman Members: Sivanesan Appadu, Abdul Razak Rahmat, Sharifah Hanisah Syed Abd , Nor Hasimah Mohamed, Raja Jamal Raja Hedar, Khairul Zaman and Hanizam Sulaiman
Field of Research	Process Technology and Engineering
Project Summary	Project objectives were to develop a novel processing prototype for producing advanced moisture based bio-composite from renewable resources; to establish the effective agro-fiber moisture controlling mechanism for bio-composite production; to develop a novel moisture based polymer processing technique via advance extrusion and compression moulding system for producing advanced bio-composite; and to identify and establish processing variables that will effect the physical, mechanical and thermal stability of thermoplastic bio-composite. All the objectives have been fully achieved with the development of the in-line moisture controlling prototype in the compounding extrusion process. A processing guide has been develop for several agrofiber materials such as rubberwood fibers, palm oil empty fruit bunch (EFB)and pulverised wood fiber. Developed prototype and processing variables has improved product consistency and reduction of total processing time due to elimination of batch drying or pre-heating process for the fibers.
Publications/ Products/ Outcomes	Products: Lab scale Moisture-Vapor Extruder (MV-Ext) System
Additional Information	Linkages: Polymer Engineering Department, Universiti Teknologi Malaysia (a joint supervision of Masters Degree Project). Commercialisation: The developed technology are planned to be transfered to the local industry of bio-compositemanufacturers via technology licensing and consultation. Several potential manufacturers has been identified.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Conducting Paste for LTCC Applications
Project Number	03-03-01-SF0017
Project Leader and Team Members	Leader: Che Seman Mahmood Members: Muhamad Daud, Sabrina Mohd Shapee, Rosidah Alias, Nadira Kamarudin, Megat Harun Al Rashid Megat Ahmad and Nor Hayati Alias
Field of Research	Electronic Materials
Project Summary	<p>The focus of miniaturising electronic products has an impact on the materials development of passive components. At present, there are two mainstream technologies applied for the integration of passives, namely the ceramics-based and thin-film technologies. The Low-Temperature-Co-fired-Ceramic (LTCC) technology is an approach that allows the integration of these passive components (resistors, actuators, capacitors, inductors, etc) in a single ceramic body. In the case of integrating conduction electrode, the major issues encountered are the formation of interfacial defects and mismatched sintering shrinkage between the conducting paste material and ceramic substrate. Several conducting paste are ready in the market but each can only be used in certain manufactured ceramic tape, with incompatibility as a major factor. In this research, a conductor paste compatible for integration in LTCC technology was developed.</p>
Additional Information	Linkages: Telekom Malaysia Research and Development Sdn. Bhd. (Telekom Research) Commercialisation: Achieved through Telekom Research
Contact Institution/Entity Address	NUCLEAR Malaysian Nuclear Agency, Bangi, 43000 Kajang, Selangor.
Phone Number	Office: 03-8925 0510 H/p: 019-223 5719
e-Mail	seman@nuclearmalaysia.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Porous Scaffold for Bone Tissue Engineering
Project Number	03-03-01-SF0021
Project Leader and Team Members	Leader: Cik Rohaida Che Hak Members: Jamaliah Sharif, Idris Besar, Rusnah Mustaffa and Mohd Reusmaazran Yusof
Field of Research	Biomedical Engineering
Project Summary	In this project, the technique for producing porous polymer-ceramic composite scaffold suitable for tissue engineering application was developed. It also involved chemical, physical and mechanical properties of the porous structure. The effects of three different bioceramics to the performance of the composites was also investigated.
Publications/Products/Outcomes	Commercialisation: This project has been proposed as the potential marketable research.
Contact Institution/Entity Address	NUCLEAR Malaysian Nuclear Agency, Bangi, 43000 Kajang, Selangor.
Phone Number	Office: 03-8925 0510 H/p: 017-373 2475
e-Mail	rohaida@nuclearmalaysia.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Recycling of Rubber by Using Electron Beam Radiation
Project Number	03-03-01-SF0023
Project Leader and Team Members	Leader: Chantara Thevy Ratnam Member: Hanafi Ismail
Field of Research	Advanced Materials
Project Summary	Concerning recycled rubber, to date there is no information available in the literature on the modification of the rubber/ thermoplastic blend by using electron beam radiation. The present study is the first attempt to lookat the development of recyled rubber/EVAblends in which electron beam radiation is utilised for the property modifications.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Anis Sakinah, Chantara Thevy Ratnam and T.G. Chuah. 2009. Effect of mixing condition on EVA/ETD blends. <i>Polymer-Plastics Technology and Engineering</i> 48: 1139-1142. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Chantara Thevy Ratnam, Anis SakinahZainal Abidinand T.G. Chuah. 2009. Studies on EVA/ WTD blends. <i>4thInternational Conference on Recent Advances in Material, Minerals & Environment and 2nd Asian Symposium on Material & Processing (RAMM & ASMP09)</i>, 1-3 June 2009, Bayview Beach Resort, Batu Feringghi, Penang . 2. Chantara Thevy Ratnam, Siti Nazira, Anis SakinahZainal Abidinand T.G. Chuah. 2009. Development of novel applications for recycled rubber by using irradiation. <i>International Conference on New Product Development, NPDC 2009</i>, 17-19 Dec. 2009, Chennai, India. 3. Anis Sakinah Zainal Abidin, Chantara Thevy Ratnam and Luqman Chuah Abdullah. 2008. Ethylene vinyl acetate (EVA) /tyre dust (WTD) blends. <i>Seminar Sains, Teknologi & Sains Sosial (STSS)</i>, 3-4 June 2008, MS Garden Hotel, Pahang. 4. Anis Sakinah Zainal Abidin, Chantara Thevy Ratnam and Luqman Chuah. 2008. Morphology and thermal analysis of EVA/WTD blend. <i>International Rubber Conference '08</i>, 20-23 Oct. 2008, KLCC, Kuala Lumpur.



	<p>5. Anis Sakinah Zainal Abidin, Chantara They Ratnam and L. Chuah. (2007). Effect of mixing conditions on the tensile properties ethylene vinyl acetate/rubber dust (EVA/WTd) blend, <i>NSPM 2007</i>, 27-28 Nov. 2007, Kuala Lumpur.</p> <p>Products: Recycle Rubber Compounds and injection molded products</p>
Awards/Certificates	<p>1. Nuclear Malaysia Innovation Award 2009: 1 Silver Medal.</p> <p>2. Malaysia Technology Expo (MTE) 2010: 1 Silver Medal</p>
Additional Information	<p>Linkages: Polymer Resources Sdn. Bhd., Sungai Rasa Industrial Estate, Klang, Selangor (industrial scale trial)</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>NUCLEAR Rubber Recycle Malaysia Sdn. Bhd., XLNT Rubber Recycle Malaysia Sdn. Bhd., No 42&44, Jalan 34/10A, Taman Perindustrian IKS, 68100 Batu Caves, Kuala Lumpur . Office: 03-8925 0510 H/p: 012-306 7409 chantara@nuclearmalaysia.gov.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Industrial Organic-wastewater Treatment Using Electron Beam Machine and Biological System
Project Number	03-03-01-SF0024
Project Leader and Team Members	Leader: Ting Teo Ming Members: Khairul Zaman Mohd Dahlan and Khomsaton Abu Bakar
Field of Research	Radiation Chemistry
Project Summary	<p>Wastewater treatment using ionising radiation by electron beam machine (EBM) can be explained as bombardment of electrons into aqueous and generate three reactive species, the reducing species, e-aq and H, and the oxidising radical, .OH. The .OH radicals can oxidise most of organics pollutants present in wastewater. Electron beam machine is an advanced oxidation process that induces the decomposition of pollutants presents in wastewater. In Korea, EB-Tech Co. Ltd has built pilot scale dyeing wastewater treatment using electron beam machine with a capacity of 1,000 m3/day. This pilot scale has also been upgraded to commercial scale with treatment capacity of 10,000m3/day. In Malaysia, all wastewater generated from industries are required to be treated by industries before discharged to inland water bodies. However, most of the individual industrial wastewater treatment plants are not properly managed and treated. Enforcement plays a significant role in ensuring the treated water discharges to the water bodies comply with the regulations. This project aims to develop treatment system and process based on unique situation in Malaysia. Industrial wastewater consists of inorganic and organic pollutants. This project focussed on removing recalcitrant organic pollutants found in wastewater. High oxidising power from electron beam machine is able to convert non-biodegradable organics into biodegradable substances by radical reaction. The converted biodegradable materials can be purified easily in shorter time via biological processes. Industrial wastewater treatment using combined electron beam technology and biological system to remove recalcitrant organic compounds found in water can be considered as potential alternative method for water treatment.</p>



<p>Publications/Products/ Outcomes</p>	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ting Teo Ming and Nur'aishikin Jamaludin. 2008. Decolonization and decomposition of organic pollutants for reactive and disperse dyes using electron beam technology: Effect of the concentrations of pollutants and irradiation dose. <i>Chemosphere</i> 73: 76-80. 2. Norlirubayah Mohd Nasir, Ting Teo Ming, Fakhru'l-Razi, and Ahmadun, Shafreeza Sobri. 2010. Decomposition and biodegradability enhancement of textile wastewater using a combination of electron beam irradiation and activated sludge process. <i>Water Science & Technology</i> 62.1: 42-47. <p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. Ting, T.M., Bakar, K.A., Sharif, J., Mohd Dahlan, K.Z. 2009. Industrial Wastewater Treatment using Ionizing Radiation. <i>Environmental Science and Technology Conference (ESTEC 2009)</i>, 7-8th Dec. 2009, Terengganu. <p>Products:</p> <p>A process of industrial wastewater treatment of toxic and hazardous content using combination electron beam and biological treatment system.</p>
<p>Additional Information</p>	<p>Linkages: EB-Tech Co. Ltd.</p> <p>Commercialisation: This project has potential to be upgraded to pilot scale to treat industrial wastewater using combined irradiation and biological system. The aim is to transfer the treatment technology system to the industry to treat industrial wastewater and recycle the treated water for industry usage.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>NUCLEAR</p> <p>Malaysian Nuclear Agency, 43000 Kajang, Selangor.</p> <p>Office: 03-8925 0510 H/p: 013-350 6557 tmting@nuclearmalaysia.gov.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Effects of Irradiation on the Microbial Burden and Chemical Constituents of Selected Herbs
Project Number	03-03-01-SF0025
Project Leader and Team Members	Leader: Salmah Moosa Members: Seetha Ramasamy, Mazli Muhamad, Ros Anita Ahmad Ramli and Norimah Yusof
Field of Research	Nuclear Technology
Project Summary	Irradiation by gamma rays is increasingly recognised as an effective method in reducing microbial contamination of medicinal plants. However, it is not known whether medical effectiveness of phytopreparations is influenced by the action of ionising radiation. To consider the possibility of the application of irradiation technology for this purpose, the total chemical profile (TQP) and microbial burden of ten selected local herbs were studied. Samples were treated with 0, 5, 10 and 25 kGy and then extracted with hot water. For each irradiated dosage, samples were tested for: (i) microbial count, and (ii) total chemical profile. The total chemical profile of the herbs was done by getting a fingerprint of the total chemical composition of the sample (via ¹ H-NMR) and then comparing the fingerprints with each other using multivariate statistical analysis. TQP will tell whether there are changes in the total chemical composition.
Publications/ Products/ Outcomes	Products: Irradiation Protocol – Containing data on optimise irradiation parameters on ten local herbal plants as reference for industries that wish to explore international market. International trade needs certified analysis on bioburden for microbes.
Additional Information	Linkages: Borneo Plant Technology, Herbal Industry Commercialisation: The results of analysis are compiled as irradiation protocol for the herbal industry, a first for the country.
Contact Institution/Entity Address Phone Number e-Mail	NUCLEAR Malaysian Nuclear Agency Bangi, 43000 Kajang, Selangor. Office: 03-8925 0510 H/p: 019-353 3544 salmahmoosa@nuclearmalaysia.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Method for Radium Removal from Industrial Wastewater Using Humic Acid Fixed onto Immobilised Material
Project Number	03-03-01-SF0027
Project Leader and Team Members	Leader: Zalina Laili Members: Muhamat Omar, Mohd Zaidi Ibrahim and Muhamad Samudi Yasir
Field of Research	Environment Technology/Industry
Project Summary	<p>This work focused on the development of a method for radium removal from industrial wastewater using humic acid (HA). HA was immobilised on a selected solid support material from agricultural waste such as empty fruit bunch (EFB) or other similar materials. HA extracted from indigenous peat acted as a complexing agent. Adsorption kinetic, equilibrium studies and distribution coefficient (Kd) of radium were performed in batch method. Subsequently, column testings for measuring radium adsorption capacity by HA loaded immobilised material and the leaching of retained radium were conducted. The leaching study determined the adsorption stability, which is important in evaluating the effectiveness of the radium removal method. This new method for removal of radionuclides has potential in the treatment of the industrial wastewater to protect the environment. This project provides added value to the peat and the selected agricultural waste. A method for radium removal from industrial wastewater by using humic acid fixed onto immobilised material was developed.</p>
Publications/Products/Outcomes	Publications: <ol style="list-style-type: none"> 1. Zalina Laili, Muhamat Omar, Muhamad Samudi Yasir, Mohd Zaidi Ibrahim, Mohd Yusri Yahaya and Julie Andrianny Murshidi. 2009. Instrumental characterization of coir pith by XRD, FTIR and SEM after radium adsorption from aqueous solution under the presence of humic acids. <i>Proceeding of International Conference on Neutron & X-Ray. American Institute of Physics</i> 1202:193-196. 2. Zalina Laili, Muhamad Samudi Yasir, Muhamat Omar, Mohd Zaidi Ibrahim and Esther Philip 2010. Influence of humic acid on radium adsorption by coir pith in aqueous solution. <i>Sains Malaysiana</i> 39: 99-106.

	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Zalina Laili, Muhamat Omar, Muhamad Samudi Yassir, Mohd Zaidi Ibrahim, Esther Phillip, Mohd Abdul Wahab Yusof and Azmi Hassan 2008. Removal of radium from aqueous solutions using adsorbent produced from coconut coir pith. R&D Seminar, 26-29 August 2008, <i>Agensi Nuklear Malaysia, Bangi</i>.39(1)(2010): 99–106. 2. Zalina Laili, Muhamad Samudi Yasir dan Muhamat Omar. 2009. Kajian Kesan pH dan masa terhadap penyerapan ion radium oleh sabut kelapa. <i>Prosiding Kolokium Siswazah Ke-9 Fakulti Sains Teknologi, UKM, Bangi</i>, pp: 740-741. 3. Zalina Laili, Muhamat Omar, Mohd Zaidi Ibrahim, Mohd Yusri Yahaya, Md.Suhaimi Elias dan Ariffin Talib.2009. Pengekstrakan asid humik daripada tanah gambut tempatan dengan menggunakan kaedah pengekstrakan kimia. <i>Nuclear Malaysia Technical Convention</i>, 6-8 Oct. 2009, DewanTun Ismail, Malaysian Nuklear Agency, Bangi.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>NUCLEAR</p> <p>Waste & Environmental Technology, Malaysian Nuclear Agency (Nuclear Malaysia) Bangi, 43000 Kajang, Selangor.</p> <p>Office: 03-8925 0510 H/p: 012-285 0378 Liena@nuclearmalaysia.gov.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The Use of Solid Particle Aerosol Dopants for Fabricating Optical Fiber Preform in the Modified Chemical Vapor Deposition Technique
Project Number	03-06-01-SF0001
Project Leader and Team Members	Leader: Abdul Aziz Mat Hassan Members: Fathinul Syahir Ahmad Saad and Mohd Imran Zulkifli
Field of Research	Process Technology and Engineering
Project Summary	Project objective was to use solid aerosol as a method to introduce dopants the Modified Chemical Vapour Deposition (MCVD) technique. Two targets were set for this project, namely the re-usage of the soot produced during the OFP fabrication, and introduction of solid particle aerosol into the high temperature chamber. A Powder Dopant Delivery System (PDDS) that is compatible to the MCVD process was designed, constructed, installed and tested. The use of solid aerosol allowed customised nanosized silica particles with RE ions to be directly injected into the region of deposition of the silica. Overall, the PDDS is a versatile technique to produce optical fibers that are precision doped with RE ions in concentration and profile. Optical fibers fabricated using this method have higher concentrations and much reduced clustering effects. These two characteristics will lead to higher performance optical fiber amplifiers and lasers.
Publications/Products/ Outcomes	Products: A new delivery system PDDS for MCVD system
Contact Institution/Entity Address	TMR&D TMR&D Cyberjaya, 63000 Cyberjaya, Selangor.
Phone Number	Office: 03-7968 6209 H/p: 013-394 1798
e-Mail	mhaziz@tmrnd.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Membrane Technology Air to Air Heat Exchanger for Thermal Cooling System
Project Number	03-06-01-SF0006
Project Leader and Team Members	Leader: Md Hisam Hanapei
Field of Research	Mechanical Engineering
Project Summary	The use of high speed and compact designs in electronic equipment leads to excessive heat generated inside telecommunications outdoor enclosure. This fact was supported by the BCC Research that has proven that 55% of electronic failure in telecommunications industry was due to temperature. The conventional heat sink was being pushed to its limits and cannot maintain the peak temperatures in the enclosures below 65°C, which then resulted in device reliability problems. To meet the demands of protecting temperature increase in the enclosure, heat exchanger was used as a thermal management mechanism to dissipate heat. This new membrane technology including advanced material solution can be manufactured locally and at low cost.
Publications/Products/ Outcomes	Product: Membrane Technology Air to Air Heat Exchanger for Thermal Cooling System
Awards/Certificates	1. International Invention, Innovation & Technology Exhibition Venue: Kuala Lumpur – KLCC - Kuala Lumpur (ITEX2010): 1 Silver Medal. 2. Innovation Day TM R&D 2010: 1 Bronze Medal.
Additional Information	Linkages: International Islamic University Malaysia with collaboration areas on(1) Membrane material specification, and (2) Computational fluid dynamic design model; Manufacturing processes for metal fabrication design with membrane core.
Contact Institution/Entity Address	TMR&D TMR&D Cyberjaya, 63000 Cyberjaya, Selangor.
Phone Number	Office: 03-8883 9431 H/p: 013-394 7716
e-Mail	mdhisam@tmrnd.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Implementation of Workpiece Preheating to Control Chatter and Improve Machinability during End-milling of Titanium Alloy Ti-6Al-4V
Project Number	03-01-08-SF0001
Project Leader and Team Members	Leader: A.K.M. Nurul Amin Members: Ahmad Faris Ismail, Agus Geter Edy Sutjipto, Afzeri, A. N. Mustafizul Karim
Field of Research	Manufacturing and Production Engineering
Project Summary	<p>A comprehensive study on the influence of preheating on chatter during end-milling of Titanium alloy Ti-6Al-4V was conducted. The project involved evaluation of the influence of preheating on chip serration phenomenon, tool life, tool wear morphology, chemical interaction, chip-tool Contact behavior, cutting force, torque and surface finish. Evaluation of the performance of both uncoated carbide tools and PCD cutting tools in hot machining titanium alloy Ti-6Al-4V was also conducted. In addition, the optimum preheating temperature based on both surface roughness and tool life was identified. Another aspect of the project was the development of an empiric relationship to correlate cutting speed, feed, depth of cut, tool life and the preheating temperature.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Turnad, L.G., Nurul Amin, A.K.M, Mustafizul Karim, A.N. and Istiyaq, M.H. 2007. Surface roughness models in end milling of titanium alloy using PCD inserts. <i>Proceeding Seminar Nasional Teknik Mesin UNJANI</i>, 28 April 2007, Bandung, Indonesia. 2. Turnad, L.G., Nurul Amin, A.K.M., Mustafizul Karim, A.N. and Istiyaq, M.H. 2007. Surface roughness prediction by response surface methodology for end milling of titanium alloy Ti-6Al-4V using PCD inserts. <i>Advance in Material and Processing Technology Conference</i>, 7 Oct. 2007, Daejeon, Korea. 3. Turnad, L.G., Nurul Amin, A.K.M, Mustafizul Karim A.N., Istiyaq, M.H. 2007. Modelling of surface Roughness for end milling titanium alloy Ti-6Al-4V using uncoated WC-Co and PCD insert, accepted for presentation in <i>The 4th International Conference on Leading Edge Manufacturing in 21st Century</i>, 7-9 Nov. 2007, Fukuoka, Japan.

	4. Turnad, L.G., Nurul Amin, A.K.M., Mustafizul Karim, A.N. and Lajis, M.A. 2007. Performance of uncoated WCCo insert in end milling of titanium alloy Ti-6Al-4V. <i>Proceeding Seminar Nasional Teknik Mesin UNJANI</i> , 28 April 2007, Bandung, Indonesia.
Additional Information	Linkages: KAIST Korea; KFU South Africa, IIT Madras, India; AIROCOAT Sdn. Bhd. (supply, modification, trouble shooting, and maintenance of the induction preheating system, which was the main equipment during the project).
Contact Institution/Entity Address	Universiti Islam Antarabangsa Malaysia (UIAM) Pengarah, Pejabat Pengurusan Penyelidikan, Universiti Islam Antarabangsa Malaysia (UIAM), Peti Surat 10, 50728 Jalan Gombak, Kuala Lumpur.
Phone Number	Office: 03-6196 4482 H/p: 012-927 7084
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Enhancement of Machinability of Hardened Steels in End Milling Using Advanced Cutting Methods and Tools
Project Number	03-01-08-SF0003
Project Leader and Team Members	Leader: A.K.M. Nurul Amin Members: Ahmad Faris Ismail, Mohamed Konneh, Mohammad Yeakub Ali and A. N. Mustafizul Karim
Field of Research	Process Technology and Engineering
Project Summary	<p>The project involved studies on tool wear phenomena of various cutting tools such as coated carbide and CBN and chip formation mechanisms at various cutting conditions using SEM and high magnification optical microscope. The optimum preheating temperature of workpiece material for different cutting conditions were determined along with the combined effect of preheating and cutting parameters on surface finish, cutting forces, tool wear mechanisms, torque, and chip formation. Data were acquired, compared and analysed for chatter/vibration signals obtained during preheated machining. The outputs from this project are the development of empirical mathematical model and the economic evaluation of the machining process in comparison with the conventional and preheating condition.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Hafiz, A.M.K, Nurul Amin, A.K.M. and Lajis, M.A 2007. Performance evaluation of coated carbide and PCBN tool inserts during hard milling of AISI H13 steel. <i>The 4th International Conference on Leading Edge Manufacturing in 21st Century</i>, 7-9 Nov. 2007, Fukuoka, Japan. 2. Lajis, M.A, Nurul Amin, A.K.M., Mustafizul Karim and Hafiz A.M.K. 2007. Effects of workpiece preheating on surface roughness and chatter during end milling steel AISI D2, <i>Advances in Materials and Processing Technologies (AMPT'2007) Conference</i>, 7-11 Oct. 2007, Daejeon, Korea. 3. Lajis, M.A, Nurul Amin, A.K.M., Mustafizul Karim and Hafiz, A.M.K. 2007. Application of RSM in prediction of surface roughness in hard milling of AISI D2 tool steel. <i>The 4th International Conference on Leading Edge Manufacturing in 21st Century</i>, 7-9 Nov. 2007, Fukuoka Japan.

	<ol style="list-style-type: none"> 4. Lajis, M.A., Nurul Amin, A.K.M., Mustafizul Karim and Hafiz, A.M.K. 2007. Prediction of surface roughness in hard milling of AISI D2 tool steel. <i>The 4th International Conference on Leading Edge Manufacturing in 21st Century</i>, 7-9 Nov. 2007, Fukuoka Japan. 5. Hafiz, A.M.K., NurulAmin, A.K.M. and Lajis, M.A.2007. Induction heating assisted end milling of AISI h13 hardened steel. <i>Advances in Materials and Processing Technologies (AMPT'2007) Conference</i>, 7-11 Oct. 2007, Daejeon, Korea.
Additional Information	<p>Linkages:KAISTKorea; KFU South Africa; IIT Madras, India; AIROCOAT Sdn. Bhd. (supply, modification, trouble shooting, and maintenance of the induction preheating system, which was the main equipment during the project).</p> <p>Commercialisation:Technolgy Transfer is planned after filing the planned patent.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Islam Antarabangsa Malaysia (UIAM) Pengaroh, Pejabat Pengurusan Penyelidikan, Universiti Islam Antarabangsa Malaysia (UIAM), Peti Surat 10, 50728 Jalan Gombak, Kuala Lumpur. Office: 03-6196 4482 H/p: 012-927 7084 akamin@iiu.edu.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Hybrid Process of Low Temperature Nitriding-carburising for Austenitic Stainless Steels
Project Number	03-01-08-SF0015
Project Leader and Team Members	Leader: ShahjahanMridha
Field of Research	Advanced Materials
Project Summary	Project objectives were to produce a superior surface hardness of austenitic stainless steels, thus, enlarging the possibilities of application of this material; to investigate the viability of fluidised bed heat treatment furnace used for the low temperature hybrid nitriding-carburising process; and to explore the potential of the novel hybrid process for commercial applications.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Triwiyanto, A., Mridha, S. and Haruman, E. 2007. Characterization of the hardened layer produced by low temperature nitriding of austenitic stainless steel in a fluidised bed furnace. <i>Proceedings of International Congress on Heat Treatment and Surface Engineering</i>, 29 Oct. – 2 Nov. 2007New Delhi, India. 2. Triwiyanto, A., Mridha, S., and Haruman, E. 2008. Low temperature thermochemical surface treatment of austenitic stainless steel for improved mechanical and tribological properties, AMPT, 3-4 Nov. 2008, Bahrain.
Awards/Certificates	<ol style="list-style-type: none"> 1. IENA Germany 2008: 1 gold medal 2. EUREKA Belgium 2007: 1 gold medal 3. ITEX Malaysia 2008: 1 gold medal
Contact Institution/Entity Address	Universiti Islam Antarabangsa Malaysia (UIAM) Pengarah, Pejabat Pengurusan Penyelidikan, Universiti Islam Antarabangsa Malaysia (UIAM), Peti Surat 10, 50728 Jalan Gombak, Kuala Lumpur.
Phone Number e-Mail	Office: 03-6196 5002 shahjahan@iiu.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Bioactive Porous Ceramic Microcarriers for Animal Cell Proliferation
Project Number	03-01-08-SF0020
Project Leader and Team Members	Leader: Lis Sopyan Members: Zainal Arifin Ahmad and Maizirwan Mel
Field of Research	Functional Materials
Project Summary	The project involved development of bioactive porous calcium phosphate ceramic microcarriers for animal cell culture applications using polymeric sponge methods and characterisation of physical properties of the microcarriers and their biological properties in animal cell proliferation. The output is improvement of cell culture performance of bioreactors using the porous microcarriers.
Publications/Products/ Outcomes	Products: 1. Bioactive porous ceramic for pharmaceutical use 2. Bone implant materials
Awards/Certificates	1. IENA Germany 2008: 1 gold medal 2. EUREKA Belgium 2007: 1 gold medal 3. ITEX Malaysia 2008: 1 gold medal
Contact Institution/Entity Address	Universiti Islam Antarabangsa Malaysia (UIAM) Pengarah, Pejabat Pengurusan Penyelidikan, Universiti Islam Antarabangsa Malaysia (UIAM), Peti Surat 10, 50728 Jalan Gombak, Kuala Lumpur
Phone Number	Office: 03-6196 4592 H/p: 016-236 7135
e-Mail	sopyan@iiu.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Rechargeable Zinc-air Batteries Employing Gelled Electrolyte
Project Number	03-01-08-SF0032
Project Leader and Team Members	Leader: Raihan Othman Members: Mohd Hanafi Ani and Hens Saputra
Field of Research	Energy Technology
Project Summary	An inorganic MCM-41 membrane has been introduced as a novel electrochemical cell separator. MCM-41 membrane possesses the 3-in-1 features which serve as ion exchange membrane, electronic insulator and electrolyte matrix simultaneously. MCM-41 tunable nanopore structures can be utilised to limit the mobility of zinc oxidation species thus improving the cycle life of secondary zinc batteries.
Publications/Products/Outcomes	Journal: 1. Hens Saputra, Raihan Othman, A.G. E. Sutjipto and R. Muhida. 2011. MCM-41 as a new separator material for electrochemical cell: application in Zinc-Air System. <i>Journal of Membrane Science</i> 367: 52-157. Products: 1. Lab-scale prototype of zinc-air microbattery (1 cm ² area and ca. 300 µm thick; highest limiting current density of 55 mA cm ⁻² and optimum power density of 53 mW cm ⁻²) 2. MCM-41 inorganic battery separator of 5 µm thick 3. Gel form alkaline electrolyte matrix
Awards/Certificates	Malaysia Technology Expo 2010 (MTE 2010): 1 Bronze Medal
IP Status	Malaysia Patent filed PI 2010002958 (Zn/MCM-41/O2 Electrochemical Cell)
Additional Information	Linkages: Pusat Teknologi Industri Proses Badan Pengkajiandan Penerapan Teknologi (BPPT) Gedung II BPPT, Jl. M.H. Thamrin No. 8 Jakarta 10340, Indonesia
Contact Institution/Entity Address	Universiti Islam Antarabangsa Malaysia (UIAM) Pengaruh, Pejabat Pengurusan Penyelidikan, Universiti Islam Antarabangsa Malaysia , Peti Surat 10, 50728 Jalan Gombak, Kuala Lumpur.
Phone Number e-Mail	Office: 03-6196 4561 raihan@iiu.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fuzzy-based NCTF Controller for High Precision (PTP) Positioning Systems
Project Number	03-01-08-SF0036
Project Leader and Team Members	Leader: Wahyudi Martono Members: Hazlina Md Yusof and Amir Akramin Shafie
Field of Research	Artificial Intelligence
Project Summary	<p>Project objective was to develop an improved NCTF controller by adopting fuzzy logic approach in order to improve both the practicality and performance of the NCTF controller for high precision positioning systems.</p> <p>The outputs of the research are an enhanced and intelligent Fuzzy-based NCTF controller for high precision positioning systems; an experimental positioning system which can be used for further research as well as teaching of control systems and Publications on the NCTF controller improvement.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Wahyudi, Riza Muhida and Salami, M.J.E.2007. Fuzzy anti-windup schemes for NCTF control of point-to-point (PTP) positioning systems. <i>American Journal of Applied Sciences</i>. 4: 220-228. 2. Wahyudi, T.F. Ibrahim, Muhida, R. and Salami, M.J.E. 2007. Robust fuzzy-based NCTF controller for point-to-point (PTP) positioning systems. <i>International Journal of Systems Simulation</i> 1: 11-29. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Wahyudi, Ibrahim, T.F., Muhida, R. and Salami, M.J.E. 2007. Fuzzy-based NCTF control of point-to-point (PTP) positioning systems. <i>Proceedings of the 4th International Symposium on Mechatronics and its Applications (ISMA07)</i>, 26-29 Mar. 2007, Sharjah, U.A.E. 2. Wahyudi, Ibrahim, T.F. and Salami, M.J. E. 2007. Robustness Evaluation of fuzzy-based NCTF control of point-to-point (PTP) positioning systems. <i>2007 IEEE/ ASME International Conference on Advanced Intelligent Mechatronics (AIM 2007)</i>, 4-7 Sept. 2007. Zurich, Switzerland.



	3. Wahyudi and Purtojo 2007. Fuzzy-based NCTF control of point-to-point (PTP) positioning systems: double mode approach. <i>Malaysian-Japan International Symposium on Advanced Technology (MJISAT 2007)</i> , 12-15 Nov. 2007. Kuala Lumpur.
Additional Information	Linkages: Tokyo Institute of Technology (Prof. Kaiji Sato of in the NCTF controller advancement).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Islam Antarabangsa Malaysia (UIAM) Pengarah, Pejabat Pengurusan Penyelidikan, Universiti Islam Antarabangsa Malaysia, Peti Surat 10, 50728 Jalan Gombak, Kuala Lumpur. Office: 03-6196 4469 wahyudi@iiu.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development and Prototyping of Intelligent Gantry Crane
Project Number	03-01-08-SF0037
Project Leader and Team Members	Leader: Wahyudi Martono Members: Hazlina Md Yusof and Amir Akramin Shafie
Field of Research	Mechanical Engineering
Project Summary	<p>Project objective was to design, build and control a lab-scale gantry crane system which has the capability to transfer a payload from one point to another point in a minimum time and also a minimum swing angle of the payload. The outputs of the research were a novel practical and intelligent control algorithm for gantry crane system; a lab-scale gantry system which can be used for further research as well as teaching of control systems; and Publications on the control algorithm for gantry crane system.</p>
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Solihin, M.I. and Wahyudi. 2007. Sensorless anti-swing control for automatic gantry crane system: model-based approach. <i>International Journal of Applied Engineering Research</i> 2: 147-161. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Solihin, M.I. and Wahyudi. 2007. Sensorless anti-swing control strategy for automatic gantry crane system: soft sensor approach. <i>Proceedings of International Conference on Intelligent & Advanced Systems (ICIAS)</i>. 26-28 Nov. 2007, Kuala Lumpur. 2. Solihin, M.I. and Wahyudi. 2007. Fuzzy-tuned PID control design for automatic gantry crane. <i>Proceedings of International Conference on Intelligent & Advanced Systems (ICIAS)</i>, 26-28 Nov. 2007, Kuala Lumpur. 3. Wahyudi. 2007. Anti-swing control of gantry crane systems: classical, intelligent and practical approaches, Invited Paper, <i>Industrial Electronics Seminar</i>, 6-8 Nov. 2007, Surabaya. 4. Solihin, M.I. and Wahyudi. 2007. Sensorless anti-swing control strategy for automatic gantry crane system using reference modifier. <i>Proceedings of International Conference on Intelligent & Advanced Systems (ICIAS)</i>, 26-28 Nov. 2007. Kuala Lumpur.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Environmental Friendly Super Bioadhesive for Structural Applications Using Egg Albumin as the Matrix Material
Project Number	03-01-08-SF0039
Project Leader and Team Members	Leader: Zuraida Ahmad Members: Lis Sopyan and Zahurin Halim
Field of Research	Materials Engineering and Metallurgy
Project Summary	Eco-friendly superbioadhesives using egg albumin as the matrix material has been developed. The structure-property relationship of egg albumin superbioadhesive for structural applications has been studied. Superior technical performance and component life of superbioadhesive comparable to conventional ceramic and polymeric adhesives have been achieved.
Publications/Products/ Outcomes	Products: 1. Cotton Fiber Reinforced Egg Albumen Biocomposite 2. Coir Fiber Reinforced Cement-Albumen Composite
Additional Information	Linkages: Domestic research institutions and universities for inter-organisational project team and informal consultation.
Contact Institution/Entity Address	Universiti Islam Antarabangsa Malaysia (UIAM) Pengarah, Pejabat Pengurusan Penyelidikan, Universiti Islam Antarabangsa Malaysia, Peti Surat 10, 50728 Jalan Gombak, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Optimisation of Production of Powdered Activated Carbon from Oil Palm Empty Fruit Bunch (EFB) for Treatment of Industrial Wastewater
Project Number	03-01-08-SF0043
Project Leader and Team Members	Leader: Suleyman Aremu Muyibi Members: Md. Zahangir Alam, Nassereldeem Ahmed Abbas, Mohamed Ismail Abdul Karim and Emad S.M.Ameen
Field of Research	Environmental Sciences
Project Summary	Project objectives were to establish the sample preparation (EFB samples collection preparation, and production of powdered activated carbon (PAC) samples); to optimise the adsorption properties of the PAC samples produced to select the best quality; to characterise the selected PAC sample produced; to determine the optimal process conditions for the selected PAC sample through laboratory experiments as well as different adsorption isotherm models and kinetics study; to design and fabricate the laboratory bench scale model and to operate the bench scale model to investigate the efficiency of the selected PAC samples produced. All of the objectives have successfully been achieved.
Publications/Products/ Outcomes	Journal: 1. Alam, M. Z., Ameen, E. S., Muyibi, S. A. and Kabbashi, N. A. 2009. The Factors Affecting the Performance of Activated Carbon Prepared from Oil Palm Empty Fruit Bunches for Adsorption of Phenol. <i>Chemical Engineering Journal</i> . 155: 191-198. Proceeding/Conference/Seminar: 1. Ameen. E.S.M., Muyibi, S.A., Alam, M.Z., Kabashi, N.A. and Abd. Karim, M.I. (2010). Preparation and Characterization of Powdered Activated Carbon from Empty Fruit Bunch. <i>South East Asian Water Environmental Series 4</i> Kensuke Fukushi, Futoshi Kurisu, Kumiko Oguma, Hiroaki Furumai and Psyche Fontanos, IWA Publishing, Sept, pp 147 - 152 ISBN 9781843393627.
Awards/Certificates	KERIE 2009:1 Silver Medal (Production of Activated Carbon from Oil Palm Industrial Residue and Its Comparative Performance with Commercial PAC)

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Improving the Performance of Electrical Discharge Machining (EDM) in Machining Titanium Alloys by Using Cryogenic Cooling of Electrodes
Project Number	03-01-08-SF0062
Project Leader and Team Members	Leader: Ahsan Ali Khan Members: Mohammad Yeakub Ali, Mohamed Konneh, Shahjahan and Ahmad Faris Ismail
Field of Research	Manufacturing and Production Engineering
Project Summary	Project objectives were to develop a cooling system for the electrodes; to determine the effect of electrode cooling on electrode wear, material removal rate and job surface quality; to enhance electrode life by cooling the system efficiently; to identify machining parameters for a surface of predetermined roughness during machining of titanium alloys; and for mathematical models for prediction of job surface finish and material removal rate.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis and Fabrication of Novel RE123-based Ceramic Oxygen Sensor Based on Hot Spot Phenomenon
Project Number	03-01-01-SF0001
Project Leader and Team Members	Leader: Ahmad Kamal Hayati Yahya Members: Laila Hanim Md Idrus, Nasri A. Hamid and Umi Sarah Jais
Field of Research	Advanced Materials
Project Summary	Project objectives were to synthesise RE123 ceramic and fabricate oxygen sensor rods; to increase failure temperature (>1000°C) of RE123 ceramic sensor rods by addition of suitable secondary phase; and to determine effect of secondary phase addition and physical factors on sensitivity and power consumption of the oxygen gas sensors.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Hassan, M., Kamal Yahya, A., Ku Hamid, K.H. and Awang, Z. 2007. Fabrication and characterization of oxygen sensing properties of Dy123 sensor utilizing hot spot phenomenon. <i>Journal of Sustainability Science and Management</i> 2: 40-43. <p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. Hassan, M., Yahya, A.K., Ku Hamid, K.H. and Awang, Z. 2007. Fabrication and performance of ceramic Er123 oxygen gas sensor. <i>Persidangan Fizik Kebangsaan 2007</i>, 26-29 Dec. 2007, Pulau Duyong Resort, Kuala Terengganu. <p>Product: Oxygen Sensor</p>
Awards/Certificates	<ol style="list-style-type: none"> 1. Innovation and Design Exhibition (IID) 2010 : 1 Bronze Medal. 2. Innovation and Design Exhibition (IID) 2009: 1 Silver Medal. 3. Innovation and Design Exhibition (IID) 2009: 1 Bronze Medal. 4. Innovation and Design Exhibition (IID) 2008: 1 Gold Medal.



Additional Information	Linkages: Nagaoka University of Technology, Nagaoka, Japan (Professor Okamoto)
Contact Institution/Entity Address	Universiti Teknologi Mara (UiTM) Fakulti Sains Gunaan, 40450 UiTM Shah Alam, Selangor.
Phone Number e-Mail	Office: 03-5544 4613 ahmad191@salam.uitm.edu.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Vibrated Fluidised Bed Mixer cum Drier for Herbal Products in Small and Medium Industries (SMIs)
Project Number	03-01-01-SF0031
Project Leader and Team Members	Leader: Norazah Abd. Rahman Members: Mohd Sobri Takriff, Noor Fitrah Abu Bakar, Norhuda Ismail, Nornizar Anuar and Tajuddin Md Jahi
Field of Research	Chemical Engineering
Project Summary	Vibrated fluidised bed (cold and hot rig) with online monitoring of temperature and pressure by using LABVIEW programming has been successfully fabricated. Three types of herbs such as lemon grass, ginger and laksa leaves with representative stem, rhizomes and leafy materials were used. Hydrodynamics of fluidisation, drying and mixing have been determined successfully. It was found that laksa leaf retained its colour after drying, while lemon grass and ginger showed decrease in green colour and turned yellowish. Important constituents of essential oils such as Citronellal, Citronellol and Geraniol found in lemon grass and Gingerol found in ginger were preserved during drying in fluidised bed dryer. Drying through this dryer also inhibited mould occurring due to homogeneous drying process.
Publications/ Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Siti Azeeyatul Akmar Kemat, Norazah Abd Rahman, and Radziah Wahid. 2008. 22nd Determination of suitable thin layer drying curve model for lemon grass (<i>Cymbopogon citrates</i>). <i>Symposium of Malaysian Chemical Engineers (SOMChE)/15th Regional Symposium on Chemical Engineering (RSCE) 2008</i>: 945-948. 2. Kemat, S.A.A., Norazah Abd. Rahman and Savory, R.M. 2008. Lemon Grass Fluidised Bed Drying Parameter Performance. 16th International Drying Symposium. 9-12 Nov. 2008, Hyderabad, India. 3. Norazah Abd Rahman, Nornizar Anuar, Noor Fitrah Abu Bakar and Rusmi Alias. (2008). Segregation in a Gas Fluidized Bed: Effect of Flowrate and ratio of Particle Size. <i>22nd Symposium of Malaysian Chemical Engineers (SOMChE)/15th Regional Symposium on Chemical Engineering (RSCE) 2008</i>. pp. 351-356.



	4. Nur Aimi Farhana, Norazah Abd Rahman, Siti Azeeyatul Akmar Kemat, Nornizar Anuar and Tajuddin Md Jahi. 2009. Drying of lemon grass, ginger and laksa leaf in a vibrated Fluidized Bed. <i>The Proceeding of the 3rd International Conference on Chemical and Bioprocess Engineering</i> . 5-23 Jan. 2009, Malaysian, pp. 1223-1227.
Awards/Certificates	Fluidized Bed Dryer Cum Mixer – Invention and Innovation Design 2008, UiTM Low Temperature Heated Air Dryer - Gangsa, Invention, Innovation and Design 2008, UiTM
Additional Information	Linkages: Jannatul Maqwa Enterprise, Melaka Collaborators: Universiti Kebangsaan Malaysia (Prof. Dr. Mohd Sobri Takriff)
Contact Institution/Entity Address	Universiti Teknologi MARA (UiTM) Penolong Naib Canselor (Penyelidikan), Institut Pengurusan Penyelidikan (RMI), Aras 3, Bangunan Wawasan, Universiti Teknologi MARA, 40450 UiTM Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Incorporation of Malaysian Herbal Extracts as an Antioxidant in Cakes
Project Number	03-01-01-SF0032
Project Leader and Team Members	Leader: Noriham Abdullah Members: Abdul Salam Babji, Aminah Abdullah, Fadhilah Jailani and Azizah Othman
Field of Research	Food Biotechnology
Project Summary	The herbal extracts of <i>Melicope lunu-ankenda</i> (Tenggek Burung), <i>Murayya koenegii</i> (Kari) and <i>Polygonum minus</i> (Kesum) using water as a solvent were successfully obtained. The antimicrobial and toxicity properties of the crude plant extracts were determined. The types of phytochemicals in the crude plant extracts were screened. The total phenolic content and antioxidant activity of crude extracts were determined. The shelf-life stability of cake incorporated with the herbal extracts was investigated. The product acceptability using sensory evaluation has been determined.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Izzreen, I. and Noriham, A. 2011. Evaluation of the antioxidant potential of some Malaysian herbal aqueous extracts as compared with synthetic antioxidants and ascorbic acid in cakes. <i>International Food Research Journal</i> 18: 578-582. 2. Huda-Faujan, N., Noriham Abdullah, Norrakiah, A. S. and Abdul Salam Babji. 2009. Antioxidant activity of plants methanolic extracts containing phenolic compounds. <i>African Journal of Biotechnology</i> 8: 484-489. 3. Huda-Faujan, Noriham Abdullah and Abdul Salam Babji. 2007. Antioxidative activities of water extracts of some Malaysian herbs. <i>Asean Food Journal</i>. 14: 61- 68. <p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. Izzreen, I., Noriham, A., Fadhilah, L. and Azizah, O. 2009. A Study on the antimicrobial and antioxidant activities of selected Malaysian herbal extracts, <i>Proceeding on Conference on Scientific and Social Research</i>, 14-15 Mar. 2009, Air Keroh, Melaka. <p>Products:</p> <ol style="list-style-type: none"> 1. Local Herbal Crude Extracts <ul style="list-style-type: none"> • Natural food antioxidant extracted from kesum, tenggekburung and curry • Application: Incorporate into formulation of cakes, cookies and meat patties • Non toxic



	<p>2. Pitaya Peel Extract: A Natural Antioxidant</p> <ul style="list-style-type: none"> • Natural antioxidant extracted from red pitaya peel • Substitution of synthetic antioxidant • Safe (nontoxic) <p>3. Deli Fibre Cake</p> <ul style="list-style-type: none"> • Mango and guava peel was incorporated into muffin as natural antioxidant • Improve shelf life and oxidative stability of baked products • To produce healthy delicatessen <p>4. Healthy Wealthy Drink</p> <ul style="list-style-type: none"> • It is a beverage that provides refreshing taste, flavor and health benefits to the human body • High in antioxidant comes from the herbs and spices which includes honey, clove, cinnamon and lemon juice. <p>Outcomes: Production of functional food ingredients from natural local resources.</p>
Awards/Certificates	<ol style="list-style-type: none"> 1. Seoul International Invention Fair (SIIF Korea)2009:1 Gold Medal 2. Invention, Innovation & Design (IID UiTM) 2009: 1 Gold Medal 3. Malaysia Technology Expo (MTE) 2009: 1 Silver Medal 4. Invention, Innovation & Design (IIDUiTM) 2009: 1 Gold Medal 5. Invention, Innovation & Design (IID UiTM) 2009: 1 Silver Medal 6. Invention, Innovation & Design (IID UiTM) 2008: 1 Gold Medal
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi MARA (UiTM), Penolong Naib Canselor (Penyelidikan), Institut Pengurusan Penyelidikan (RMI), Aras 3, Bangunan Wawasan, Universiti Teknologi MARA, 40450 UiTM Shah Alam, Selangor. Office: 03-5544 3560 H/p: 012-331 7037 noriham985@salam.uitm.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Edible Fruit Coating from Palm Stearin
Project Number	03-01-01-SF0033
Project Leader and Team Members	Leader: Norizzah Abd. Rashid Members: Adi Md Sikin, Cheow Chong Seng and Halimahton Zahrah Mohamed Som
Field of Research	Food Science and Nutrition
Project Summary	Project objectives were to formulate and develop edible fruit coating from palm stearin; to determine the physicochemical properties of the edible coating; to measure the effectiveness of coating application on guavas; to determine the of coating in extending the shelf-life of guavas; to determine the influence of different coating formulations on the quality attributes of guavas such as weight loss, surface colour development, firmness, glossiness, sugar content, titratable acidity, vitamin C, permeabilities of oxygen, carbon dioxide and water vapour; and to fabricate an applicator dryer for the application of coating material on guavas.
Publications/Products/ Outcomes	Products: 1. Prototype (water and oil based stearin wax edible coating) 2. Machine – coating applicator-dryer
Awards/Certificates	1. Seoul International Invention Fair (SIIF) 2009 Korea: 1 Silver medal. 2. Malaysia Technology Expo (MTE) 2009: 1 Silver Medal. 3. UiTM INVENTION, INNOVATION & DESIGN (IID) 2008: 1 Silver Medal. 4. UiTM INVENTION, INNOVATION & DESIGN (IID) 2009: 1 Gold Medal.
Additional Information	Linkages: Jiangnan University, China; Cargill Oils and Fats Sdn Bhd. provided constant supply of palm stearin for this study. Guavas was obtained from Sui Yuan Fruit Trading, Ladang Bikam Bidor.
Contact Institution/Entity Address	Universiti Teknologi MARA (UiTM) Penolong Naib Canselor (Penyelidikan), Institut Pengurusan Penyelidikan (RMI), Aras 3, Bangunan Wawasan, Universiti Teknologi MARA, 40450 UiTM Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Ceramic Membrane Bioreactor for the Production of Lactic Acid
Project Number	03-01-01-SF0034
Project Leader and Team Members	Leader: Norliza Ibrahim Members: Murthy V.P.S. Veluri and Teng Wan Dung
Field of Research	Chemical Engineering
Project Summary	Project objectives were to develop a ceramic membrane using solid waste from sanitary industry and ball clay and determine the cell separation ability of the ceramic membrane bioreactor for the production of lactic acid.
Awards/Certificates	<ol style="list-style-type: none"> 1. IID 2007 (UiTM): 1 Bronze Medal 2. ITEX 2007: 1 Bronze Medal 3. SHELL INTER-Varsity Student Paper Presentation Contest 2007: 1st winner
Additional Information	Linkages: Collaboration can be done with SIRIM in order to produce ceramic membrane with smaller pore size and therefore widen its application.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi MARA (UiTM) 40450 UiTM Shah Alam, Selangor. Office: 03-5543 6313 H/p: 013-361 1756 norli76@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Iron Oxide Silica Aerogel Magnetic Nano-composite Using Silica Rich Natural Sources as Precursors
Project Number	03-01-01-SF0087
Project Leader and Team Members	Leader: Umi Sarah Jais Members: Azizah Shaaban and Syed Yusainee Syed Yahya
Field of Research	Engineering Materials
Project Summary	Project was to develop silica aerogel having pore size ranging between 50-80nm. Fe ₂ O ₃ -SiO ₂ nano-composite has been prepared but it was difficult to see under SEM whether the phase was homogeneously distributed. It was found that magnetic Fe ₂ O ₃ only obtained when the Fe content is 7.5% and after controlled heat treatment at 1100C.
Publications/Products/ Outcomes	<p>Journals</p> <ol style="list-style-type: none"> 1. Maamur, K. and Umi Sarah Jais. 2009. Rice husk derived silica aerogel as chromatographic packing material for colour separation of purple orchid (<i>Cattleya bowringiana</i>) flower. <i>Materials Research Innovations</i> 3: 266-269. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Umi Sarah Jais and Khomarul Nafishah Maarof. 2007. Sol-gel synthesis and magnetic phase development of Fe-SiO₂ aerogel and xerogel prepared using rice husk ash. <i>Proceedings of International on Advanced Materials and Nanotechnology (ICAMN 07)</i>, 29 May-1 June 2007, Langkawi, Kedah. 2. Umi Sarah Jais and Khomarul Nafishah Maarof. 2008. Fe-SiO₂ aerogel and xerogel prepared using rice husk ash. <i>Proceedings of 2nd International Conference on Functional Materials and Devices 2008 (ICFMD-2008)</i>, 16-19 Jun 2008, Kuala Lumpur. 3. Umi Sarah Jais and Khomarul Nafishah Maarof. 2008. Effect of iron incorporation on the efficiency of silica aerogel derived from rice husk ash as chromatographic packing material for colour separation of purple orchid (<i>Cattleya bowringiana</i>) flower. <i>Proceedings of IIIV Regional Conference on Solid State Science and Technology (RCSST08)</i>, 29 Nov-2 Dec 2008, Port Dickson, Negeri Sembilan.
Awards/Certificates	International Conference on Advancement of Materials and Nanotechnology 2007 (ICAMN 2007): Langkawi, Kedah, Malaysia 29 May-1 June 2007: Best Poster



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Voltage Stability Improvement in Power System Using Ant Colony Optimisation Technique
Project Number	03-01-01-SF0121
Project Leader and Team Members	Leader: Ismail Musirin Member: Muhammad Murtadha
Field of Research	Electrical and Electronic Engineering
Project Summary	<p>Project was to develop a new combinatorial optimisation algorithm for ant colony optimisation from original graphical-mode ant colony optimisation algorithm; to develop a new technique based on ant colony optimisation for improving voltage stability condition in power system; and to develop an optimisation engine for loss minimisation in power transmission system based on ant colony optimisation technique. Ant Colony Optimisation (ACO) engines have been developed to Address voltage stability improvement and eventually the loss minimisation. The development of ACO engine can be further utilised for wide area stability assessment and to be applied in larger power system network.</p>
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ismail Musirin and Mohd Rozely Kalil. 2008 Ant colony optimization technique for optimal transformer tap changer setting in voltage stability improvement. <i>Journal of Management and Science</i> 6: 83-90. 2. Mohd Rozely Kalil, Ismail Musirin, Muhammad Murtadha Othman. 2009. Optimal transformer tap changer setting using ant colony optimization for voltage stability improvement. <i>International Journal of Power, Energy and Artificial Intelligence (IJEAI)</i> 2: 88-94. 3. Ismail Musirin and Mohd Rozely Kalil. (2009). Optimal reactive power dispatch for loss minimization in power system using ACO, EP and AIS. <i>International Journal of Electrical Energy Systems (IJEES)</i> 39-47. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Kalil, M.R., Musirin, I., Othman, M.M. and Rahman, T.K. A. 2009. Ant Colony Technique for Transformer Tap Changer Setting Optimization. <i>8th WSEAS International Conference on Artificial Intelligence, Knowledge and Data Bases (AIKED2009)</i>, 21- 23 Feb, Cambridge, UK, pp. 248-253.



	2. Ismail Musirin and Mohd Rozely Kalil. (2008). Ant colony optimization technique for optimal transformer tap changer setting in voltage stability improvement. <i>Information Science and Engineering Seminar (ICSE)</i> , 8 May, Management and Science University, Malaysia.
Additional Information	Linkages: Tenaga Nasional Research (TNBR) for any potential research collaboration
Contact Institution/Entity Address	Universiti Teknologi MARA (UiTM) Penolong Naib Canselor (Penyelidikan), Institut Pengurusan Penyelidikan (RMI), Aras 3, Bangunan Wawasan, Universiti Teknologi MARA, 40450 UiTM Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Automated Weigh-in-motion Systems for Data-Collection and Enforcement
Project Number	03-01-03-SF0018
Project Leader and Team Members	Leader: Ahmad Saifizul Abdullah Members: Mohd Rasdan Ibrahim and Mohamed Rehan Karim
Field of Research	Civil Engineering
Project Summary	A prototype automated weigh system for data-collecting and enforcement supported by weigh-in-motion (WIM) and automatic vehicle identification (AVI) has been developed. Field test of the proposed prototype on Malaysia's roadway system has been conducted.
Publications/Products/ Outcomes	Proceeding/Conference/Seminar: 1. Ahmad Saifizul Abdullah, Mohamed Rehan Karim, and Hideo Yamanaka. 2008. Evaluation of Quartz based automatic traffic monitoring system. <i>Proceedings of 10th International Conference on Application of Advanced Technologies in Transportation</i> , 20 - 31 May 2008, Athens, Greece. Products: ROAD-i
Awards/Certificates	1. Malaysia Technology Expo (MTE) 2010: 1 Gold Medal 2. 21st International Invention, Innovation & Technology Exhibition (ITEX) 2010: 1 Gold Medal 3. Innovation & Creativity Expo 2010: Best Category 4. Innovation & Creativity Expo 2010: 1 Gold Medal
IP Status	Patent Pending PI 2009 7016
Additional Information	Linkages: Integrated Transportation Solutions Sdn. Bhd.
Contact Institution/Entity Address	Universiti Malaya Center for Transportation Research, Faculty of Engineering, University of Malaya, 50603 Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Novel H ₂ S and CO ₂ 'Molecular Basket' Adsorbent Materials from Palm Shell for Natural and Biogas Purification
Project Number	03-01-03-SF0124
Project Leader and Team Members	Leader: Mohamed Kheireddine Aroua Members: Wan Mohd Ashri Wan Daud and Rozita Yusoff
Field of Research	Process Technology and Engineering
Project Summary	Project objective was to develop novel hybride adsorbent from palm shell based activated carbon as 'molecular basket' and very low molecular weight PEI and conventional alkanolamine as source of selective adsorption sites to separate CO ₂ and H ₂ S from gas streams.
Publications/Products/ Outcomes	Journal: 1. Aroua, M.K., Daud, W.M.A.W., Yin, C.Y. and Adinata, D. 2008. Adsorption capacities of carbon dioxide, oxygen, nitrogen and methane on carbon molecular basket derived from polyethyleneimine impregnation on microporous palm shell activated carbon. <i>Separation and Purification Technology</i> . 62: 609-613.
Additional Information	Linkages: Bravo Green Sdn. Bhd. provided the commercial palm shell activated carbon used in the process Commercialisation: Potential
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaya Department of Chemical Engineering, University of Malaya, 50603 Kuala Lumpur. Office: 03-7967 5313 H/p: 012-687 8251 mk_aroua@um.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Hydrogel as a Scaffold for Biomaterial in the Treatment of Articular Cartilage Defects
Project Number	03-01-03-SF0145
Project Leader and Team Members	Leader: Azlina Amir Abbas Members: S. Anandan Samugan, Lakshmi Selvaratnam, Tunku Kamarul Zaman, Norimah Yusof and Colin Ng Leong Liong
Field of Research	Biotechnology
Project Summary	A new biomaterial PVA-chitosan scaffold was successfully developed to produce an alternative or better techniques to repair damaged articular cartilage.
Publications/Products/ Outcomes	Product: Extracellular Scaffold
Awards/Certificates	<ol style="list-style-type: none"> 1. Gold medal – 21st International Invention, Innovation & Technology Exhibition, 14-16 May 2010, Kuala Lumpur Convention Center, Malaysia. 2. Gold medal - Pencipta Malaysia 2009: International Exposition of Research and Invention of Institutions of Higher Learning, Ministry of Higher Education and University of Malaya, 8-10 October 2009. 3. Silver medal - 19th International Invention, Innovation & Technology Exhibition, 9-11 May 2008, Kuala Lumpur Convention Center, Malaysia. 4. Silver medal - University Malaya Invention and Innovation Exhibition, 13-15 January 2009, University of Malaya, Kuala Lumpur. 5. Bronze medal - Malaysia Technology Expo, 21-23 February 2008, Putra World Trade Center, Kuala Lumpur Malaysia.
IP Status	Patent Filed (Malaysia-P120081246); Patent Pending (International-PCT/MY2009/000062)
Additional Information	International Linkages: Malaysian Nuclear Agency as collaborator in scaffold development by providing biomaterials and irradiation services. Industrial Linkages: Rocke by company from Australia.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Manufacturing of Advanced Bioreactor for Mechanical Cell Conditioning
Project Number	03-01-03-SF0155
Project Leader and Team Members	Leader: Belinda Murphy Members: Chai Yoke Chin, Wan Abu Bakar Wan Abas and Noor Azuan Abu Osman
Field of Research	Biomedical Engineering
Project Summary	Project objectives were to develop and manufacture an advanced cell conditioning bioreactor capable of delivering complex mechanical stimulation to cells both in a research and a clinical setting; to undertake a full development cycle to produce a fully functional bioreactor system; and to allow sterility, ease of use, multiple complex mechanical operations and appropriate measurement of the effects of such a regime upon mammalian cells.
Publications/Products/ Outcomes	Products: Bi-axial Loading Bioreactor for Mechanical Stimulation of Engineered Cartilage
IP Status	Patent Filed PI20095685
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis and Reactivity Studies of Organotransition Metal Cluster Complexes with Potential Catalytic Properties
Project Number	03-01-03-SF0209
Project Leader and Team Members	Leader: Richard Wong Chee Seng
Field of Research	Chemical Sciences
Project Summary	<p>The project involved the synthesis, isolation and characterisation of organotransition metal complexes with selected types of ligands, particularly mixed Group 15 (nitrogen, phosphorus, arsenic and antimony) and Group 16 (oxygen, sulfur, selenium and tellurium) elements. Initial stage of synthesis study involved identifying the optimum reaction condition. Synthesis procedure generally employed the use of Schlenk technique and subsequent workup in a drier maintained under argon. Products were mainly isolated using column chromatography. Products are characterised via ¹H and ³¹P NMR, FTIR, U.V. spectrophotometry, elemental analysis and mass spectrometry. Finally, structural elucidation was determined by single crystal x-ray diffraction. A systematic reactivity study was carried out in order to deduce their reaction pathways. Bulk and NMR tube reactions under different thermolytic conditions were performed to determine product yields. Electrochemical studies using various polarographic techniques are used to determine the redox behavior of these new found products.</p>
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Richard Chee Seng Wong, Mei Lee Ooi and Seik Weng Ng. 2008. (μ-4-Methyl-benzenethiolato-2S:S) bis[carbonyl(5-cyclopentadienyl) molybdenum(II)]. Acta Crystallographica E64, m695) 64(Pt 5): m695. 2. Richard Chee Seng Wong, Mei Lee Ooi, Hidehiro Sakurai and Seik Weng Ng (2008). Tris[2-(deuteriomethylsulfanyl) phenyl] phosphine deuteriochloroform 0.125-solvate. Acta Crystallographica E64, o898)
Additional Information	Linkages: Institute of Molecular Sciences, The Graduate University for Advanced Studies, Japan (Prof. Hidehiro Sakurai)

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Field Electron Emission Devices Based on Chemical Vapor Deposited Diamond
Project Number	03-01-03-SF0291
Project Leader and Team Members	Leader: Roslan Md. Nor Member: Yusoff Mohd. Amin
Field of Research	Applied Sciences and Technologies
Project Summary	A field electron emission rector was constructed. The study of field electron emission of Chemical Vapor Deposited (CVD) diamond and carbon nanotubes was achieved.
Publications/Products/ Outcomes	Products Name : CVD Diamond Films
Additional Information	International Linkages: Prof. Dr. Yap Yoke Khim, from Michigan Technological University under the Brain Gain Program Commercialisation: Preliminary studies towards the possibility of commercialisation
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaya (UM) Lembah Pantai, 50603 Kuala Lumpur. Office: 03-79674285 H/p: 013-3900715 rmdnor@um.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Computer Based Qualitative Eco Design Tool for Concept Generation and Selection Stage: Eco-concept
Project Number	03-01-03-SF0307
Project Leader and Team Members	Leader: Raja Ariffin Raja Ghazilla Members: Siti Zawiah Md. Daw, Zahari Taha, Norhafizan Ahmad, Siti Nurmaya Musa and Yap Hwa Jen
Field of Research	Environmental Engineering
Project Summary	Project objectives were to define the requirements for an environmental analysis; to determine the requirements of environmental analysis tools of several companies; to conduct benchmarking of different softwares; to develop a model for product environmental risk analysis based on modification and combination of proven models; and to develop an expert system to optimise product development to reduce environmental risk based on a rule-based approach. A computer aided ecodesign system to improve product eco efficiency called EnviroDesign have been developed.
Publications/Products/Outcomes	Products: Enviro Design Software
Additional Information	Linkages: Waste Management Association Malaysia; , SIRIM (SME application); Center for Engineering and Sustainable Research De La Salle U; Eekang Design Sdn. Bhd. (improving the EnviroDesign software for commercialisation) Commercialisation: Potential
Contact Institution/Entity Address	University of Malaya Centre for Product Design and Manufacture, Faculty of Engineering, University of Malaya, Lembah Pantai, 50603 Kuala Lumpur.
Phone Number	Office: 03-7967 5369 H/p: 019-266 5815
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Experimental Rig Design for Production of Biodiesel from Jatropha Oil
Project Number	03-01-16-SF0002
Project Leader and Team Members	Leader: Badhrulhisham Abdul Aziz Members: Syamsul Bahari Abdullah, Noor Ida Amalina Ahamad Nordin, Mashitah Mohd Yusof and Saiful Nizam Tajuddin
Field of Research	Energy Technology
Project Summary	Project objectives were to optimise experimental conditions for maximising biodiesel production from transesterification of Jatropha oil and to scale up biodiesel production from Jatropha oil for industrial purposes.
Publications/Products/ Outcomes	Products: 1. The possible method for biodiesel production from crude Jatropha curcas Linn. seed oil. 2. Optimisation of esterification process from Jatropha curcas Linn. seed oil to produce Biodiesel.
Additional Information	Linkages: Biomac and Institut Pertanian Bogor, Indonesia (development of the processing of Jatropha oil). Commercialisation: Discussion is underway with potential companies to collaborate and later on, if successful, commercialisation of the scale up will be the next target.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Superior Grade Gaharu Extract via Enzymatic Intensification Steam Distillation Process
Project Number	03-01-16-SF0003
Project Leader and Team Members	Leader: Rosli Mohd Yunus Members: Saiful Nizam Tajuddin, Noorlisa, Fatmawati Adam and Mazni Ismail
Field of Research	Chemical Engineering
Project Summary	Project objectives were to examine the feasibility of the steam distillation process on gaharu extraction via enzymatic pretreatment process as an improved method on gaharu oil extraction from agarwood chips; to investigate the effect of process variables on the performance of steam distillation technique; to investigate the effect to oxygenation reaction in producing superior quality of gaharu oil. The results from this project showed that the improved method on gaharu oil extraction has increased by 71% oil yield through combination of ultrasound and enzymatic pretreatment method. The optimum operating conditions within the range of study also has been established .
Publications/Products/ Outcomes	Products: Gaharu Essential Oil
Awards/Certificates	PENCIPTA Exhibition 2009: 1 Silver Medal
IP Status	Patent Filed : PI20094154
Additional Information	Linkages: Mazlan Muhammad - Gaharu oil manufacturer from Gua Musang. Commercialisation: Potential
Contact Institution/Entity Address	Universiti Malaysia Pahang (UMP) Fakulti Kej. Kimia dan Sumber Asli, Universiti Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang, Kuantan, Pahang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Design Evaluation System Software for Home Appliances Remanufacturing
Project Number	03-01-16-SF0013
Project Leader and Team Members	Leader: Kumaran Kadirgama Members: Mohd Ruzaimi Mat Rejab, Muhamad Mat Noor, Wan Sharuzi Wan Harun and Azlyna Senawi
Field of Research	Manufacturing and Production Engineering
Project Summary	Project objectives were to integrate the AI tool that is Case Based Reasoning (CBR) with the Design for Remanufacturing(DfRem) technique in order to evaluate the remanufacturability of the home appliances product; and to design an evaluation system of the design for remanufacturing of the electronic appliances product. The scope of the project was limited to the home appliances because of their short life cycles.
Publications/Products/Outcomes	Products: Method and System for Determining End of Life Strategy for Products
Awards/Certificates	Bronze – Malaysian Technology Expo (MTE) 2010
IP Status	Patent Filling No: PI20095013
Additional Information	Linkages: Department of Intelligent Mechanical System, Division of Industrial Innovation Sciences, Graduate School of Natural Science and Technology, Okayama University, Japan. Commercialisation: Potential
Contact Institution/Entity Address	Universiti Malaysia Pahang (UMP) Faculty of Mechanical, Universiti Malaysia Pahang, 26600 UMP, Pekan, Pahang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Ultrasonic Technology to Extract Carrageenan from Seaweeds and Online Estimation
Project Number	03-01-10-SF0003
Project Leader and Team Members	Leader: Awang Bono
Field of Research	Chemical Engineering
Project Summary	Project objectives were to produce pure carrageenan by ultrasonic technology based extraction procedure from local seaweed; to compare the yield with traditional thermal extraction of carrageenan; to develop new online methodology to estimate the carrageenan with the help of artificial neural networks coupled with sonar techniques and to develop a mathematical model for estimation of solid-liquid mass transfer coefficient of carrageenan.
Publications/Products/ Outcomes	Journals/Books: <ol style="list-style-type: none"> 1. Duduku Krishnaiah, Awang Bono, D.M.R. Prasad, and Mariani Rajin. Optimisation of Ultrasonic extraction parameters of Iota-carrageenan from seaweed (<i>Eucheuma-Denticulatum</i>), Chapter 10 in book titled: Products and Optimization using Response Surface Methodology. (in press). 2. Duduku Krishnaiah, D.M.R. Prasad, Awang Bono, Rosalam Sarbatly. (2008). Application of ultrasonic waves coupled with functional link neural network modeling for estimation of carrageenan concentration. <i>International Journal of Physical Sciences</i>. 3: 90-96. 3. Duduku Krishnaiah, Rosalam Sarbatly, D.M.R. Prasad and Awang Bono. (2008). Mineral content of some seaweeds from Sabah's South China Sea. <i>Asian Journal of Scientific Research</i>. 1:166-170.
Contact Institution/Entity Address	Universiti Malaysia Sabah (UMS) Pusat Penyelidikan dan Inovasi, Universiti Malaysia Sabah, Beg Berkunci 2073, 88999 Kota Kinabalu, Sabah.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Lignin and Cellulose Wood for Polymetric Electrolyte
Project Number	03-01-10-SF0007
Project Leader and Team Members	Leader: Fauziah Abdul Aziz Member: Razali Idris
Field of Research	Condensed Matter Physics
Project Summary	Project objectives were to determine a suitable solvent to dissolve the extraction amorphous lignin and crystalline cellulose from wood fibre using derivative such as tetrahydrofuran (THF) or methyl ethyl ketone (MEK) or acetonitrile; to obtain and characterise amorphous lignin and crystalline cellulose from wood fibre found from hardwood located locally in Sandakan, Sabah using scanning electron microscopy (SEM), nuclear magnetic resonance (NMR) spectroscopy and x-ray diffraction (XRD); and to evaluate the potential of wood lignin and cellulose as a new electrode materials and electrolytes for battery.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Jahimin Asik, Fauziah Abdul Aziz and Razali Idris. (2010). The potential of cellulose extracted from local wood as solid polymeric electrolyte (SPE) (poster), <i>UMS 12th Convocation Exhibition 2010</i>, 9 – 11 Oct, Centre of Materials and Minerals, Kota Kinabalu Sabah. 2. Razali Idris, Jahimin Asik and Fauziah Abdul Aziz. (2010). Mercerized natural cellulose based-solid polymer electrolyte. <i>19th Scientific Conference of the Electron Microscopy Society of Malaysia (EMSM)</i> 14-16 Dec, Langkawi, Kedah. 3. Fauziah Haji Abdul Aziz, Jahimin Asik and Razali Idris (2007). Hardwood cellulose found in Sabah for battery usage. <i>Poster presentation at NATPRO 2007</i>, 29-31 Mar, PWTC, Kuala Lumpur.
Additional Information	Linkages: AMREC, SIRIM Berhad, Kedah Commercialisation: Potential
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Improved Synthesis of Poly(hydroxamic acid)-Poly(amidoxime) Resin as an Effective Chelator for Toxic Metals Removal from Aqueous Media
Project Number	03-01-10-SF0019
Project Leader and Team Members	Leader: Md. Lutfor Rahman Members: Jahimin Asik@Abd.Rashid
Field of Research	Physical Chemistry (including theoretical and structural)
Project Summary	A poly(methyl acrylate-co-acrylonitrile) grafted sago starch was prepared.The chelating resin containing hydroxamic acid and amidoxime functional groups were prepared perfectly.The binding properties of chelating resin were evaluated. The performance of the resin to metal ions removed from electroplating waste water was excellent.
Publications/Products/ Outcomes	Journal: 1. Md Lutfor Rahman and Jahimin Asik (2008). Polymeric chelating resin for removal of toxic metals from various water sources and electroplating liquors. <i>Polymer Preprints</i> . 49: 923.
Awards/Certificates	PECIPTA 07': 1 Bronze Medal
Additional Information	Linkages: BI-PMB Waste Management Sdn. Bhd. (waste water collection from electroplating industries).
Contact Institution/Entity Address	Universiti Malaysia Sabah (UMS) Pusat Penyelidikan dan Inovasi, Universiti Malaysia Sabah, Beg Berkunci 2073, 88999 Kota Kinabalu, Sabah.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Production of Biodiesel from Encapsulated Lipase in Immobilised Bioreactor
Project Number	03-01-10-SF0022
Project Leader and Team Members	Leader: Chan Eng Seng Member: Sariah Abang
Field of Research	Chemical Engineering
Project Summary	Project activities were to test the lipase for activity and stability; to install and standardise an immobilised bioreactor; to undertake immobilisation studies of the lipase; and to study the production of biodiesel using free and immobilised lipase through kinetics and modeling.
Additional Information	Linkages: Prof. Dr. Denis Poncelet from ENITIAA, France. POIC Sabah Sdn Bhd (review on immobilised lipase system for biodiesel production).
Contact Institution/Entity Address	Universiti Malaysia Sabah (UMS) Pusat Penyelidikan dan Inovasi, Universiti Malaysia Sabah, Beg Berkunci 2073, 88999 Kota Kinabalu, Sabah.
Phone Number e-Mail	Office: 088-320 000 engseng.chan@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Advanced Artificial Clay (ceramic) Membrane
Project Number	03-01-10-SF0023
Project Leader and Team Members	Leader: Rosalam Sarbatly Members: Awang Bono, Subbarao, Duduku Krishnaiah, Yeo Kiam Beng@Abdul Noo and Kamaruzaman Ampon
Field of Research	Advanced Materials
Project Summary	Project objectives were to manufacture the advanced artificial clay membrane for used in precision engineering applications (e.g. medical instruments, in-situ production of intravenous dripping solutions, drug delivery system, and oxygen enrichment); to carry out fundamental methods for precisely segregates the fine particles of clays; to develop a segregation technique to precisely control the size of clay particles segregated into clusters involving physical sieving, ultrasonic sieving, thermal treatment and chemical treatment; to characterise, formulate and manufacture the clay membrane support; and to produce a ceramic flat sheet membrane and hollow fibre membrane.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Rosalam, S., Duduku, K., Richard, E., Sariah, A. and Jeanette, J. (2007). Comparison studies of applied pressure and concentration gradient driving forces in ceramic nano-filtration membrane for the production of intravenous salt solution. <i>Journal of Applied Sciences</i> 7:2069-2075. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Rosalam, S. and Zykamilia, K. (2008). Ceramic membrane support - a review. <i>Proceeding of the Seminar on Engineering and IT – SEIT2008</i>, UMS Malaysia. 1:76-80. 2. Rosalam, S. and Thien, S.F. (2008). Effect of coagulation agents on preparation and characteristic of polyethersulfone membrane, <i>Proceeding of the Seminar on Engineering and IT - SEIT2008</i>, UMS Malaysia. 1:3-6.
Additional Information	Linkages: Universiti Teknologi Malaysia (UTM)



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	A Cost-effective Integrated Process for Production of Probiotic Cells as Poultry Antibiotic Substitute
Project Number	03-01-10-SF0041
Project Leader and Team Members	Leader: Chan Eng Seng Members: Sariah Abang and Pogaku Ravindra
Field of Research	Process Technology and Engineering
Project Summary	Project objectives were to fabricate and set up system for cell production and drying processes; to study the effect of process variables on production of cells encapsulated within microparticles; to study the effect of drying process variables on viability of encapsulated cells and subsequent storage stability; and to optimise and integrate the cell production and drying processes at pre-pilot plant scale.
Additional Information	Linkages: Assoc. Prof. Dr. Tey Beng Ti from Universiti Putra Malaysia (technical advice); Stellagen Sdn. Bhd. (provide the bacterial strains).
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Person Identification Using Facial Features
Project Number	03-01-10-SF0045
Project Leader and Team Members	Leader: Jamal Dargham Members: Ali Chekima and Razak
Field of Research	Signal Processing
Project Summary	Project objectives were to develop fast and reliable algorithms for human face detection and localisation in an image; to design and develop an intelligent system for person identification from facial features for access control to secured location; to identify facial features that can be used for person identification and develop algorithms for their extraction from facial images; and to evaluate the performance of the different facial features for person identification.
Publications/Products/Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Jamal Ahmad Dargham, Ali Chekima and Sigeru Omatu. (2009). Data fusion for skin detection. <i>Artificial Life and Robotics</i> 13: 438-441. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Jamal Ahmad Dargham and Ali Chekima. 2008. Component-based face detection in colour images. <i>Proceedings of the 10th WSEAS International Conference on Mathematical Methods, Computational Techniques and Intelligent Systems</i>, 26-28 October 2008, Corfu, Greece. 2. Jamal Ahmad Dargham, Ali Chekima and Sigeru Omatu. 2008. Lips detection by use of neural networks. <i>Proceedings of the 13th International Symposium on Artificial Life and Robotics (AROB'08)</i>, Feb. 2008, Beppu, Japan. 3. Jamal Ahmad Dargham, Ali Chekima and Sigeru Omatu. (2008). Data fusion for skin detection. <i>Proceedings of the 13th International Symposium on Artificial Life and Robotics (AROB'08)</i>, Feb. 2008, Beppu, Japan.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Methods Based on Real-time Polymerase Chain Reaction (PCR) for the Authentication of Raw and Processed Meats
Project Number	03-01-10-SF0046
Project Leader and Team Members	Leader: Clemente Michael Wong Vui Ling Members: Suhaimi Napis, Vijay Kumar
Field of Research	Industry
Project Summary	<p>Currently, PCR-based techniques available for the detection of meat species in a meat admixture have low sensitivity, time consuming and sometimes are unreliable. Hence, this project was set-out to address these problems by establishing a real-time polymerase chain reaction (qPCR)- based assay for the authentication of permissive and non-permissive meats. Several sets of meat species-specific primers and Taqman probes were developed to target regions of the mitochondrial D-loop. The specificity, sensitivity and reliability of each assay have been verified by using the SYBR Green based qPCR. By using a cut-off CT of 30 cycles, all assays show sensitivity down to 0.05% of the DNA spike level. When applied to DNA templates from raw meat admixtures, assays were able to detect the target species up to a level of 0.1%. Hence, these assays have a potential application in the processed meat industry. In terms of sensitivity and reproducibility the SYBR Green based qPCR was better than the Taqman probes. Several tests were carried out using the SYBR Green based qPCR to authenticate processed food. The results indicated that the real-time PCR technique can reliably detect meat contaminants in the processed food in a relatively short time.</p>
Publications/ Products/ Outcomes	Products: A prototype called the Meat ID kit has been developed.
Awards/Certificates	<ol style="list-style-type: none"> 1. Seoul International Invention Fair: 1 Gold Medal 2. PEREKA UMS: 1 Gold Medal 3. BioInno Award competition: 1 Silver Medal 4. ITEX: 1 Bronze Medal
Additional Information	Commercialisation: Potential



Contact Institution/Entity Address	Universiti Malaysia Sabah (UMS) Pusat Penyelidikan dan Inovasi, Universiti Malaysia Sabah, Beg Berkunci 2073, 88999 Kota Kinabalu, Sabah.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Transesterification of Palm Oil to Methyl Ester at Low Temperature: An Investigation into Mass-transfer-controlled Regime
Project Number	03-01-10-SF0048
Project Leader and Team Members	Leader: Chu Chi Ming Members: Pogaku Ravindra and Chan Eng Seng
Field of Research	Chemical Engineering
Project Summary	Project objectives were to study the effect of mixing variables on alcohol droplet size; to study the relationship between droplet size of alcohol on mass transfer rate and the conversion rate; to determine the liquid properties of oil and alcohol at respective temperatures used for reaction; and to determine the energy and cost of agitation required for the desired conversion rate.
Additional Information	Commercialisation: The results of this work can be tested at industrial scale for saving of production cost.
Contact Institution/Entity Address	Universiti Malaysia Sabah (UMS) Pusat Penyelidikan dan Inovasi, Universiti Malaysia Sabah, Beg Berkunci 2073, 88999 Kota Kinabalu, Sabah.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Bio-degradable Lubricant for Milling of Inconel and Stainless Steel with Coated Tool
Project Number	03-01-10-SF0050
Project Leader and Team Members	Leader: Willey Liew Yun Hsien Members: Awang Bono and Yeo Kiam Beng@Abdul Noo
Field of Research	Manufacturing and Production Engineering
Project Summary	<p>Experiments had been carried out to study the performance of TiAlN/AlCrN nano-multilayer coated, TiAlN single-layer coated and uncoated carbide tools in milling STAVAX (modified 420 stainless steel)at a low speed of 50 m/ min under flood and mist lubrication. Scanning electron microscope, energy dispersive X-ray analysis system and Raman spectroscopy were used to examine the tool wear and determine the type of oxide formed on the tool surface during machining. In machining STAVAX with a hardness of 40 HRC, the coated tools were subjected to delamination, attrition and abrasive wear throughout the duration of testing. During machining STAVAX with a hardness of 55 HRC, three distinct stages of tool wear occurred, (i) initial wear by delamination, attrition and abrasion, followed by (ii) cracking at the substrate and (iii) the formation of individual surface fracture at the cracks which would then enlarge and coalesce to form a large fracture surface .The TiAlN/AlCrN coated tool exhibited higher resistance against delamination and abrasive wear than the TiAlN coated tool. The cracking resistance and hardness of the coating, and oxidation of the coating during machining appeared to have significance influences on the resistance of the tool against these wear mechanisms. A longer cutting distance was required to cause TiAlN/AlCrN coated tool to crack and fracture. This was due to the substrate receiving greater protection against cracking and fracture as a result of the coating being removed at a slower pace by abrasion and delamination. Small quantity of mineral oil sprayed in mist form was effective in reducing the severity of delamination and abrasive wear, and delaying the occurrence of cracking, fracture and chipping.</p>
Publications/ Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Liew, W.Y. H. 2010. Low-speed milling of stainless steel with TiAlN single-layer and TiAlN/AlCrN nano-multilayer coated carbide tools under different lubrication conditions. Wear. 269: 617-631.

	<p>2. Liew, W.Y.H. and Ding, X. 2008. <i>Wear progression of carbide tool in low-speed end milling of stainless steel</i>. Wear. 265: 155-166.</p> <p>Proceedings/Conferences/Seminars:</p> <p>1. Liew, W.Y.H. 2009. Wear of TiAlN and TiAlN/AlCrN coated carbide tools in low-speed end milling of stainless steel. <i>World Tribology Congress IV</i>, 6-11 Sept, Kyoto, Japan.</p> <p>2. Liew, W.Y.H. 2008. Performance of TiAlN and TiAlN/AlCrN coated tools in low-speed end milling of stainless steel. <i>The 3rd UMS-GIST International Symposium on Science and Technology 2008</i>, 1-3 Dec, Gwangju Institute of Science and Technology (GIST), Gwangju, Korea, pp.133-157.</p>
Additional Information	<p>Linkages: Prof. Dr. Lee Sun Kyu (Professor in Gwangju Institute of Science and Technology, Korea)</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Malaysia Sabah (UMS) School of Engineering and Information Technology, Universiti Malaysia Sabah, Locked Bag 2073, 88999 Kota Kinabalu, Sabah.</p> <p>Office: 088-320000/ 3050 H/p: 019-8109550 wyhliew@ums.edu.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Production and Characterisation of Biopowders Made from Gel-forming Polymers
Project Number	03-01-10-SF0051
Project Leader and Team Members	Leader: Chan Eng Seng Member: Pogaku Ravindra
Field of Research	Advanced Materials
Project Summary	Project objectives were to set-up a bench scale microparticle production system; to study the effect of process variables on microparticle production; to characterize the properties of powder made from different gel-forming polymeric materials; and to determine the interaction between powder properties and stability of bioactive compounds.
Publications/ Products/ Outcomes	Products: The LCP method: A new technique to measure surface tension
Awards/Certificates	1. ITEX: 1 Gold Medal
IP Status	Eng-Seng, Chan, Boon-Beng Lee, Pogaku Ravindra (2009) A new method of determining surface tension. Universiti Malaysia Sabah (PI20093457).
Additional Information	Commercialisation: Further R&D work with respect to the scaling-up of microparticle production system is required before commercialisation.
Contact Institution/Entity Address	Universiti Malaysia Sabah (UMS) Centre of Materials and Minerals, School of Engineering and IT, Universiti Malaysia Sabah, 88999 Kota Kinabalu, Sabah.
Phone Number e-Mail	Office: 088-320 000 engseng.chan@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Enhancing Finished Products Appearances and Durability of Sapwood from Cultivated Acacia hybrid and Tectona grandis through Environmental Friendly Heat Treatment Process
Project Number	03-01-10-SF0071
Project Leader and Team Members	Leader: Razak Wahab Members: Ag Ahmad Mohd Yunus, Janshah Moktar, Hashim Wan Samsi and Othman Sulaiman
Field of Research	Wood and Non-wood Forest Products
Project Summary	Project objectives were to develop a suitable heat treatment scheduling for an environment safe technique in prolonging the service life span and enhancing biological durability of sapwood from cultivated Acacia hybrid and Tectona grandis; to improve and enhance the sapwood colour appearances of cultivated Acacia hybrid and Tectona grandis by heat treatment process; to assess the physical, mechanical, chemical and durability heat treated Acacia hybrid and Tectona grandis; and to identify the structural properties of treated and untreated Acacia hybrid and Tectona grandis.
Publications/Products/ Outcomes	Publication: 1. Izyan Khalid, Razak Wahab, Mahmud Sudin, Othman Sulaiman, Affendy Hassan, Roziela Hanim Alamjuri. 2010. Chemical Changes in 15 Year-old Cultivated Acacia Hybrid Oil-Heat Treated "at 180, 220 and 220°C" <i>International Journal of Chemistry</i> . 2 (1). Product: Oil curing machine for enhancing wood colour appearances and durability of juvenile wood.
Awards/Certificates	19th International Invention, Innovation & Technology Exhibition (ITEX) 2008: 1 Silver Medal.
Additional Information	Linkages: Forest Research Center in Sandakan and Forest Research Institute Malaysia; Timber plantation and furniture manufacturers in Sabah Commercialisation: Potential
Contact Institution/Entity Address	Universiti Malaysia Sabah (UMS) Universiti Malaysia Sabah, 88999, Kota Kinabalu, Sabah.
Phone Number	Office: 088-320 584 H/p: 016-836 6055
e-Mail	drzakw@ums.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Encapsulation of Liquid Herbal Extract for Drying in a Packed Bed System
Project Number	03-01-10-SF0084
Project Leader and Team Members	Leader: Rachel F. Mansa Members: Pogaku Ravindra and Chan Eng Seng
Field of Research	Food Engineering
Project Summary	Malaysia plays a key role in the global booming herbal market. It is important to build our competitive edge based on combination of diverse natural herbal heritage and advanced herbal process technology. Conventional methods in drying liquid herbal extracts (LHE) are spray-drying and freeze-drying which have setbacks of high production cost, high degradation of active compounds, inferior powder qualities and these result in limited product application. In this study, packed bed drying (PBD) system is proposed for drying of LHE. Advantages of PBD are low capital and operating costs, mild drying temperature, short residence time, high rates of heat and mass transfer. However, the main setback is that the system can only be used to dry materials in solid form and not liquid form such as LHE. To solve this problem, LHE will be first converted into solid hydrogel microcarriers by using our previously developed encapsulation technology before packing them into a column for PBD.
Publications/ Products/ Outcomes	Products: Drying of encapsulated herbal extract in a packed bed system
Additional Information	Linkages: Furley Marketing Sdn. Bhd. Commercialisation: Further R&D is required to scale-up the encapsulation and drying systems.
Contact Institution/Entity Address	Universiti Malaysia Sabah (UMS) Centre of Materials and Minerals, School of Engineering and IT, Universiti Malaysia Sabah, 88999 Kota Kinabalu, Sabah.
Phone Number	Office: 088-320 000 H/p: 013-856 9896
e-Mail	rfmansa@ums.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The Development of Compact Pem Electrolyzer Unit for Renewable Hydrogen Production
Project Number	03-01-12-SF0024
Project Leader and Team Members	Leader: Mohd Zamri Ibrahim Members: Wan Ramli Wan Daud and Kamaruzzaman Sopian
Field of Research	Renewable Energy
Project Summary	Project objectives were to design and fabricate the Proton Exchange Membrane electrolyzer; to extend the existing building for placement of the equipment; to install the weather monitoring system; to integrate the hydrogen energy production system with the renewable energy sources namely wind turbine and solar module; to test, commission and operate the integrated hydrogen energy production system; and to study the techno-economic integrated hydrogen energy production system.
Publications/Products/ Outcomes	Products: Hydrogen Generator Unit for Renewable Hydrogen Production System
Awards/Certificates	PECIPTA 2009: 1 Bronze Medal
IP Status	PI 2007 1969 filed 13 November 2007 - PV Wind (Patent title: Hydrogen Production Method)-Malaysia PI 2007 1971 filed 13 November 2007 - PEM (Patent title: PEM Electrolyzer)-Malaysia
Additional Information	Linkages: Solar Energy Research Institute (SERI) at Universiti Kebangsaan Malaysia (solar hydrogen energy production system production system). Commercialisation: Potential
Contact Institution/Entity Address	Universiti Malaysia Terengganu (UMT) Department of Engineering Science, Faculty of Science and Technology, Universiti Malaysia Terengganu, 21030 Kuala Terengganu, Terengganu.
Phone Number	Office: 09-668 3328 H/p: 019-968 4553
e-Mail	zam@umt.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Renewable Hydrogen Production Through Water Splitting Reaction Using Nanostructured Titanium Dioxide Photocatalyst
Project Number	03-01-12-SF0051
Project Leader and Team Members	Leader: Mohd Hasmizam Razali Members: Mohd Zamri Ibrahi and Wan Ramli Wan Daud
Field of Research	Advanced Materials
Project Summary	High performance nanostructured titanium dioxide photocatalysts has been succesfully synthesised using soft chemistry method (various type of nanostructured titanium dioxide succesfully synthesised). Physical characteristics study of the prepared nanostructured titanium dioxide photocatalyst using various techniques for further understanding of the nanostuctured properties (Various instruments such as TEM, SEM, XRD, and tec. has been used for physical properties study). Optimisation of nanostructured titanium dioxide photocatalyst with bandgap engineered for solar splitting of water. (Bandgap for every type of TiO2 nanostructured has been measured and optimised). The performance of the prepared nanostructured titanium dioxide photocatalyst has been tested towards water splitting reaction for hydrogen gas production. (Different type of TiO2 nanostructured gave different photocatalytic performance).
Publications/ Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Ruslimie, C. A., MohdHasmizamRazali and Wan M. Khairul. 2010. Effect of HTAB concentration of the synthesis of nanostructured TiO2 towards its catalytic activities. <i>The Malaysian Journal of Analytical Sciences</i>. 14: 41-49. <p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. Edmand Andrew Bedurus, MarinahMohdAriffin and MohdHasmizamRazali (2010). Synthesis and characterization of effective Titania (TiO2) nanowires as a photocatalyst for photodegradation of Rhodamine B. <i>Proceedings of 9th International Symposium on Sustainable Science and Management</i>, 8-11 May, Kuala Terengganu, pp. 638-643.

	Product: One dimension nanostructured titanium dioxide photocatalyst
Awards/Certificates	1. Anugerah Inovasi Negara (Pereka Muda)" 2009: finalis 2. The 37th International Exhibitions of Inventions, New Technique & Products, Geneva, Switzerland, 2009: Special Award (MAHWIBA award); 1 Gold Medal 4. International Invention, Innovation and Technology Exhibition 2008: 1 Silver Medal 5. Malaysia Technology Expo 2008: 1 Bronze Medal
Additional Information	Linkages: New-Biogas; Consultation with the fuel cell industry for an inexpensive and new method for hydrogen gas production towards fuel cell application. Commercialisation: Potential to be commercialised
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaysia Terengganu (UMT) Department of Chemical Sciences, Faculty of Science and Technology, Universiti Malaysia Terengganu, 21030 Kuala Terengganu, Terengganu. Office: 09-668 3252 H/p: 012-732 7142 mdhasmizam@kustem.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of an Efficient Hybrid Solar Thermoelectric-adsorption Cooling System
Project Number	03-01-09-SF0018
Project Leader and Team Members	Leader: Mohammad Omar Abdullah@Mak Khoon Ling Member: Khairuddin Ab. Hamid
Field of Research	Applied Sciences and Technologies
Project Summary	An efficient hybrid solar thermoelectric-adsorption cooling system has been developed. Cooling is produced via the Peltier effect during the day, by means of thermoelectric elements, and through adsorption process at night.
Publications/ Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Abdullah, M.O., Ngui, J.L., Abd. Hamid, K., Leo, S.L. and Tie, S.H. 2009. Cooling performance of a combined solar thermoelectric–adsorption cooling system: An experimental study. <i>Energy & Fuels</i>. 23: 5677–5683. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Abdullah, M.O., Abd. Hamid, K., Leo, S.L. and Ngui, J. L. 2007. A study on a hybrid solar thermoelectric and adsorption cooling system. <i>Proceedings of EnCon2007, 1st Engineering Conference on Energy & Environment</i>, 27-28 Dec, Kuching, Sarawak, Malaysia. pp. 460-462. 2. Leo, S.L., Abdullah, M.O., Ab. Hamid, K. and Sulaiman, M. Z. 2007. Hybrid solar peltier-adsorption cooler. <i>Proceedings of International Conference on Engineering and ICT (ICEI 2007)</i>, 27-28 Nov 2007, Melaka. 2: 609-611.
IP Status	Malaysia Patent Application Number PI20090404 (Mohammad Omar Abdullah, Khairuddin Ab. Hamid, Ngui Jia Lin, Tie Soon Hieng, Leo Sing Lim, Efficient Hybrid Solar Thermoelectric-adsorption cooling system),.
Additional Information	Linkages: American Society of Heating, Refrigerating and Air-conditioning Engineers (ASHRAE), USA (initial funding amounting to US\$3,155)

Contact Institution/Entity Address	Universiti Malaysia Sarawak (UNIMAS) Timbalan Naib Canselor (Penyelidikan dan Inovasi), Universiti Malaysia Sarawak, 94300 Kota Samarahan, Sarawak.
Phone Number	Office: 082-583 280 H/p: 013-845 6072
e-Mail	amomar@feng.unimas.my/ amomar13@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Vibration-based Micro Power Generator for Wireless Applications
Project Number	03-02-03-SF0001
Project Leader and Team Members	Leader: Hanim Salleh Members: Fazrena Azlee Hamid, Farrukh Nagi, Abdul Talip Zulkarnain and Azrul Ghazali
Field of Research	Renewable Energy
Project Summary	The various designs of vibration-based micro power generator were compared - electrostatic, electromagnetic and piezoelectric. The parameters that contribute to power generation were found and optimised. Simulations of the optimum mechanical-electrical model were conducted and prototype of the vibration-based micro generator were fabricated.
Publications/ Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nur Azwani, Fazrena Azlee Hamid, Hanim Salleh. 2008. Charge pumps application in the development of vibration-based micro power generator system for wireless application. <i>Malaysian Science And Technology Conference</i>, 16-17 Dec. 2008, Kula Lumpur. 2. Hanim Salleh and Norabita M Rashid. 2009. Wideband piezoelectric energy harvester for condition monitoring in power plant application. <i>Proceedings of The Sixteenth International Congress on Sound and Vibration</i>, 5- 9 July 2009, Krakow, Poland. 3. Khairul Adly Wahib and Hanim Salleh. 2008. Optimizing piezoelectric bimorph bender power output by using low level ambient vibration (2008). <i>Proceedings SCORED 2008</i>, 19 -20 Aug. 2008, Universiti Tenaga Nasional, Malaysia. 4. Nur Azwani, Fazrena Azlee Hamid, and Hanim Salleh. (2008). Preliminary study of charge pump, <i>Proceedings SCORED 2008</i>, 19-20 Aug. 2008, Universiti Tenaga Nasional 5. Nur Azwani, Dominic Hua Shi Hao, Low Peh Sie, Ng Yeow Chong, , Hanim Salleh, and Fazrena Azlee Hamid. 2008. "ESCAB"-An energy scavenging charging booth. <i>Proceedings SCORED 2008</i>, 19-20 Aug. 2008, Universiti Tenaga Nasional, Malaysia.

	Products: ESCAB II ESCAB I
Awards/Certificates	1. ITEX08: 1 GoldMedal. 2. Innova Brussels Eureka 08: 1 Silver Medal.
Additional Information	Linkages: Univ. of Southampton; Intelligent Power System Technology Sdn. Bhd; SOL-Lite (M) Sdn. Bhd.
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number	Office: 03-8928 7294
e-Mail	H/p: 012-299 7738 hanim@uniten.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	An Experimental and Numerical Investigation of the Pumping Effect in Rotating Orifices to Prevent Non- Contact Seal Leakage
Project Number	03-02-03-SF0008
Project Leader and Team Members	Leader: Mohd Azree Idris Members: Norshah Hafeez Shuaib, Mohd Zamri Yusoff, Kannan M. Munisamy and Hasril Hasini
Field of Research	Applied Sciences and Technologies
Project Summary	This project has developed the method of reducing seal leakage by using rotating orifices, which govern the air flow to prevent and to reduce the seal leakage inside the rotating components. The labyrinth seal method was used.
Publications/Products/ Outcomes	Products: A test rig for rotating orifices
Awards/Certificates	Malaysia Technology Expo 2009: 1 Gold Medal
Additional Information	Commercialisation: Potential
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number e-Mail	Office: 03 - 8928 7223 azree@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	An Improved High Strength Alumina-based Structural Ceramics for Industrial Applications
Project Number	03-02-03-SF0011
Project Leader and Team Members	Leader: Ramesh Singh Members: Chong Yee How, Prakash Kumarasamy, Constance Linda, Aw Khai Liang, Mohammed Luay Bakir, Siti Zubaidah Othman, Tan Chou Yong, Prabhu Murugesu, Meenaloshini Satgunam and Ting Chen Hunt
Field of Research	Materials Engineering and Metallurgy
Project Summary	The product is an improved alumina-based structural ceramics powder composition with the addition of small amounts of transition metal oxides as dopants that is sinterable at relatively low temperatures. The sintered body exhibited excellent mechanical characteristics, with relative density of > 96%, Vickers hardness of > 15 GPa and Flexural stiffness of > 350 GPa, being attainable via pressureless sintering at temperature as low as 1400°C.
Publications/ Products/ Outcomes	Products: An alumina solid ceramic body
Awards/Certificates	The 19th International Invention, Innovation & Technology Exhibition (ITEX) 2008: 1 Silver Medal
Additional Information	Linkages: Ceramics Technology Group, SIRIM Berhad (provided support with phase analysis by X-ray diffraction, Young's modulus measurement, SEM microstructural analysis and Vicker hardness measurement). Commercialisation: Potential
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number e-Mail	Office: 03-8928 7282 Ramesh@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Nanoporous Solid Acid Catalyst from Waste Materials for Oil Industries
Project Number	03-02-03-SF0014
Project Leader and Team Members	Leader: Halina Misran Members: Ramesh Singh, Rose Aini Kamarudin and Siti Zubaidah Othman
Field of Research	Functional Materials
Project Summary	The product is a low-cost mesoporous silica-alumina with high surface area at ca. 880 m ² /g, high pore volume and sharp pore size distributions. These materials are easily and readily produced from waste materials of coal fly ash and using microwave-assisted solgel technique. In addition, the materials has excellent active sites for catalysis and adsorption with the existence of tetrahedrally coordinated Al atom (Td).
Publications/Products/Outcomes	Products: A low-cost, mesoporous silica-alumina catalyst.
Additional Information	Linkages: UKM - structural characterisations and evaluation of product yield; SIRIM-AMREC - structural characterisations; UM - Solid-state Nuclear Magnetic Resonance; Relevant and potential industrial partner had been identified.
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
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e-Mail	halina@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fabry-Perot Interferometric Optical Pressure Sensor for Turbo-machinery Application
Project Number	03-02-03-SF0016
Project Leader and Team Members	Leader: Md Zaini Jamaludin Members: Fairuz Abdullah, Talal F Yusaf, Mohd Suhaimi Sauti and Hanim Salleh
Field of Research	Industrial Engineering
Project Summary	<p>This invention discloses a novel pressure sensor based on (1. linear cavity erbium-doped fiber laser (EDFL) and (2. Ring Cavity erbium-doped Fiber laser. The FBG simultaneously acting as a pressure sensor and cavity mirror on one fiber end. The FBG sensor used has a pressure range from 0 bar to 10 bar as well as up to 100 bar with a reflectivity of more than 90%. The sensor head in which it will react to pressure changes and provide real time pressure measurement with resolution up to 0.1 nm/bar. Both prototypes can measure pressure with accuracy of 0.1 bar and a resolution of 0.05% full scale. The system can be used in manufacturing, oil-palm industries, power generation turbine and oil and gas exploration field. These prototypes pressure laser sensor system can offer an attractive alternative to the currently available electro-mechanical sensor system.</p>
Publications/ Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Jamaludin, M.Z., Abdullah, M.K., Abdullah, F., Abbas, A.F., Mahdi, M.A. and Rahman, F. A. 2008. A hybrid high-gain double-pass erbium-doped fiber amplifier with dispersion compensation feedback loop", <i>Journal Optic and Laser Technology</i>. 40: 270-272. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Idris, S.M., Jamaludin, M.Z. and Abdullah, F. 2008. Development of laser source for optical networking. <i>Malaysia Science and Technology Conference</i>, 16-17 Dec 2008, Kuala Lumpur. 2. Jamaludin, M.Z., Abdullah, M.K., Abdullah, F. et al. 2007. Improving optical fiber transmission distance using chirped Bragg grating double-pass EDFA, <i>2nd International Engineering Convention</i>, 10-14 Mar 2007, Jeddah, Saudi Arabia. <p>Products:</p> <p>Pressure Sensor Utilising Linear Cavity & Ring Cavity Erbium Doped Fiber Laser</p>



Awards/Certificates	<ol style="list-style-type: none"> 1. ITEX 2010: 1 Gold Medal (Pressure sensor utilising ring cavity erbium-doped fiber sensor) 2. MTE 2010: 1 Silver Medal (Pressure sensor utilising linear cavity erbium-doped fiber sensor)
IP Status	Patent File Number PI 2010000312
Additional Information	<p>Linkages: Significant Technologies and TNB Research (provide the team Members with basic optical industrial requirement and specification as well as system standard operating procedure)</p> <p>Commercialisation:Potential</p>
Contact Institution/Entity Address Phone Number e-Mail	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8928 7282 H/p: 019-219 0817 mdzaini@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Electricity Generation System for Marine Current Energy Extraction in Malaysia
Project Number	03-02-03-SF0019
Project Leader and Team Members	Leader: Ungku Anisa Ungku Amiruldin Members: Thahirah Syed Jalal, Savithry K.Thangaraju, Omar Yaakob, Noor Miza Muhamad Razali, Intan Rahayu Ibrahim and Aidil Azwin Zainul Abidin
Field of Research	Renewable Energy
Project Summary	<p>This project developed a marine current turbine generation system. The system models the marine current turbine connected directly to a synchronous generator. The variable three-phase voltage is produced by the generator due to the variable marine current velocity. In order to produce a constant output voltage, the variable three-phase voltage is rectified and then passed through a DC-DC converter. The converter switching is then controlled in order to produce a constant DC output voltage at a required level to be supplied to the load. The modelled system was simulated using different controllers in order to compare the controller's performance to produce the required constant DC output voltage. The system was modelled in MATLAB/Simulink.</p>
Publications/ Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ghazali, A.H., UngkuAmirulddin, U.A. and Nagi, F. H. 2009. Buck boost DC-DC converter with fuzzy bang bang controller for marine current turbine application", <i>Proceedings of the International Seminar on Advances in Renewable Energy Technology (ISARET2009)</i>, 27-28 April 2009, UniversitiTenagaNasional, Malaysia. 2. Ghazali A.H., UngkuAmirulddin U.A., MuhamadRazali N. M. and Syed Jalal T. 2008. Marine current energy extraction system using a fuzzy logic controlled Buck-Boost DC-DC converter. <i>International Graduate Conference on Engineering and Science (IGCES)</i>, 23 - 24 December 2008, UniversitiTeknologi Malaysia, Malaysia. 3. Ghazali, A.H. and UngkuAmirulddin. 2008. Marine current as a new source of renewable energy. <i>UNITEN Student Conference on Research and Development (SCORED)</i> 26-27 Nov. 2008, Malaysia.



	<p>Outcome:</p> <ol style="list-style-type: none"> 1. A simulation of Marine Current Turbine Generation system with fuzzy logic controller.
Additional Information	Linkages: UniversitiTeknologi Malaysia (UTM)
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8921 2227 anisa@uniten.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Solving Technical Issues of Integrating Embedded Generators with Renewable Energy Sources in a Distribution Network
Project Number	03-02-03-SF0023
Project Leader and Team Members	Leader: Azni Wati Azizan Members: Agileswari K. Ramasamy, Au Mau Teng, Mahmoud A Younis, Tiagrajah V.Janahiraman, Vigna Kumaran Ramachandaramurthy and Wan Nurdiana Wan Ibrahim
Field of Research	Electrical and Electronic Engineering
Project Summary	Project objectives were to investigate the impact of integrating embedded generators in a distribution network; to provide an alternative solution to the network problem; to evaluate the network properties in relation to embedded generation; and to enhance awareness and knowledge of current and new techniques for mitigation in relation to networks with embedded generators.
Publications/ Products/ Outcomes	Outcomes: 1. The Influence of Embedded Generator Control Modes on an Electrical Network Power Flows and Voltage Profiles. 2. Distributed Generator Control Mode and its Effects on the Dynamaic Behaviour of a Distribution Network
Additional Information	Linkages: TNB (data, planning, initial software support, technical assistance for analysis; TCL (case study, site visitation, oprational information); MANITOBA HVDC Research (technical support for simulation).
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number	Office: 03-8921 2248 H/p: 014-329 2512
e-Mail	azniwati@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Composite Floor Using Local Industrial Wastes
Project Number	03-02-03-SF0030
Project Leader and Team Members	Leader: Abdul Monayem Akhand Members: Lee Choon Yong, Monashuhaila Mohamad, Muhammad Abu Eusuf and Wan Hamidon Wan Badaruzzaman
Field of Research	Construction Processes
Project Summary	Project objectives were achieved based on (1)cost-effectiveness – the cost of lightweight-aggregates-concrete composite slabs were lower than traditional solid slabs but did not differ too much to the existing composite slabs. However, the use of lightweight-aggregates-concrete composite slabs will reduce the sizes the other structural elements; and (2)structural performance – the performance of lightweight-aggregates-concrete composite slabs is almost the same as that of the existing composite slabs. However, the former performed better based on strength-to-weight ratio.
Publications/ Products/ Outcomes	Product: Composite Floor
IP Status	Copyright of Intelligent Software Lightweight Concrete Mix Design (IS_LWC_MD)
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number	Office: 03-8921 2272 H/p: 012-605 2993
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fabrication of Bi-2212/Nano-MgO Bulk Superconductor Elements for Applications in Power System
Project Number	03-02-03-SF0034
Project Leader and Team Members	Leader: Nasri A. Hamid Members: Zolman Hari, Elya Sufliza Marsom, Ahmad Kamal Hayati, Imad (Moh'd Khair) and Ewe Lay Sheng
Field of Research	Advanced Materials
Project Summary	The nanosize MgO added Bi-2212 bulk superconductor was fabricated using the co-precipitation method and heat treated by partial melt processing. From the results of our investigation, the nanosize MgO additions did not affect the transition temperature, T_c of the superconductor. However, the critical current density, J_c at 77K of the compounds slightly decreases for samples with nanosize MgO additions of higher than 5%. Furthermore, the SEM micrographs of the samples showed a decreasing trend in the average grain size with nanosize MgO addition. For sample with 5% addition, the SEM micrograph showed lower grains orientation angle with MgO particles resided between the platelet grains of the Bi-2212 phase. The nanosize MgO particles enhanced the connectivity of the Bi-2212 phase grains in the 5% addition sample and exhibited the highest J_c if compared with the other additions. With these properties, the MgO added Bi-2212 bulk superconductor has the potential to be used in the power system application such as the fault current limiter.
Publications/ Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Hamid, N.A., Shamsudin, N.F., Abd. Rahman, N., See, K.W. and Ewe, L. S. 2007. Microstructure and superconducting properties of nanosizeMgOadded Bi-2212 superconductor. <i>Journal of Solid State Science & Technology Letters</i> 14(2): 5. 2. N.A. Hamid, N.A., N.F. Shamsudin, N.F. and K.W. See, K. W. 2009. Superconducting properties and mechanical strength of MgOfibresreinforced bulk Bi-2212 superconductor ceramics. <i>Materials Research Innovations</i> 13 (3): 379-381. 3. Hamid, N.A., Shamsudin, N.F., Chin, K.M. and See, K. W. 2009. Fabrication of MgO Fibers and the mechanical properties of MgOfibers added Bi-2212 superconductor compounds", <i>Solid State Science & Technology</i> 17:16-23.



	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Hamid, N.A., Shamsudin, N.F. and See, K.W. 2008. Enhancement of electrical and mechanical properties in nanosizeMgOadded Bi₂Sr₂CaCu₂O₈ superconductor ceramics. in: Z.B. Guvenc, C. Ozdogen, D. Baleanu (Eds.), <i>Proceedings of the International Workshop on New Trends in Science and Technology</i>, 3-4 Nov. 2008, Ankara, Turkey. pp.1–5 (ISBN 978-975-6734-02-5). 2. Hamid, N.A., Shamsudin, N.F., Chin, K.M. and See, K.W. 2009. Mechanical strength of nanosizeMgO added dip-coated Bi₂Sr₂CaCu₂O₈ superconductortape at cryogenic temperature. <i>Proceedings (Abstract) of the International Conference on Materials for Advanced Technologies 2009 (ICMAT 2009), Symposium D: Functional Ceramic Materials, Oxide Thin Films and Heterostructures</i>, 28 June - 3 July 2009, Singapore, pp. 59. 3. Hamid, N.A., Shamsudin, N.F. and Chin, K. M. 2009. Electrical and superconducting properties of nanosizeMgO added dip-coated Bi-2212 superconductor tape. <i>Proceedings of ICEE 2009 3rd International Conference on Energy and Environment</i>, 7-8 December 2009, Malacca, 373-376 (DOI: 10.1109/ICEENVIRON.2009.5398628) <p>Product: Bi-2212/Nano-MgO Bulk Superconductor</p>
Additional Information	<p>Linkages:Universiti Putra Malaysia; Universiti Teknologi MARA; University of Jordan; TNB Research Sdn. Bhd. (use of testing facilities).</p> <p>Commercialisation:Potential</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8928 7252 nasri@uniten.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Micro Hydro Potentials in Malaysia
Project Number	03-02-03-SF0035
Project Leader and Team Members	Leader: Ibrahim Hussein Members: Muhamad Ibrahim Mahmud, Mohd Hariffin Boosroh, Lariyah Mohd. Sidek and Kumaran Palanisamy
Field of Research	Mechanical Engineering
Project Summary	The project objectives were achieved. Data obtained on micro hydro potential sites which included physiographic characteristics of site i.e name of river, location, highest and lowest elevation etc.; topography description, terrain description, estimation of catchment boundary and area; preliminary planning for sites which include estimation on the diversion for good flow, estimation of gross head etc.; and probable potential which include accessibility, energy demand etc. Pump as Turbine System (PATs) was found to be the most suitable for micro hydro system as the system is cost effective. Work carried out included design and development of test rig for PATs including conversion of induction motor to induction generator.
Publications/ Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Nathan a/l Raman and Ibrahim b. Hussein. (2008). Micro hydro potentials in Southern Region of Malaysia'. Malaysian Science and Technology Congress, Confederation of the Scientific and Technological Associations in Malaysia (COSTAM), Dec, CD ROM, Dec 2008, CD ROM, pg 565-573. 2. Nathan a/l Raman and Ibrahim bin Hussein. (2008). Reconnaissance studies to identify micro hydro potential in Southern Region of Malaysia. UNITEN SCORED, August 2008, Malaysia. 3. Nathan Raman and Ibrahim Hussein. (2009). Micro hydro potential at Sg. Kering, Kenaboi Region, Jelebu, N. Sembilan. <i>International Seminar on Advances in Renewable Energy Technology (ISARET2009)</i>, 27-28 April 2009, UNITEN, Malaysia.
Additional Information	Linkages: Jabatan Ukur dan Pemetaan Malaysia (JUPEM) (data and topography maps for all sites); Metrological Department Malaysia (rainfall and evaporation data); Jabatan Hal Ehwal Orang Asli Malaysia



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Stormwater Gross Pollutant Traps (GPT's) Decision Support System for River Rehabilitation
Project Number	03-02-03-SF0040
Project Leader and Team Members	Leader: Lariyah Mohd. Sidek Members: Aminuddin Ab Ghani, Chua Kok Hua, Mohamed Nor Mohamed Desa, Muhammad Khairudin Khalil and Norazli Osman
Field of Research	Civil Engineering
Project Summary	The decision support system developed to assist end user such as engineer, local authority or even developer to select the most suitable type of GPTs to be installed at site, according to specific catchment characteristic. The DSS estimates gross pollutant loads from rainfall data and land-use type information, as well as trapping performance and costs associated with alternative trapping strategies. The DSS will be a simple reference tool for engineers/designers to use in selecting and design appropriate gross pollutant traps (GPT's) for given resources and management needs, based on understanding of gross pollutant movement and trapping. The system also includes estimation of life cycle cost of the trapping devices based its estimated life span. Apart from that, the decision support system provides detail design facilities for proprietary and non-proprietary GPTs. Other than that, the decision support system features information on gross pollutant characteristic.
Publications/ Products/ Outcomes	Journal: 1. Lariyah, M.S., Mohd Nor, M.D., Nasir, M.N., Hidayah, B. and SitiZuleika, Z. 2009. Characteristic of gross pollutant in urban areas under tropical climate. <i>Journal of Hydrologic Environment</i> 1738-8449. Product: DeGPTs Software – Stormwater Gross Pollutant Trap Decision Support System for River Rehabilitation
Awards/Certificates	1. The Malaysia Technology Expo 2009: Invention & Innovation Competition (MTE2009) : 1 Gold Medal. 2. World Exhibition on Innovation, Research and New Technologies (INNOVA): 1 Gold Medal.



IP Status	Copyright Applied
Additional Information	<p>Linkages:Universiti Sains Malaysia, REDAC (provide data and technical advice); Drainage and Irrigation Department, DID (provide data and technical advice and adopt the output as a guideline for GPT's);Multimedia University (Knowledge Audit in De-GPT);</p> <p>ZHL Engineers Sdn Bhd (to enhance DeGPTs). DID and Local Council supported DeGPTs as end user.</p> <p>Commercialisation:In progress to commercialise the product with ZHL Engineers Sdn. Bhd.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.</p> <p>Office: 03-8928 7289 H/p: 019-278 0324 lariyah@uniten.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The Effects of the Impact of Viscoelastic Rods Using the Standard Linear Solid Model
Project Number	03-02-03-SF0048
Project Leader and Team Members	Leader: Abu Bakar Musa Members: Ahmad Kamal Zulkifle, Farrukh Nagi, Md Mujibur Rahman Minsur Ali and Zainudin Yahya
Field of Research	Resource-based Technology
Project Summary	There are finitely many discontinuity, a Maple computer program needs to capture all the discontinuity in order to calculate the residues. If we fail to capture any pole, a discontinuity jump will be shown in the result whereas the wave has not yet arrive at the interface. Mathematically and analytically, we have determined the distance between pole to pole so that we know where is the location of each pole. Then we calculate the total residues and add into the single pole residue to obtain the numerical result of instantaneous stress and velocity at the interface. A Multiple scale perturbation is obtained mathematically and analytically to validate the results. From this we can determine whether two viscoelastic materials are part company or stick together after the impact. If the stress is tensile then they are going to part company. If the stress is compresive, the both materials are going to stick together and the next coming wave will then will determine a new stress at the interface.
Publications/ Products/ Outcomes	Products: <ol style="list-style-type: none"> 1. A well written Maple computer Program to determine the finitely manydiscontinuitues(Poles) in order to calculate the residue for Complex inversion integral. 2. A well written Maple computer Program to determine the instantaneous stress and velocity at the interface numerically. 3. A well written Perturbation method to validate the results (instantaneous stress and velocity at the interface)
Additional Information	Linkages: This is a basic research but it has very good impact to industry because the viscoelastic materials are petroleum based products such as polythelene, polysterine and etc.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Modeling and Simulation of Resin Transfer Molding (RTM) Process
Project Number	03-02-03-SF0062
Project Leader and Team Members	Leader: Ahmad Kamal Zulkifle Members: Abu Bakar Musa, Faris Tarlochan and Ishak Hashim
Field of Research	Engineering Materials
Project Summary	The project is an alternative method to the modelling and simulation to manufacture polymer composite parts by autoclave processing method. In this work of Resin Transfer Molding (RTM), the composite part is fabricated by resin injection through a fiber perform as compared to compression of the stacked prepreps in the autoclave. The porous media flow theory is applicable to the RTM process and resin cure is modeled by the Arrhenius type thermo-kinetic equations. New finite difference schemes for the porous flow model will be developed. Heat transfer and resin cure model will be incorporated in the modeling and simulation procedure of the RTM process.
Additional Information	Linkages: Fakulti Sains Teknologi, Universiti Kebangsaan Malaysia
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) Dept of Engineering Sciences and Mathematics, College Engineering, Universiti Tenaga Nasional, Km 7 Jln Kajang-Puchong, 43009 Kajang, Selangor.
Phone Number e-Mail	Office: 03-8921 2261 ahmadkamal@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of High Toughness Hydroxyapatite by Incorporating Selective Dopants
Project Number	03-02-03-SF0073
Project Leader and Team Members	Leader: Ramesh Singh Members: Tan Chou Yong, Siti Zubaidah Othman, Meenaloshini Satgunam and Halina Misran
Field of Research	Advanced Materials
Project Summary	Hydroxyapatite (HA) is a bioactive material mainly because of its calcium-to-phosphorus ratio being similar to that of natural bone and teeth thus rendering this material an ideal candidate for clinical applications either in the form of a fully dense sintered material or as a coating material on a bioinert metallic implant. Although HA is a promising implant material but its use under load bearing applications such as artificial joints have been restricted by the low toughness ($< 1 \text{ MPam}^{1/2}$) and low flexural strength ($< 120 \text{ MPa}$) of the ceramic body. Hence, to Address this issue, the Ceramics Technology Lab. at UNITEN under the Leadership of Prof. Ramesh Singh have recently completed a research in attempt to improve the mechanical properties of sintered hydroxyapatite. The production of nanocrystalline HA powders using a novel wet chemical precipitation method was developed in this research and a Malaysian Patent entitled was subsequently filed. Indeed, the nano powder produced exhibits the composition of a stoichiometric HA and the crystals compared very favourably with that of enamel of a human tooth. In addition, the nano particles revealed improved sinterability and superior mechanical characteristics when compared to a commercial available powder.
Publications/ Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Ain, R.N., Sopyan, I. and Ramesh, S. 2008. A bioceramic that exhibits high toughness and improved densification for biomedical application preparation of biphasic calcium phosphate ceramics powders and conversion to porous bodies. <i>Proceedings of The International Conference on Construction and Building Technology (ICCBT 2008): Modern Developments in Renewable Energy & Sustainability</i> , Ed. by H. Al-Matta

	<p>2. Toibah, A.R., Sopyan, I., Hamdi, M. and Ramesh, S. (2008).Development of agnesium-doped biphasic calcium phosphate through sol-gel method. IFMBE Proceedings Biomed 2008 "4th Kuala Lumpur International Conference on Biomedical Engineering (International Federation for Medical and Biological Engineering, Vol. 2</p> <p>3. Tan, C.Y., Ramesh, S. and Hamdi, M. (2007). The Effect of MgO on the sinterability of hydroxyapatite. <i>Proceedings of the Malaysia-Japan International Symposium on Advanced Technology 2007 (MJISAT2007)</i>. Paper No. MJISAT-184 (Malaysia-Japan University Center, UTM, Malaysia, 1215 November 2007).</p> <p>Journal:</p> <p>1. Ramesh, S., Tan, C.Y., Hamdi, M., Sopyan, I. and Teng, W. D. 2008. The Influence of Ca/P Ratio on the Properties of Hydroxyapatite Bioceramic. <i>Proceedings of SPIE, Vol. 6423: International Conference on Smart Materials and Nanotechnology in Engineering</i>, Ed. by Shanyi Du, Jinsong Leng & Anand K. Asundi (SPIE Di Synthesis of Nano Sized Hydroxyapatite Powder Using Sol-Gel Technique and Its Conversion to Dense and Porous Bodies. I. Sopyan, S. Ramesh & M. Hamdi. Indian Journal of Chemistry, 47A,1626-1631 (2008).</p>
Awards/Certificates	PECIPTA 2009: 1 Gold Medal
IP Status	Malaysia Patent Pending: "A Method for Manufacturing Hydroxyapatite Bioceramic" (Pl. 20043325)
Additional Information	<p>Linkages:Collaboration were achieved with the following organisations:IIUM - with Dr. Iis Sopyan on the use of SEM facilities; SIRIM - with Dr. Teng Wan Dung on the use of mechanical test facilities.</p> <p>Commercialisation:Potential</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8928 7282 Ramesh@uniten.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Superheterodyne Microwave Interferometer for Non-Contact Vibration Measurements on Rigid Structures
Project Number	03-02-03-SF0074
Project Leader and Team Members	Leader: Chandan Kumar Chakrabarty Members: Norashidah Md Din, Ong Hang See and Sivadas Thiruchelvam
Field of Research	Electrical and Electronic Engineering
Project Summary	The product is a superheterodyne microwave interferometer for non-Contact dielectric measurements of materials. The device is able to measure and obtain the complete thickness profile of any dielectric substrate without any Contact. The 2D thickness profiling system consists of an interferometer and integrated with a 2D motion rack. The object placed in the equipment can be moved in 2 dimensions namely in the z direction and the y direction. This will allow the interferometer to be set in a fixed position while the 2D motion rack gradually. The rack moved the dielectric material in small steps until it covered the area of the entire dielectric material.
Publications/ Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Badjian, M. H., Chakrabarty, C. K., Devkumar, S., Goh Chin Hock. 2008. Circuit modeling of an UWB patch antenna. <i>RF and Microwave Conference, 2008</i>. RFM 2008. IEEE International. 3 – 6. 2. Badjian, M. H., Chakrabarty, C. K., Hock, G. C., Devkumar, S. 2008. The Effects of Slotline on Directivity and Return Loss Characteristics of a Planar UWB Antenna. <i>Journal of IEEE Xplore Digital Library</i>. 148 – 151. <p>Products: Two Dimensional Non-Contact Thickness Profiling of Dielectric Material</p>
Awards/Certificates	The 19th International Invention, Innovation & Technology Exhibition (ITEX) 2008: 1 Silver Medal
IP Status	Patent application will be filed
Additional Information	Linkages: Agilent Techmark

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Development of a New Smart Sensing System for Liquid Phase and Composition Monitoring in Oil Palm Tissue Culture Growth
Project Number	03-02-03-SF0075
Project Leader and Team Members	Leader: Abu Bakar Hasan Members: Jamaludin Omar, Ahmad Tarmizi Hashim and Ahmad Jais Alias
Field of Research	Engineering Sciences
Project Summary	Sensor based on optical. Used in measuring the weight of callus multiplication in oil palm tissue culture.
Publications/Products/ Outcomes	1 article in national scientific Publications 1 paper delivered at national conferences/seminars
IP Status	Copyright
Additional Information	International Linkages: PORIM Industrial Linkages: Tissue culture research in oil palm industry.
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number e-Mail	Office: 03-8921 2377 abakarh@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Re-cycling of Waste Materials from Steel Industry for Production of NiZn Ferrite Suppressor Using Millscale Derived Hematite
Project Number	03-02-03-SF0076
Project Leader and Team Members	Leader: Zolman Hari Members: Woon Hai Song, Rosdi Ibrahim, Noorhana Yahya, Noor Baa'yah Ibrahim, Nasri A. Hamid, Md. Mujibur Rahman and Adnan Roseli
Field of Research	Environmental Sciences
Project Summary	The result of the sample above show the increasing of coercive force and impedance. That properties is suitable for EMI suppressor application.
Publications/Products/Outcomes	Products: EMI suppressor
Additional Information	Commercialisation: Commercial Potential
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number	Office: 03-8928 7242 H/p: 019-322 5245
e-Mail	zolman@uniten.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Solid State Dye-sensitised Titanium Dioxide Photoelectrochemical Cells
Project Number	03-02-03-SF0080
Project Leader and Team Members	Leader: Mohd. Yusri Abd. Rahman Members: Siti Fazlili Abdullah, Muhammad Yahaya, Muhamad Mat Salleh and Azizan Ahmad
Field of Research	Advanced Materials
Project Summary	The solar cell utilised a nanoparticle TiO ₂ prepared by controlled hydrolysis technique and an electrolyte of PAN-PC-LiClO ₄ prepared by solution casting technique. The best Jsc and Voc of the device were 2.82 μAcm^{-2} and Voc of 0.58 V, respectively, obtained at the conductivity of $4.2 \times 10^{-4} \text{ Scm}^{-1}$ and intensity of 100 mW cm^{-2} . The Jsc was improved by about three times by introducing nanoparticle TiO ₂ and by using a solid electrolyte of PAN-PC-LiClO ₄ replacing PVC-PC-LiClO ₄ in the device.
Publications/ Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Rika, Ahmad, A., Rahman, M.Y.A. and Salleh, M. N. 2009. Preparation and characterization of PAN based solid polymeric electrolyte for dye-sensitized solar cells, <i>Physica B: Condensed Matter</i>, 404: 1359-1361. 2. Rika, Rahman, M.Y.A., Salleh, M.M., Umar, A.A. and Ahmad, A. 2009. Synthesis and characterization of TiO₂ nanoparticle films coated with organic dyes, <i>Physica B: Condensed Matter</i>, 404: 1420-1422. 3. Noor, S.A.M., Ahmad, A. and Rahman, M.Y. A. 2009. Preparation and characterization of a solid polymeric electrolyte of PEO-ENR (70-30)-LiClO₄, <i>Current Trends in Polymer Science, Research Trends</i>. 13: 17-23. 4. Rika, Rahman, M.Y.A., Salleh, M.M., Umar, A.A., and Ahmad, A. 2010. Effect of grain size of nanoparticle TiO₂ coated dye on the short-circuit current density and open-circuit voltage of a solar cell of ITO/TiO₂/ PAN-PC-LiClO₄/graphite, <i>Journal of Applied Polymer Science</i>. 116: 3278-3282. 5. Rika, Rahman, M.Y.A., Salleh, M.M., Umar, A.A. and Ahmad, A. 2010. Effect of ionic conductivity of a PAN-PC-LiClO₄ solid polymeric electrolyte on the performance of a TiO₂ photoelectrochemical cell, <i>Journal of Solid State Electrochemistry</i>. 14: 2089-2093.

	Products: A prototype of dye-sensitized solar cell of ITO/TiO ₂ /PAN-PC-LiClO ₄ /graphite
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Innovation of Ventilated Brake Disc Blade Design for Cooling Improvement
Project Number	03-02-03-SF0084
Project Leader and Team Members	Leader: Kannan M. Munisamy Members: Savithry K.Thangaraju, Norshah Hafeez Shuaib, Muhamad Ibrahim Mahmod, Mohd Zamri Yusoff, Kumaran Palanisamy and Hasril Hasini
Field of Research	Mathematical Sciences
Project Summary	The product is an improved version of disk brake design for diameter 255mm. About 30% improvement of heat transfer.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Munisamy, K. M.,Norshah, H. S., Mohd. Zamri,Y., and Thangaraju, S.K. 2011. Flow Improvement Using CFD for Passenger Car:Bi and Uni-Directional Application, <i>Jurnal Mekanikal</i> 32: 73 – 85. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. S. Savarimuthu, K. M. Munisamy, S. K. Thangaraju, Application of ANSI/ASME TC 19.1 Test Uncertainty in Symmetric and Asymmetric Uncertainty Analysis of Air Flow Measurement through a Circular Ducting Using Pitot-Static Tube in Disc Brake Laboratory,<i>Proceedings of UNITEN Student Conference on Research and Development 2004</i>, 19 – 20 August 2004,Kuala Lumpur. 2. S. Savarimuthu, B. A. Khidir, K. M. Munisamy, Operation and Optimization of G-Code Programming for the Fabrication of Ventilated Brake Disc Test Specimen Using Okuma OSPU10M CNC Milling Machine, <i>Proceedings of UNITEN Student Conference on Research and Development 2004</i>, 19 – 20 August 2004,Kuala Lumpur. <p>Products: Disk brake : Curved 1 and Curved 2, Aerofoil</p>
Additional Information	Commercialisation: Commercial Potential

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Concrete Utilising Recycled Tire Rubber
Project Number	03-02-03-SF0091
Project Leader and Team Members	Leader: Bashar S. Mohammed Members: Muhd Fadhil Nuruddin, Muhammad Fauzi Mohd Zain and Hashem Mohd Ali Al-Mattarneh
Field of Research	Advanced Materials
Project Summary	Modified rubbercrete hollow block made of cement, fly ash, silica fume, coarse aggregate and fine aggregate partially replaced with crumb rubber collected from waste rubber reproduction plant. This rubbercrete hollow blocks exhibit potential for use as a direct substitute for conventional concrete hollow blocks. Its strength as an engineering material appears to lie in their ability to reduce the heat transmission, increase the electrical resistivity and increase the sound absorption. In addition, the rubbercrete hollow blocks can be used as a load bearing systems. Modified rubbercrete hollow block made of cement, fly ash, silica fume, coarse aggregate and fine aggregate partially replaced with crumb rubber collected from waste rubber reproduction plant. This rubbercrete hollow blocks exhibit potential for use as a direct substitute for conventional concrete hollow blocks. Its strength as an engineering material appears to lie in their ability to reduce the heat transmission, increase the electrical resistivity and increase the sound absorption. In addition, the rubbercrete hollow blocks can be used as a load bearing systems.
Publications/ Products/ Outcomes	Proceeding/Conference/Seminar: 1. Mohammed, B. S. and Najwa Jwaini. 2009. Engineering Properties of concrete containing large volume of recycled tire rubber, <i>Proceedings of the 24th International Conference on Solid Waste Technology and Management</i> , USA. 1337-1346. Products: Rubbercrete Hollow Block
Awards/Certificates	1. The Belgian and International Trade Fair for Technological Innovation, 13-15 November 2008 (Brussel; Belgium) 1 Gold Medal with Special Mention, (Hybrid Composite Wall System (CWS) Using Local Industrial Waste).

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

	<ol style="list-style-type: none"> 2. Development of concrete block using recycled materials: used paper and crumb rubber, International Invention, Innovation & Technology Exhibition (ITEX) 2007, KLCC Kuala Lumpur. 3. INDEC Competition, 2007, Universiti Tenaga Nasional: 1 Gold Medal and first prize overall winner (Permeable Rubber Concrete) 4. Post graduate competition: 1 Silver Medal. Engineering Properties of Concrete Containing Recycled Tire Rubber: Malaysian Technology Expo 2010: 1 Silver Medal
Additional Information	<p>Linkages:Hume Cemboard Industries (Malaysia) Sdn. Bhd (to produce a hybrid composite wall system using rubbercrete (crumb rubber with cement) as infill materials).</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8921 7231 H/p: 012-575 6460 bashar@uniten.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Multi Dielectric Sensors for Characterisation of Contaminated Soil
Project Number	03-02-03-SF0092
Project Leader and Team Members	Leader: Lariyah Mohd. Sidek Members: Muhammad Fauzi Mohd Zain, Mohd.Raihan Taha, Hassan Basri, Hashem Mohd Ali Al-Mattarneh and Azmi Ibrahim
Field of Research	Engineering Sciences
Project Summary	Detection of various types of contamination in soil material such as Petroleum, Leachate, Heavy Metals. Quantify the level of soil contamination. Determine soil moisture content. Can be used for characterisation of several other liquids such as water and waste water.
Publications/ Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Hashem At Martaneh, Lariyah Mohd Sidek, Rabah & Mohd Pauzi (2007), Development on Non Destructive Dielectric Sensing System for Determination Type and Level of Soil, 3rd Conf for the Int of Chemistry Environment, Kuwait. 2. Hashem At Martaneh, Rabah, Mohd Pauzi, & Lariyah Mohd Sidek (2007), Effect of Leachete From Solid Waste on the Dielectric Dispersion of Sandy Soil, The Seventh Saudi Engineering Conference Towards Engineering Environment to Merge in a Competitive Economy 3. Rabah Ismail, M. F. M. Zain, Hashem Al-Mattarneh, Lariyah Mohd Sidek & Mohd Raihan Taha (2008), Determination of Petroleum Contamination Level of Sandy Soil using Electromagnetic Measurement Techniques, Int. Conf. on Construction & Building Technology (ICCBT08), Kuala Lumpur, Malaysia 4. Rabah Ismail, Hashem Al-Mattarneh, Lariyah Mohd Sidek, M. F. M. Zain & Mohd Raihan Taha (2008), Dielectric Properties of Soil contaminated by Solid Waste Leachate in the Frequency Range of 100 kHz to 1000kHz, Int. Conf. on Construction & Building Technology (ICCBT08), Kuala Lumpur, Malaysia 5. H.M.A.Al-Mattarneh, L.M.Sidek, R.M.A.Ismail, M.F.M.Zain, M.R.Taha, Dielectric Dispersion Characteristics of Sandy Soil Contaminated by Pb and Cd, Int.Conf. on Construction & Building Technology (ICCBT08), Kuala Lumpur, Malaysia

	<p>Name of Product: Multi Dielectric Sensor</p>
Awards/Certificates	<p>Bronze Medal - The Malaysia Technology Expo 2008: Invention & Innovation Competition (MTE2008).</p>
IP Status	<p>Submit application for Patent of Multi-Dielectric Sensor.</p>
Additional Information	<p>Industrial Linkages:ZHL Engineers Sdn. Bhd. is a strategic partner to develop multidielectric for infiltration facilities. Commercialisation:ZHL Engineers Sdn. Bhd. is interested to commercialise the product.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8928 7289 H/p: 016-620 6128 lariyah@uniten.edu.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The recycling of local steel mill by-product (mill scale) into high industrial grade permanent magnets
Project Number	03-02-03-SF0095
Project Leader and Team Members	Leader: Woon Hai Song Members: Zolman Hari, Rosdi Ibrahim, Noorhana Yahya and Lim Kean Pah
Field of Research	Environment Technology/Industry
Project Summary	The isotropic strontium hexaferrite was prepared using waste-derived hematite as raw material. The magnetic properties of the product such as maximum-energy-product (BH) _{max} , remanence and coercivity are 1.0 MGOe, 1500 G and 2500 Oe respectively, well fall in the acceptable range as an industrial grade permanent magnet quality. The waste-derived hard ferrite may find its applications as component of a DC motor, loud-speaker, toy, holding material and etc.
Publications/ Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Woon, H.S., Lim, K.P., Puteri, N, Rozaimah.R. and Tan, C.Y. 2009. Synthesis and Characterization of Hot-roll and Cold-roll By-product-derived Strontium Hard Ferrites, <i>American Journal of Engineering and Applied Sciences</i>. 2:580-583. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Woon, H.S., Puteri, N., Rozaimah, R., Lim, K.P. and Ho, C.K. 2009. Magnetic properties of hot-roll and cold-roll byproduct-derived Strontium hard ferrites, <i>Proceedings of RAMM and ASMP</i>, 1-3 June 2009, USM, Penang. 2. Woon, H.S., Lim, K.P. Tan, C.Y., Ewe, L.S. and Farah, H. 2008. Surface morphology and phase analysis of mill scale. <i>Proceedings of Student Conference on Research and Development (SCORED2008)</i>, 19-20 August 2008, UNITEN, Selangor. 3. Woon, H.S., Lim, K.P., Tan, C.Y., Puteri, N. and Ewe, L.S. 2008. Effect of Fe3O4 addition on Strontium hard ferrites. <i>Proceedings of RCSSST 2008 Conference, 30 November - 2 December 2008</i> Port Dickson, Negeri Sembilan. 4. Woon, H.S., Lim, K.P., Puteri, N., Ewe, L.S. and Tan, C.Y. 2009. Color analysis of cold rolling steel waste-derived hematite. <i>Proceedings of The 25th Regional Conference on Solid State Science and Technology</i>, 21-23 Dec. 2009, Bayview Hotel, Penang.

	Product: Waste-derived Isotropic Strontium Hard Ferrite (Permanent Magnet)
Awards/Certificates	MTE2010 (Malaysia Technology Expo 2010): 1 Gold Medal
Additional Information	Linkages: ITMA UPM; AMREC SIRIM; Southern Steel Bhd (Butterworth), Ann Joo St Commercialisation: Potential
Contact Institution/Entity Address Phone Number e-Mail	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8921 2294 H/p: 012-201 7523 hwoon@uniten.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a New Artificial Intelligent Controlled Neodymium-Doped Yttrium Aluminum Garnet (Nd:YAG) Laser Module
Project Number	03-02-03-SF0104
Project Leader and Team Members	Leader: Johnny Koh Siaw Paw Members: Tiong Sieh Kiong, Tin Win, Syed Sulaiman Kaja Mohideen, Normy Norfiza Abdul Razak, Ishak Aris and Goh Su Mei
Field of Research	Engineering Sciences
Project Summary	The product is an improved laser scanning module to optimise the scanning speed and reduce the power consumption of the laser. The product can be applied for both vision and laser scanning system.
Publications/ Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Path Optimization in Laser Scanning System. Accepted for 2nd International Conference on Science and Technology (ICSTIE2008). 2. Path Optimization Using Genetic Algorithm in Laser Scanning System. Proceeding of International Symposium of Information Technology (ITSIM'08). 3. Implementing Genetic Algorithm in Laser Scanning Path Optimization, SCORED 2008, Universiti Tenaga Nasional. <p>Products: AI-Based Laser Scanner</p>
IP Status	A Multiple Beam Laser Scanning System, Patent Pending
Additional Information	Industrial Linkages: The collaborations are in terms of design and fabrication.
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number e-Mail	Office: 03-8921 2245 johnnykoh@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	A Novel Microwave Mediated Hydrophobically Modified Chitosan Nanoparticles as Molecularly Imprinted Polymer Matrix for Removal of Estrogenic Pollutants from Contaminated Wastewater
Project Number	03-02-03-SF0105
Project Leader and Team Members	Leader: Saifuddin M. Nomanbhay Members: Syed Javaid Iqbal, Siti Fazlili Abdullah, Chai Mee Kin, Chua Kok Hua and Kumaran Palanisamy
Field of Research	Biochemistry
Project Summary	A rapid and simple method to synthesise molecularly imprinted particles receptors for estrogenic compounds via microwave mediated non-covalent molecular imprinting technique with estradiol, which is generally more stable in water as the template has been developed using hydrophobically modified chitosan matrix and polyacrylamide gel grafting as polymer for molecularly imprinting with focus on optimisation of polymerisation parameters. Characterisation work with focus on the comparisons between the grafting MIP has been performed and the MIP was prepared by simple entrapment method in terms of material morphology and adsorptive properties. The dynamics of adsorption and desorption of the chitosan imprinted polymer has also been characterised. Chromatographic studies to show that the chitosan has a very promising prospect as a highly selective molecularly imprinted material for protein separation in aqueous environment was carried out.
Publications/ Products/ Outcomes	Products: A molecularly imprinted polymer (MIP) for SPE application in removal of endocrine disruptive compounds.
Additional Information	Linkages: There was collaboration with UPM for the services of TEM and FTIR analysis; A particular company may be interested in using the method developed to produce nanoparticles for application as fungicides. It is now in the initial field trial stage.
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) Department of Engineering Sciences, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number	Office: 03-8928 7285 H/p: 016-272 3662
e-Mail	saifuddin@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Enhancing Strength and Durability of Concrete with Pulp and Paper Mill Residuals
Project Number	03-02-03-SF0115
Project Leader and Team Members	Leader: Bashar S. Mohammed Members: Taksiah A.Majid, Muhd Fadhil Nuruddin, Monashuhaila Mohamad, Kamal Nasharuddin Mustapha and Hashem Mohd Ali Al-Mattarneh
Field of Research	Advanced Materials
Project Summary	Composite Wall System (CWS) made of cement bonded wood particles panels are fabricated from wood-construction waste particles and Portland cement. The cavity of the wall is filled with either papercrete fabricated from paper sludge (collected from paper mill treatment plant) or rubbercrete fabricated from crumb rubber (collected from waste rubber tires) and Portland cement. CWSs exhibit potential for use as a direct substitute for conventional structural materials. Their strength as an engineering material appears to lie in their ability to absorb energy. They can be used in applications requiring sound absorption and fire resistance. They also exhibit exceptional behavior in the dissipation of mechanical energy or toughness.
Publications/ Products/ Outcomes	Product: Hybrid composite wall system using local industrial waste: panels of cement bonded wood particles infilled with papercrete or rubbercrete "Noval Solution For IBS"
Awards/Certificates	<ol style="list-style-type: none"> 1. Gold Medal-Malaysia Technology Expo 2008: 1 Gold Medal. 2. The Belgian and International Trade Fair for Technological Innovation: 1 Gold Medal with mention. 3. Institute of mechanised construction and rock mining, Warsaw Poland: Prize for Innovation
Additional Information	Linkages: Universiti Petronas Malaysia (SEM and x-ray facilities); Hume Cemboard Industries (Malaysia) Sdn. Bhd. (production of a hybrid composite wall system using papercrete as in fill materials)
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number	Office: 03-8921 7231 H/p: 012-575 6460
e-Mail	bashar@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	A New Electromagnetic Prime Mover for Efficient Transports Applications
Project Number	03-02-03-SF0120
Project Leader and Team Members	Leader: Noor Miza Muhamad Razali Members: Ungku Anisa Ungku Amiruldin, Halil Hussai and Aidil Azwin Zainul Abidin
Field of Research	Energy Technology
Project Summary	The prototype is designed based on the internal combustion engine principal reciprocating motion and electric motor magnetism concepts. The force produced from the solenoids are always tangential to the crankshaft which maximises the overall torque on the shaft. The solenoids also operate independently of each other that makes the whole system easier to maintain especially during coils burn out. Powered by 20V power supply with a maximum output power of 46.08 W at 1750 rpm. The maximum torque that the prototype can produce is 0.65 N.m at 10 rpm. The peak efficiency is rated at 99.86 that produces 0.2 N.m of torque at 1800 rpm speed. Initial tests implied that this prototype is suitable for DC motor applications.
Publications/ Products/ Outcomes	Products: Solenoid Powered Engine (SPE) - Prototype SPE 8H13U-1
Additional Information	Linkages: Iles Research Sdn. Bhd.
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number	Office: 03-8928 7282 H/p: 016-311 0779
e-Mail	noormiza@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Next Generation Quality of Service (QoS) Based Optical-IPTransceiver
Project Number	03-02-03-SF0123
Project Leader and Team Members	Leader: Fairuz Abdullah Members: Md Zaini Jamaludin, Ida Suzana, Sharifah Azma, Hazlinda Hakimie and Norashidah Md Din
Field of Research	Communication
Project Summary	The system developed is an enhanced monitoring system that can monitor the health of the whole physical transportation condition in EPON. The Monitoring system involves Fiber Bragg Gratings (FBGs) as the main component to reflect the monitoring signals centered at 1550 nm propagated from OLT to ONUs and from ONUs back to OLT. Implementation of this system can be done in a live system therefore minimizing downtime and cost for implementation. FBGs were installed in each transceiver at each ONUs to promote higher efficiency and seamless EPON services.
Publications/ Products/ Outcomes	Product: Ethernet Passive Optical Network with Live Monitoring System
Additional Information	Linkages: Significant Technologies Sdn. Bhd.
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number e-Mail	Office: 03-8921 2020 fairuz@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Layered Organic-inorganic Nanohybrid Materials: Herbicides Intercalated into Layered Double Hydroxide and Its Controlled Release Properties
Project Number	03-02-03-SF0126
Project Leader and Team Members	Leader: Zaemah Jubri@Mohd Zufri Members: Rose Aini Kamarudin, Siti Halimah Sarijo and Mohd Zobir Hussein
Field of Research	Other Applied Sciences and Technology not elsewhere classified
Project Summary	The presence of herbicides in water, soil and air has raised concerns for the protection of the environment, in particular protection of drinking water quality. An important way to control the contamination of herbicides in water is the design of formulations that can prevent the accumulation of the chemicals in the environment. The development of organic-inorganic nanocomposite nanohybrid will be carried out by intercalating herbicides such as (3,4-dichlorophenoxy) acetic acid into the interlayer structure of layered double hydroxide using direct co-precipitation technique. PXRD and CHNS analysis will be used to confirm the intercalation of herbicides into the interlayer of Zn-Al layered double hydroxide. The release of herbicide anion from the interlamellae of organic-inorganic nanohybrid material could be controlled by adjusting the concentration and the anion in the release media or the amount of the nanocomposite. The advantages of controlled release formulation developed based on herbicides-Zn-Al nanocomposite are to prevent the accumulation of herbicides in the environment, prolong duration of action, high stability with slow release capability of the active agent and can be synthesised at a relatively low cost.
Publications/ Products/ Outcomes	Products: Zinc-aluminium-beta-naphthoxyacetate nanocomposite (b-SR)
Additional Information	Malaysia Technology Expo (MTE) 2010: 1 Bronze Medal
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number	Office: 03-8928 7253 H/p: 017-373 5184
e-Mail	zaemah@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Prototype Liquid Nitrogen Cooled Superconducting Motor for Applications in Industry
Project Number	03-02-03-SF0132
Project Leader and Team Members	Leader: Nasri A. Hamid Members: Khairul Salleh Mohamed, Imad (Moh'd Khair) Rashid, Ahmad Kamal and Hayati Yahya
Field of Research	Engineering Materials
Project Summary	<p>Superconducting motors have great potential for applications in the power industry due to its compactness, lightweight and high efficiency in comparison to the conventional motors. In this study, we developed a low wattage dc motor with a fixed superconducting field winding. We chose a 2-pole type winding in the construction of the superconducting motor. Each field coil was designed with a racetrack-shaped double pancake wound using DI-BSCCO Bi-2223 superconducting tape. The DI-BSCCO superconducting tape is an innovative bismuth-based high-temperature superconductor tape which is commercially available and developed by the Sumitomo Electric Industries Limited, Japan. The estimated critical current value of the coil due to bending is about 30 A at 77 K in zero magnetic field. The tape has almost the same mechanical properties with the conventional copper wire. The field coils were mounted around laminated field iron cores. The superconducting motor operates at liquid nitrogen temperature and utilising the iron cores to acquire sufficient output power. The torque performance of the superconducting motor was measured and compared with the performance of the conventional copper-wound motor. The superconducting electric motor was found to consume lower power to produce the same output as the conventional copper-wound motor.</p>
Publications/ Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> Chin, K.M., Hamid, N.A. and Abd. Rahman, M.Y. 2011. Investigation on the performance of DI-BSCCO superconducting electric motor. <i>Natural Science</i>.3: 36-41. <p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> Chin, K.M., Hamid, N.A., Sahari, K.S.M. and See, K. W. 2009. Development of a prototype of bench- top liquid nitrogen cooled superconducting motor. 25th.

	<p><i>Regional Conference on Solid State Science & Technology 2009, 21-23 Dec, Penang.</i></p> <p>Products: Superconducting Electric Motor prototype</p>
Additional Information	<p>Linkages: TNB Research; UiTM, Shah Alam and University of Jordan, Amman (structural and electrical studies of the superconducting coil); Sumitomo Electric Company Limited, Japan</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8928 7252 nasri@uniten.edu.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Enhancement of Car Crashworthiness Subject to an Impact with a Heavy Vehicle
Project Number	03-02-03-SF0134
Project Leader and Team Members	Leader: Faris Tarlochan Members: Md. Mujibur Rahman and Shahida Begum
Field of Research	Engineering Sciences
Project Summary	Overall, the project objectives were achieved. We managed to generate a high energy absorbing composite tube and an effective under guard rideprotection device. The combination of these on the car and and heavy vehicle is capable on reducing the casualty during collisions between such vehicles (theoretically) based on the simulations.
Publications/ Products/ Outcomes	Publications: 1. F. Tarlochan. Crash Energy Absorption of Composite Sandwich Structures, <i>4th International Conference on Recent Advances in Materials, Minerals and Environment; and 2nd Asian Symposium on Materials and Processing (RAMM &ASMP 2009)</i> . 2. A. Faridz and F. Tarlochan. Application of plackett-burman experimental design through hyperstudy for sensitivity study in frontal crash performance.
Additional Information	Industrial Linkages: The project had a good partnership with a representative from PROTON's CAR Crash Analysis team assisting in the crash analysis. His input was important in modeling correctly the crush elements via finiteelement analysis. Commercialisation: To discuss with PROTON and to share our findings on the effectiveness of composite tubes in crashworthiness application and to propose the inclusion of composite material in their vehicle design.
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
Phone Number	Office: 03-8921 2020 H/p: 012-628 1567
e-Mail	rameshjit@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The Extraction of Silica and Alumina from Coal Fly Ash Using Microwave Irradiation for the Synthesis of Zeolites
Project Number	03-02-03-SF0139
Project Leader and Team Members	Leader: Rose Aini Kamarudin Members: Zaemah Jubri@Mohd Zufri and Zainab Ramli
Field of Research	Applied Sciences and Technologies
Project Summary	The extraction of silica and alumina from coal fly ash using microwave irradiation from a domestic microwave oven has been successfully executed. The Box-Behnken design of Response Surface Methodology was employed to reduce the number of experiments performed to obtain optimum extraction conditions. Zeolites which were successfully synthesised are Na-X, Na-P, Na-A and sodalite octahydrate. The cation exchange capacities of Na-X, Na-P and Na-A zeolites were measured. Na-A zeolites have the potential to be used as water softener.
Publications/ Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Rose Aini Kamarudin, Abdul Salam Matlob, Zaemah Jubri and Zainab Ramli, "Extraction of Silica and Alumina from Coal Fly Ash for the synthesis of zeolite", <i>Proceeding of ICEE 2009, 3rd International Conference on Energy and Environment</i>, 7-8 December 2009, Malacca. 2. Mohd Yazre Mohd Yasin, Rose Aini Kamarudin and Zaemah Jubri, "Microwave Irradiation of Silica and Alumina from Coal Fly Ash for the synthesis of Na-X and Na-P Zeolites". <i>25th Regional Conference on Solid State Science & Technology 2009</i>, 21-23 December 2009, Penang. 3. Rose Aini Kamarudin, Abdulsalam Matlob, Zaemah Jubri, Zainab Ramli, Extraction of Silica and Alumina from Coal Fly Ash using Box-Behnken Design for the synthesis of Na-A zeolites", <i>Proceeding of the 25th International Conference on Solid Waste Technology and Management</i>, 14-17 March 2010, Philadelphia, USA.
Additional Information	Gold Medal in the 21st <i>International Invention, Innovation & Technology Exhibition, ITEX 2010</i> , "Waste to Wealth: Coal Fly Ash to Na-Zeolites", Kuala Lumpur, 14th -16th May 2010.



Additional Information	Linkages: Universiti Teknologi Malaysia, Skudai (co-supervision of PhD student; advise on synthesis; sample characterisation such as FTIR, solid state NMR spectroscopy). Commercialisation: Potential
Contact Institution/Entity Address Phone Number e-Mail	Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8928 7233 Rose@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Self-compacting Concrete with Good Fire Spalling Properties
Project Number	03-02-03-SF0140
Project Leader and Team Members	Leader: Kamal Nasharuddin Mustapha Members: Hashem Mohd Ali Al-Mattarneh, Norlela Ismail and Sivadass Thiruchelvam
Field of Research	Design
Project Summary	The methodology, mainly experimental, has been set and focused on the effect of different parameters on the fire spalling. Parameters such as concrete age, moisture content, specimen geometry, load configuration, type and amount of filler, amount of fibres and fire load play an important role in determining the fire spalling properties of self-compacting concrete. A relationship between fire load configuration and fire-spalling resistance has been suggested. A design guidance for manufacturing of self-compacting concrete with good fire spalling resistance was developed.
Publications/Products/ Outcomes	Journals: 1. Arabi N. S. Al Qadi, Kamal Nasharuddin Mustapha, Hashem Al-Mattarneh and Qahir N.S. AL-Kadi. 2009. Statistical Models for Hardened Properties of Self-Compacting Concrete. <i>American Journal of Engineering and Applied Sciences</i> . 2: 764-770. 2. Arabi N. S. Al Qadi, Kamal Nasharuddin Mustapha and Hashem Al-Mattarneh. 2009. Central composite design models for workability and strength of self-compacting concrete. <i>Medwell Journal of Engineering and Applied Sciences</i> . 4: 177-183.
Additional Information	Linkages: Universiti Kebangsaan Malaysia (use of furnaces, compression testing machine and flexural testing machine available in the Structural Laboratory of UKM for testing of self-compacting concrete specimens)
Contact Institution/Entity Address	UNITEN Deputy Vice Chancellor (Students Affairs, Alumni & Management) Universiti Tenaga Nasional (UNITEN), Jalan IKRAM-UNITEN, 43000 Kajang, Selangor.
Phone Number	Office : 03 – 8926 3660 H/P : 019 – 358 3797
e-Mail	kamal@uniten.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Integrated Analysis of Sago Palm as a Commercial Biomass
Project Number	03-04-02-SF0005
Project Leader and Team Members	Leader: Abdul Manan Dos Mohamed Members: Fairol Tajuddin Suhai, Roshada Hashim, Nurleyna Yunus, Adrina Tie Pei Lang, Cianra Drahman, Azeri Haili, Awang Zulfikar Rizal Awan, Noramina Hampden, Razali Chie, Herman Hadafi Mohamad and Shahrulrazid Sarbini
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to classify and quantify biomass product at five different commercial stages of sago palm, to screen and identify the potential uses of the identified sago biomass products for food and nonfood applications, to provide an integrated analysis on the most feasible means of utilising sago palm at shortest gestation period and to provide strategies to transform total biomass from sago palm into commercial value-added products. All the objectives were achieved. Whole biomass utilisation for biomass conversion is made possible at early stage, thereby a reduction of 35% in gestation period.
Contact Institution/Entity Address	Craun Research Sdn. Bhd. (CRAUN) Craun Research Sdn. Bhd, Lot 3147, Blok 14, Jalan Sultan Tengah, 93055 Kuching, Sarawak.
Phone Number	Office: 08-2446489 H/p: 019-4538038
e-Mail	manandos@craunresearch.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Exterior Grade Ply-bamboo
Project Number	03-03-10-SF0001
Project Leader and Team Members	Leader: Mohd Khairun Anwar Uyup Members: Paridah Md. Tahir, Mohd Parid Mamat, Mohamad Jani Saad, Zaidon Ashaari, Hamdan Husain, Rafeadah Rusli and Mohd Tamizi Mustafa.
Field of Research	Forestry Sciences
Project Summary	The objectives of the project were to develop a dimensionally stable ply-bamboo, evaluate the properties of impregnated ply-bamboo and develop a manufacturing protocol of impregnated ply-bamboo. The optimum procedure to produce a dimensionally stable ply-bamboo was developed, along with the properties of phenolic-treated ply-bamboo were evaluated and the manufacturing protocol was documented.
Publications/ Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Anwar, U.M.K., Paridah, M.T., Hamdan, H., Bakar, E. S. and Sapuan, M. S. 2008. Impregnation and drying process of bamboo strips treated with low molecular weight phenol formaldehyde (LMwPF) resin. <i>Journal of Polymer Materials</i> 25: 145-153. 2. Anwar, U. M. K., Paridah, M. T., Hamdan, H., Sapuan, M. S and Bakar, E. S. 2009. Effect of curing time on physical and mechanical properties of phenolic impregnated bamboo strips. <i>Journal of Industrial Crops and Products</i> 29: 214–219. <p>Proceedings/ Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Anwar, U. M. K., Paridah, M. T., Hamdan, H., Sapuan, M. S. and Zaidon, A. 2007. Impregnation of bamboo strips with low molecular weight phenol formaldehyde resin: Impregnation and drying process. <i>All Division 5 Conference, IUFRO</i>, 29 Oct - 2 Nov 2007, Taipei, Taiwan. 2. Anwar, U. M. K, Paridah, M. T., Hamdan, H., Bakar, E. S and Sapuan, M. S. 2007. Impregnation of bamboo (<i>Gigantochloa scortechinii</i>) strips with low molecular weight phenol formaldehyde. <i>International Panel Products Symposium</i>, 17-19 Oct 2007, Cardiff, UK.



	<p>3. Anwar, U. M. K., Hamdan, H., Paridah, M. T, Rafiuz Zaman, H., Mohamad Omar, M. K and Siti Rafidah, M. 2008. Failure characteristics of phenolic-treated and untreated plybamboo. <i>9th Pacific RIM Bio-Based Composites Symposium</i>, 5-8 Nov 2008, Roturoa, New Zealand.</p> <p>Others:</p> <p>1. Anwar, U.M.K. 2008. Modification of bamboo (<i>Gigantochloa scortechinii</i>) with phenolic-resin for the production of dimensionally stable plybamboo. UPM PhD Thesis.</p>
<p>Contact</p> <p>Institution/Entity</p> <p>Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Forest Research Institute Malaysia (FRIM)</p> <p>Forest Research Institute Malaysia (FRIM)</p> <p>52109 Kepong,</p> <p>Selangor.</p> <p>Office: 03-6279 7390</p> <p>H/p: 012-686 7962</p> <p>mkanwar@frim.gov.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Suitability of Laminated Oil Palm Veneer Lumber (LOPVL) as Raw Materials for Timber-Based Products
Project Number	03-03-10-SF0011
Project Leader and Team Members	Leader: Wan Tarmeze Wan Ariffin Members: Mohd Khairun Anwar, Khairul Awang, Mohd Tamizi Mustafa, Huda Farhana Mohamad and Abdul Hamid Saleh
Field of Research	Forestry Sciences
Project Summary	The objectives of the project were to determine the physical and mechanical properties, the durability and the manufacturing cost of various configured LOPVL (different veneer combination, treatment and coating), to determine the mechanical properties of joints made from LOPVL, to develop timber-based products made from LOPVL and to evaluate the product making suitability of LOPVL based on the gathered information. The development of timber-based products made from LOPVL and the evaluation of product-making suitability of LOPVL based on the development of timber based products was found less promising. Improvement of OPTTEL was conducted by changing the veneer attributes, resin application and press configurations (pressure-heat-time).
Publications/ Products/ Outcomes	<p>Books:</p> <ol style="list-style-type: none"> 1. Tuan Anis Nadia, T. M. S. (2008). Thickness swelling and water absorption test of Laminated Oil Palm Veneer Lumber (LOPVL) for sample H. In: FRIM in FOCUS June 2008 (pp. 8-9), FRIM. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Tuan Anis Nadia, T. M. S. (2008). Delamination test type II of Laminated Oil Palm Veneer Lumber (LOPVL). <i>Bengkel Pemantauan Projek-Projek Penyelidikan Dana Sains (Sciencefund) Di Bawah Kluster Industri Bil. 1/2008</i>, 13 Mei 2008, Putrajaya. 2. Khairul, A., Abdul Hamid, S., Wan Tarmeze, W. A., Marzalina, M., Desmond, H. L. S. and Abdul Rahim, A. 2008. Garden Furniture from POPS Lumber (GF-POPSL). <i>19th International Invention, Innovation and Technology Exhibition (ITEX)</i>, 9-11 May 2008, Kuala Lumpur.



	<ol style="list-style-type: none"> 3. Wan Tarmeze, W. A., Khairul, A., Marzalina, M., Abdul Hamid, S., Mohd Tamizi, M. and Abdul Rahim, A. 2008. POPS Lumber (Parallel Oil Palm Strand Lumber). <i>19th International Invention, Innovation and Technology Exhibition (ITEX)</i>, 9-11 May 2008, Kuala Lumpur. 4. Wan Tarmeze, W. A., Marzalina, M., Abdul Hamid, S., Khairul, A., Mohd Tamizi, M. and Abdul Rahim, A. 2008. POPScrim– Parallel Oil Palm Scrim Lumber. <i>Hari Anugerah Rekacipta FRIM</i>, 15 Dec 2008, Selangor.
Awards/Certificates	<ol style="list-style-type: none"> 1. International Invention, Innovation and Technology (ITEX) Exhibition 2008: 1 Silver Medal. 2. International Invention, Innovation and Technology (ITEX) Exhibition 2008: 1 Bronze Medal.
Contact Institution/Entity Address Phone Number e-Mail	Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia (FRIM) 52109 Kepong, Selangor. Office: 03-6279 7419 H/p: 012-209 8687 tarmeze@frim.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Eco-friendly Rubberwood Furniture Dimensional Stocks with Minimum Preservative Requirement, Using High Heat Treatment Technique
Project Number	03-03-10-SF0016
Project Leader and Team Members	Leader: Sik Huei Shing Members: Sarani Zakaria, Woon Weng Chuen, Choo Kheng Ten and Sahrimbin Ahmad
Field of Research	Forestry Sciences
Project Summary	The objectives of the project were to determine a set of optimum schedules for the high heat treatment (HHT) of Rubberwood and evaluate the performance of heat-treated and modified Rubberwood socks. An optimum schedule for the HHT of Rubberwood has been customised based on the existing retrofitted HHT kiln in FRIM. The drying performance and various properties of heat-treated Rubberwood such as its physical, mechanical and selected chemical properties were also analysed.
Publications/ Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Sik, H. S., Sarani, Z., Sahrim, A. and Choo, K. T. 2008. Kajian pengaruh suhu rawatan ke atas isotherma jerapan bagi kayu getah (<i>Hevea brasiliensis</i>). <i>Prosiding Kolokium Siswazah ke-8, Fakulti Sains dan Teknologi</i>, UKM, 1-2 July 2008, Selangor. 2. Sik, H. S., Sarani, Z., Sahrim, A. and Choo K. T., 2007. The influence of elevated temperatures on selected properties of rubberwood. <i>Proceeding of All Division 5 Conference- Forest Products and Environment: A Productive Symbiosis</i>, 29 Oct – 2 Nov 2007, Taipei, Taiwan.
Contact Institution/Entity Address	Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia (FRIM) 52109 Kepong, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Zinc Borate and Epoxy Resin Treatments to Increase Durability of Wood Composites from Acacia Hybrid and Oil Palm Empty Fruit Bunches
Project Number	03-03-10-SF0031
Project Leader and Team Members	Leader: Koh Mok Poh Members: Salmiah Ujang, Roszaini Kadir, Mohamad Jani Saad and Rafeadah Rusli
Field of Research	Forestry Sciences
Project Summary	The objectives of the project were to study the suitability of using zinc borate and epoxy resin treatments to improve the durability of particleboards and fiberboards from an acacia hybrid and empty fruit bunches of oil palm, develop efficient treatment methods for manufacturing particleboard and fiberboard from an acacia hybrid and empty fruit bunches of oil palm. Both the objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Fibreglass Reinforced Wood Veneer Moulded Products
Project Number	03-03-10-SF0034
Project Leader and Team Members	Leader: Hamdan Husain Members: Ahmad Fauzi Puasa, Abdul Hamid Saleh, Mohamad Jani Saad, Hashim Wan Samsi, Mohamad Omar Mohamad, Khairul Awang and Mohd Khairun Anwar
Field of Research	Forestry Sciences
Project Summary	The objectives of the project were to determine the best matrix combination of resin types, fiberglass and wood veneer, determine the physical and mechanical performance of fiberglass reinforced wood veneer, develop a thin, light and strong fiberglass reinforced wood veneer, determine the curvature tolerance of the fiberglass reinforced wood veneer; and evaluate the feasibility of using fiberglass reinforced wood veneer for molded products. Different panel configurations and parameters were tested; and a leaflet on the best processing method was established. These data, along with their results and findings, served as a basis for our IP application. Meanwhile, samples were tested using BS and JAS standards, and the results were collected, analysed and presented. A thin, light and strong panel was produced, and the curvature tolerance was tested using different values of the mold radius available at a factory, and was also simulated with FEA. A prototype of the molded products has been successfully produced (furniture).
Publications/ Products/ Outcomes	Products: 1. GFR-V
Awards/Certificates	1. Anugerah Rekacipta FRIM 2008 – 1 Gold medal 2. Malaysian Technology Expo 2009 – 1 Gold medal 3. ITEX 2009 - 1 Gold medal
Contact Institution/Entity Address	Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia (FRIM) 52109 Kepong, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Wood Polymer Composite with Enhanced Properties from Modified Acacia mangium and Oil Palm Fibres
Project Number	03-03-10-SF0054
Project Leader and Team Members	Leader: Puad Elham Members: Suffian bin Misran, Mohamad Jani Saad, Roszaini Kadir and Salmiah Ujang
Field of Research	Forestry Sciences
Project Summary	<p>The objectives of the project were to evaluate the feasibility of using modified wood fibres on the production of wood polymer composite (WPC), develop an efficient treatment/modification method for wood fibres suitable for WPC production, determine the effect of modified fibres on the performance and durability of WPC. This study evaluated the modification of Acacia mangium and EFB residues through several types of processing namely chemical pulping (CP), thermo mechanical pulping (TMP) and soda pulping (SP) to manufacture wood polymer composite. Chemical composition was conducted on the fibres. Empty fruit bunch and acacia were utilised in this study to evaluate its suitability in terms of fibre content to produce fibre-plastic composite. Polypropylene (PP) and fibre composites were prepared and evaluated in terms of their mechanical and physical properties. The effects of compounding on tensile strength and modulus, flexural strength, thickness swelling and water absorption were evaluated. The properties of composites were tested using ASTM methods. The performance of wood plastic composites sample was evaluated against fungal decay caused by Malaysian white rot fungus, <i>Lentinus sajor-caju</i> and another white rot fungus, <i>Coriolus versicolor</i>. The evaluation was based on ASTM laboratory soil-jar decay test method confined to above-ground Contact conditions exposure. The decay test was monitored every week to determine the weight loss of sample. The test was terminated until 16 weeks of exposure.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Low Density Particleboard Using Kenaf Core
Project Number	03-03-10-SF0055
Project Leader and Team Members	Leader: Mohamad Jani Saad Members: Zaihan Jalaludin, Mohd Parid Mamat, Roszaini Kadir, Salmiah Ujang, Rafeadah Rusli, Koh Mok Poh and Suffian Misran
Field of Research	Forestry Sciences
Project Summary	<p>The objectives of the project were to develop a method for manufacturing low density particleboard from kenaf core to enhance kenaf low density particleboard resistant towards moisture, biological, fire and free formaldehyde emission, evaluate the properties of low density kenaf particleboard. The method on how to manufacture particleboard using kenaf core were achieved by utilisation of kenaf plant through separator machine with kenaf core (inner part) successfully separated from the bast (outer part). The chipping, sieving, drying, glue mixing and board preparation were successfully conducted. The properties of kenaf particleboard were enhanced against moisture by adding isocyanate glue, biological by adding zinc borate, fire by adding Dricon (phosphate based chemical). The kenaf particleboard either has been enhanced or has not, was evaluated by mechanical, physical, termite, fungus, fire, acoustic, pilot scale and also techno economic tests.</p>
Publications/ Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Izran, K., Zaidon, A., Abdul Rashid, A. M., Abood, S., Khairun Anwar, U., Mohamad Jani, S., Hashim, W. S. and Suffian M. 2008. The preliminary study in determining the sufficient fire retardant impregnation time of kenaf core medium density particleboard for fire test. <i>National Conference on Forest Product</i>, 29-31 Oct 2008, Kuala Lumpur. 2. Mohamad Jani, S., Suffian, M. and Nordin, P. 2008. Kenaf OSB. <i>9th Pacific Rim Bio-Based Symposium</i>, 5-7 Nov 2008, Rotorua, New Zealand. 3. Mohamad Jani, S., Koh, M. P., Suffian, M., Rafeadah, R., Salmiah, U., Roszaini, K., Zaihan, J. and Parid, M. 2008. Development of low density particleboard using kenaf core: mechanical and physical testing results. <i>Project Evaluation Meeting</i>, 21-22 Jan 2008, Melaka.



	<p>4. Mohamad Jani, S. and Zaihan, J. 2008. Kenaf particleboard: The resistance against fire. <i>National Conference on Forest Product</i>, 29-31 Oct 2008, Kuala Lumpur.</p> <p>5. Izran, K., Zaidon, A., Abdul Rashid, A. M, Abood, F., Mohamad Jani, S., Nor Yuziah, M.Y, Suffian, M., and Zaihan, J. 2008. The relationship of kenaf core buffering capacity treated with fire retardants to the gelation time of UF resin, <i>National Symposium on Polymeric Materials</i>, 18-20 June 2008, Penang.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia (FRIM) 52109 Kepong, Selangor. Office: 03-6279 7319 H/p: 016-238 4884 jani@frim.gov.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Stabilisation of Antioxidant from Fruit by Coacervation Microencapsulation
Project Number	03-03-08-SF0197
Project Leader and Team Members	Leader: Mohd. Suhaimi Alias Members: Mahanom Hussin, Saniah Kormin, Nur Izalin Mohd and Arif Zaidi Jusoh
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to establish and optimise coacervation microencapsulation process parameter for the stabilisation of antioxidant in fruit juice and fruit essential oil, evaluate the effect of coacervation microencapsulation process on the stability of antioxidant in fruit juice and fruit essential oil. Establishment of coacervation microencapsulation process parameters for essential oil, stabilisation of antioxidant in fruit juice and fruit essential oil, and the evaluation on the effect of coacervation microencapsulation process on the stability of antioxidant in fruit juice and fruit essential oil were done.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	In-situ Multiple Parameter Monitoring and Measurement System for Liquid Hydrocarbon Using Fiber Optic Sensor
Project Number	03-02-01-SF0001
Project Leader and Team Members	Leader: Mohd Ridzuan Mokhtar Member: PankajKumar Choudhury
Field of Research	Physical Sciences
Project Summary	<p>The objectives of the project were to model fibre gratings and analyse the effect of external perturbations such as temperature and index on the dispersion characteristics and propagation modes of the fibre; design novel fibre grating configurations in order to improve their sensitivity and stability toward external perturbations i.e. index and temperature and capable of multiple parameter sensing function; construct the fibre optic sensor and to experimentally characterise the sensor's performance towards index and temperature changes; design an array of sensor elements and construct and characterise the multiplexed in-situ monitoring system for liquid hydrocarbon. Overall, the objectives of the project were achieved. A technique based on intelligent algorithm for multiple parameter sensing has been investigated. The fabrication system for long-period grating has been constructed and optimised. Additionally, novel fibre sensor networks have been proposed and demonstrated.</p>
Publications/Products/ Outcomes	Journal: 1. Lin, H.S., Mokhtar, M. R., Abdul Rashid, H.A. and Rahman, F.A. 2009. Simultaneous sensing system for identical long-period gratings sensors using subcarrier multiplexing. <i>Laser Physics</i> 19: 1453-1456.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Device Applications of Diamond-like Carbon Film
Project Number	03-02-01-SF0002
Project Leader and Team Members	Leader: Tou Teck Yong Members: Ong Duu Sheng and Siew Wee Ong
Field of Research	Material Sciences
Project Summary	The objectives of the project were to fabricate and characterise the brightness and stability of organic LED due to insertion of a diamond-like carbon thin film; and to fabricate and characterise the application of diamond-like carbon in photovoltaic operation or DLC-on-Si Heterojunction Device. In general both the objectives have been achieved.
Publications/Products/ Outcomes	Journals: 1. Yap, S. S., Yow, H. K. And Tou, T. Y. 2009. Amorphous carbon-silicon heterojunction by pulsed Nd:YAG laser deposition. <i>Thin Solid Film</i> 517: 5569-5572. 2. Yap, S. S., Yong, T. K. And Tou, T. Y. 2009. Effects of diamond-like carbon in organic light-emitting device. <i>Thin Solid Film</i> 517: 5311-5313.
Contact Institution/Entity Address Phone Number e-Mail	Multimedia University (MMU) Multimedia University, Cyberjaya Campus: Jalan Multimedia, 63100 Cyberjaya, Selangor. Office: 0383125278/5000/5018 tytou@mmu.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Multivariable Identification of Thermal Systems
Project Number	03-02-01-SF0004
Project Leader and Team Members	Leader: Tan Ai Hui Members: Timothy Yap Tzen Vun and Tan Wooi Haw
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were to study the temperature distribution of a multi-zone furnace using single-input multi-output identification; design perturbation signals suitable for multi-input multi-output identification; identify and model the effects of having multiple inputs in the form of multiple heaters on the characteristics of a multi-zone furnace; and characterise the behaviour of thermal systems in the presence of airflow. The temperature distribution study of a multi-zone furnace using single-input multi-output identification was fully achieved by temperature profiling of the furnace, static steady state tests and dynamics step tests and estimating the amount of noise and non-linear distortion. The design perturbation signals suitable for multi-input multi-output identification was fully achieved by designing new signals which enable the minimisation of coupling effects and comparing their effectiveness with those two other classes of signals on a simulated distillation process. The new signals were evaluated based on their robustness in the presence of noise as well as their plant-friendliness. The behaviour characteristic of thermal systems in the presence of airflow was obtained by investigating the effects of using different types of gases and airflow rates on the furnace characteristics and studying the temperature dependence on the airflow rate obtained from an air blower system.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Tan, A. H., Godfrey, K. R. and Barker, H. A. 2009. Design of ternary signals for MIMO identification in the presence of noise and nonlinear distortion. <i>IEEE Transactions on Control Systems Technology</i> 17: 926-933. 2. Chook, K. C. and Tan, A. H. 2007. Identification of an electric resistance furnace, <i>IEEE Transactions on Instrumentation and Measurement</i> 56: 2262 – 2270.

	<p>3. Tan, A. H. 2007. Design of truncated maximum length ternary signals where their squared versions have uniform even harmonics. <i>IEEE Transactions on Automatic Control</i> 52: 957 – 961.</p> <p>Proceedings/Conferences/Seminars:</p> <p>1. Foo, M. F. L., Tan, A. H. and Basu, K. P. 2007. Pseudorandom maximum length signal design with bias compensation least squares estimation for system identification', <i>IEEE Instrumentation and Measurement Technology Conference (IMTC)</i>, 1 – 3 May 2007, Warsaw, Poland.</p> <p>2. Chook, K. C. and Tan, A. H. 2008. Comparison of three proportional-integral-derivative based controllers on a bilinear electric resistance furnace', <i>IEEE International Instrumentation and Measurement Technology Conference (I2MTC)</i>, 12 – 15 May 2008, Victoria, Canada.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Quantum Image Processor (QIP) – An Embedded Design Humanoid rain
Project Number	03-02-01-SF0008
Project Leader and Team Members	Leader: Loo Chu Kiong Members: Khor Swee Eng
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design a novel quantum computing model or quantum neural nets without using logic gates for pattern recognition, to deploy embedded system technology and to design an embedded design of quantum image processor.
Publications/ Products/ Outcomes	Proceeding/Conference/Seminar: 1. Loo, C. K., Teh, J. P. 2008. Quantum bio-inspired invariant object recognition model on system-on-a-chip (SoC), <i>3rd IEEE International Conference on Robotics, Automation and Mechatronics (RAM)</i> , 3-6 June 2008, Chengdu, China.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The Dynamics of the Technology Transfer Process: A Study of the Multimedia Super Corridor (MSC) Flagships
Project Number	03-02-01-SF0011
Project Leader and Team Members	Leader: Kamarulzaman Ab. Aziz
Field of Research	Economics, Business and Management
Project Summary	<p>This project successfully identified key facilitating factors in order to improve the process to ensure effective and successful technology transfer. It was observed that sender and receiving organisations must both be willing and ready for the transfer. MDeC's role as a mediator is also a key in ensuring the success. In this study, key inhibiting factors to improve the process to ensure an effective and successful Technology Transfer was also identified. The inhibiting factors are managerial, financial, technological and organisational in nature. The Malaysian National System of Innovations was identified as being the key moderating factor in the process. It was noticed that there is a fair level of understanding among the flagship Members. The most common form of material transferred was when finished product is handed over to the receiving organisations to be used. To some extent, transfer also took place in forms of handbooks and manuals. However, the desirable capacity transfer was not seen from this study.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Bio-degradable Nanocomposite Lithium Sulfur Battery
Project Number	03-02-01-SF0012
Project Leader and Team Members	Leader: Lee Wah Pheng Members: Siew Wee Ong, Pang Wai Leong, Zurina Osman and You Ah Heng
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to develop highest conducting degradable solid polymer electrolytes film based on nanocomposite materials such as Al ₂ O ₃ and SiO ₂ ; characterise the prepared polymer electrolyte using XRD, FTIR, TGA and SEM; measure conductivity of the samples prepared using impedance spectroscopy; develop the cathode materials based on the sulphur and carbon black with different binders suitable for lithium-surface batteries fabrication; characterise the cathode materials prepared by using TGA/DCS, XRD, EDX, FTIR, SEM and Cyclic voltametry; and fabricate the lithium sulfur batteries by using the nanocomposite solid polymer electrolyte and cathodes materials prepared and utilising standard carbon anode. The objectives to develop, characterise and measure conductivity of the prepared polymer electrolyte were achieved. The cathode materials based on sulphur and carbon black can be developed and hence the Lithium sulphur batteries can be fabricated based on the results of the present study.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Scanning UV Surface Voltage Technique : A New Approach for the Study of Defects in Insulating Materials and Nanostructures
Project Number	03-02-01-SF0027
Project Leader and Team Members	Leader: Lee Wah Pheng Member: Koh Song Foo
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design a nano-positioning system for the development of scanning UV voltage technique; fabricate fiber-type surface voltage probe with a high signal-to-noise ratio preamplifier to amplify the signal from probe; study the electron traps and UV related defects in thin SiO ₂ using UV enhanced scanning tunneling current and UV surface voltage measurement. A nano-positioning system for the development of scanning UV voltage technique was designed and used to move sample in nano-scale range, and the team was able to fabricate fiber-type surface voltage probe with a high signal-to-noise ratio pre-amplifier to amplify the signal from the probe but difficult to maintain good measurement results due to the surface flatness of fiber. The electron traps and UV related defects in thin SiO ₂ using UV enhanced scanning tunneling current and UV surface voltage measurement was also studied. However, promising results on UV enhanced scanning tunneling current was not obtained mainly due to the tunneling current measurement and tunneling gap between probe and sample.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Preparation and Analysis of Magnetic FePt Films for Ultra High Density Storage Media
Project Number	03-02-01-SF0028
Project Leader and Team Members	Leader: Ong Boon Hoong Members: Ong Boon Hoong and Tou Teck Yong
Field of Research	Material Sciences
Project Summary	The objectives of the project were to determine the preparation condition for obtaining FePt films of nanoparticle arrays with highly perpendicular c-axis orientation, revealing suitable magnetic properties for an ultra high density storage media and characterising and observing the particle's size, shape and dispersion, its variation, crystal structure, as well as film thickness dependence on various properties and morphology. The FePt films of nanoparticle array with highly perpendicular c-axis orientation for the ultra high density storage media have been prepared and studied. The influences of the particle size and shape, particle dispersion, crystal structure, as well as film thickness on magnetic properties and its morphology have also been studied.
Publications/Products/ Outcomes	Proceeding/Conference/Seminar: 1. Low, P.L., Matsumoto, M., Ong, B.H. and Tou, T.Y. 2008. Structural and magnetic properties of nanostructured FePt thin films. <i>International Nanoscience and Nanotechnology Conference (NANO-SciTech)</i> , 18-21 Nov 2008, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis and Characterisation of Monodisperse Magnetic Nanoparticles
Project Number	03-02-01-SF0029
Project Leader and Team Members	Leader: Ong Boon Hoong
Field of Research	Applied Sciences and Technologies
Project Summary	The precipitation process has been developed to fabricate magnetic nanoparticles. The physical and magnetic properties of magnetic nanoparticles have also been characterised.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Fabrication of III-V InP Based Quantum-Well(QW) Laser.
Project Number	03-02-01-SF0030
Project Leader and Team Members	Leader: Wong Hin Yong Member: Yow Ho Kwang
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were to design III-V InP based quantum-well laser material structures with improved optical and electrical properties for the realisation of efficient light sources for optical communication applications; develop the capability, process recipes and techniques for the fabrication of laser test structures and devices based on the proposed material structures; and device a systematic approach for the deduction and analysis of the key lasers parameters based on the experimental characterisation data. Several material structures with better temperature performance were proposed, analysed and demonstrated for the enhancement feature. Two of the laser structures were fabricated (sponsored by University of Glasgow) and characterised. The objective of devising a systematic approach to deduce and analyse key lasers parameters based on the experimental characterisation data was achieved, though it deviated from the original plan. Originally, all of the analysis is based on experimental data alone. However, a simulation tool to investigate the experimental trend observed was then employed. The underlying physical phenomenon responsible for the enhancement were discussed and further analysed to create a more concrete understanding of the influence of certain design criteria on the device performance need to be done. The optimised designs of InGaAlAs/InP lasers, which has the potential to be commercialised, were produced.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Development of Single-phase Voltage Sag Mitigator (dynamic voltage restorer)
Project Number	03-02-01-SF0034
Project Leader and Team Members	Leader: Kartik Prasad Basu Members: Normiza Mohamad Nor and Chilukuri Venkata Mahendr
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to identify a single-phase commercial and industrial loads susceptible to quick voltage drop (voltage sag); investigate the causes of single-phase voltage sag, short and long term power interruption/failure (STPI and LTPF) in domestic, commercial and industrial distribution networks; investigate the operation of a 3-phase zigzag transformer connected across balanced and unbalanced 3-phase loads with one phase open from the source; estimate the capability of the 3-phase zigzag transformer as voltage sag, STPI and LTPF mitigator by transferring the load on the open phase to the healthy phases of the 3-phase supply; compute the rating of the zigzag transformer and the overload capacity of the healthy phases; test the whole system under different voltage sag, STPI and LPTF situations under various loading conditions and recommend the 3-phase zigzag transformer as the single-phase voltage sag and STPI mitigator. All of the objectives were successfully achieved under the laboratory test condition with low values of load power.
Publications/Products/ Outcomes	Journals: 1. Basu, K. P. And Naeem, M. H. 2009. Stability enhancement of power system by simultaneous ac-dc power transmission, <i>IEICE Electron Express</i> , pp. 818-823.
Contact Institution/Entity Address	Multimedia University (MMU) Multimedia University, Cyberjaya Campus: Jalan Multimedia, 63100 Cyberjaya, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Intelligent Nonlinear Calibration Method of robot Tool Center Point (TCP) and Part Positioning Method with Laser Line Scanner
Project Number	03-02-01-SF0036
Project Leader and Team Members	Leader: Lee Tian Soon Members: Ho Kim Fong and Zahari Taha
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to develop an automatic robot TCP calibration method with a 3-D laser line scanner and intelligent non-linear optimisation algorithm. This proposed method will improve the calibration accuracy speed of all existing robot TCP calibration methods. The objective of the proposed method is aimed at replacing the conventional method that requires a visual inspection which evidently results in lower calibration accuracy and to develop a method to precisely locate the position (i.e. Cartesian coordinates) and orientation (i.e. Euler angles) of a geometrical part relative to a predefined reference frame. This research was implemented using a robotic arm calibrated with the 3-D laser line scanner and with the same 3-D laser line scanner attached to the robotic arm in the work cell. Overall, the application of a 3-D laser line scanner as a calibration tool (part 1) and measuring device (part 2) eliminates the process of tool changing and the need for an expensive tooling for locating parts or work pieces during manufacturing. Furthermore, our proposed method with 3-D laser line scanner is more accurate as a calibration tool and measuring device when compared to the existing 2-D laser displacement sensor. This is the result of an improved vision sensor feedback accuracy, provided by 3-D laser line scanner. The new methodology of kinematic derivation of KUKA robot was completed and the simulation of checking correctness of the kinematic equations of the robot has also been successfully confirmed. The calibration method of 3-D scanner on KUKA robot has been proposed, and all that remains is the implementation on the robot itself.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Composite Capacitor for a DRAM Cell Using Barium Strontium Titanate [BST] Oxide Material
Project Number	03-02-01-SF0059
Project Leader and Team Members	Leader: Balachandran R Members: Yow Ho Kwang, Ong Boon Hoong and Swaminatha Viswanathan
Field of Research	Material Sciences
Project Summary	The objectives of the project were to device a nano composite capacitor for a DRAM cell using Barium Strontium Titanate [BST] oxide as a dielectric capacitor with a high charge storage capacity and low leakage current density. The BST thin films used in the as-prepared capacitor are to be characterised by X-Ray Diffraction [XRD], Scanning Electron Microscope [SEM]/Energy Dispersive Analyser [EDAX], TransmissionElectron Microscope [TEM] and Atomic Microscope [AFM] and to test the capacitor for charge storage density and leakage current density. A composite capacitor was fabricated by using BST oxide pellets as a dielectric material, and NiFe/Cu as a bottom electrode. The dielectric constant was found to be 1164 and the charge storage density was 2.57 $\mu\text{F}/\text{m}^2$.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Optimisation of Monolithic Mode-locked GalnNAs- BasedSESAM-VCSEL with Optical Clocking and Wavelength Conversion Functionalities
Project Number	03-02-01-SF0062
Project Leader and Team Members	Leader: Marinah Othman
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to investigate the dynamics of a symmetric circular waveguide VCSEL structure, design an integrated mode-locked SESAM-VCSEL for high speed optical clocking, extend the operating wavelength to 1.3-1.6 micron using GalnNAs/GaAs materials and add on the wavelength conversion functionality by employing a novel Top Hat Structure.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Low Thermal Expansion Glaze for Anorthite Ceramic
Project Number	03-03-02-SF0003
Project Leader and Team Members	Leader: Doll Said Ngah Member: Jaafar Abdullah
Field of Research	Material Sciences
Project Summary	The objectives of the project were to develop a low thermal expansion (TEC) glaze of $<5 \times 10^{-6}$ K ⁻¹ for anorthite-based ceramic tableware and value add local limestone and silica for formulation of glaze. All of the objectives were successfully achieved, the low thermal expansion coefficient (TEC) glaze of $<5 \times 10^{-6}$ K ⁻¹ was developed and local limestone, silica and kaolin were used in the glaze formulation. The commercial local source of limestone and silica were also used in the development of synthetic ash that was used as a precursor material in the anorthite-based ceramic bodies.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. D.S.Ngah. 2007. Effect of Magnesium Carbonate (MgCO₃) Addition in Synthesizing of Anorthite Ceramics. <i>Journal of Solid State Science and Technology Letters</i> 14: 53. <p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. D. S. Ngah, J. Abdullah and N. I. M. Shopee. 2008. Development of Low Thermal Expansion Coefficient (TEC) Glaze for Anorthite-based Ceramics. <i>10th International Conference on Ceramic Processing Science (ICCPS-10)</i>, 25-28 May 2008, Aichi, Japan.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Stainless Steel 316L Parts Using Powder Injection Molding Technique for Orthopaedic and Orthodontic Application
Project Number	03-03-02-SF0004
Project Leader and Team Members	Leader: Rosdi Ibrahim Members: Roila Awang and Shamsul Muhamad
Field of Research	Material Sciences
Project Summary	The objectives of the project were to develop a novel binder system based on palm oil derivatives for the Powder Injection Molding (PIM) technique, fabricate a stainless steel 316L powder through PIM technique, study the cytotoxic activities and the growth of human fibroblast cell lines 3T3 and human gingival cell lines on the stainless steel parts. Four different formulations have been successfully developed as alternative binders, which comprises PE/PW/SA, PE/PW/PS, PE/PW/PA, PE/PW/MA and PE/PS. Orthopedic and maxillofacial parts – Fixation plates and L Shape plates for craniofacial has been successfully moulded using the PIM technique and direct Contact of the cell on the stainless steel parts has been successfully achieved.
Publications/Products/ Outcomes	Proceeding/Conference/Seminar: 1. Ibrahim, R., Azmiruddin, M., Muhamad, M., Baharuddin, F. Z., Azilah, N., Awang, R. and Muhamad, S. 2008. The Effect of Palm Oil as a Binder System in Powder Injection Molding Process. <i>2nd International Conference on Functional Materials and Devices</i> , Kuala Lumpur.
Contact Institution/Entity Address	SIRIM Berhad (SIRIM) SIRIM Berhad, No. 1, Persiaran Dato' Menteri, Seksyen 2, Peti Surat 7035, 40911 Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Enhancing the Properties of Epoxidised Natural Rubber Based Polymer Electrolytes for Electrochemical Device Applications
Project Number	03-03-02-SF0007
Project Leader and Team Members	Leader: Razali Idris Members: Mas Rosemal Hakim, Zulkafli Ghazali and Kamisah Mohamad
Field of Research	Material Sciences
Project Summary	The objectives of the project were to purify epoxidised natural rubber polymer as a polymer host in a polymer electrolyte via the refluxing process and selection of a low molecular weight; synthesise the ionic liquid based on imidazolium cations as mobile ion carrier in epoxidised natural rubber polymer electrolyte systems, modify the silica oxide particles to act as a filler for the enhancement of physical properties in epoxidised natural rubber based polymer electrolyte, fabricate ENR based polymer electrolytes and characterisation for ionic conductivity, electrochemical and physical state properties. The planned objectives were achieved, research tasks were executed and all milestones of the project were met.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Porous Carbonated Apatite for Possible Biomedical Purposes
Project Number	03-03-02-SF0010
Project Leader and Team Members	Leader: Fadzil Ayad Zakaria Members: Jamunathevil Kalithee and Jose Fernando Mikan Veneg
Field of Research	Material Sciences
Project Summary	The objectives of the project were to fabricate a porous carbonated apatite which has a pore size that is suitable for osteoprogenitor cell growth and development. A porous carbonated apatite with a pore size of 1000um that is suitable for osteoprogenitor cell growth and development was fabricated.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development and Fabrication of Apatite-coated Metallic Implants for Fracture Fixation in Orthopedic and Maxillofacial Applications
Project Number	03-03-02-SF0014
Project Leader and Team Members	Leader: Mohd Afian Omar Members: Siti Mariam Mohamad, Fazilah Fazan, Mohd Zakuan Abdullah, Wan Ruzaini Wan Sulaiman, Nor Shahida Kader Bashah, Rosdi Ibrahim and Mazli Mustapha
Field of Research	Material Sciences
Project Summary	The objectives of the project were to develop the metal injection moulding (MIM) process technology for manufacturing metallic implants for fracture fixation, determine the parameters for plasma spraying of apatite-coating, utilise locally produced apatite made from Malaysian limestone develop apatite-coated metallic implant prototypes. A MIM process for producing fracture fixation plates was successfully developed, the process parameters for plasma spraying of apatite coating using commercial HA and inhouse HA was determined, and the locally produced apatite from Malaysia's limestone to fabricate the prototype was utilised.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Nano Structured Lithium Manganese Based Cathode Materials for High Power Energy Storage and Devices
Project Number	03-03-02-SF0015
Project Leader and Team Members	Leader: Mohd Ali Sulaiman Members: Surani Buniran, Azrulnizam Mat and Khairul Syakirin Sulaiman
Field of Research	Material Sciences
Project Summary	The objectives of the project were to synthesise Manganese (Mn) based nanosized cathode material that is capable of delivering high power densities ($P=IV$) by improving the charge/discharge rate and operational voltage range. The synthesised $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ cathode materials has the nanostructured powder, high discharge rate and high operational voltage properties.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Sulaiman, M.A., Mat, A., Sulaiman, K.S., Hasan, H. and Khalim A. A. 2008. Effect of fuel insynthesizing $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ using self propagating combustion method. <i>International Conference on Functional Materials and Devices</i>, 16 – 19 July 2008, Kuala Lumpur. 2. Sulaiman, M.A., Abu Bakar, Y.S., Zakaria, I. and Mat, A. 2007. Effect of ball milling process to the physical and electrochemical performance of LiCoO_2. <i>23rd Regional Conference on Solid State Science and Technology (RCSSST)</i>, 27-29 Nov 2007, Johor. 3. Sulaiman, M.A., Ying, T.K., Mat, A. and Sulaiman, K.S. 2006. Characterization of ultra-fine LiCoO_2 by glycine-nitrate combustion method. <i>International Meeting on Lithium Battery (IMLB)</i>, 18-23 June 2006, Biarrits, France. 4. Sulaiman, M. A., Ying, T.K., Mat, A., Sulaiman, K.S. and Wan, M.N. 2007. Synthesizing nano-particle size LiCoO_2 using glycine combustion technique. <i>16th International Conference on Solid State Ionics</i>, 1-6 July 2007, Shanghai, China. 5. Sulaiman, M.A., Khalim, A. A., Mat, A. and Sulaiman K.S. 2007. Synthesizing and characterization of ultra-fine particle of $\text{LiNi}_{1/3}\text{Co}_{1/3}\text{Mn}_{1/3}\text{O}_2$ using self propagating combustion method. <i>6th ASEAN Microscopy Conference</i>, 10-12 Dec 2007, Pahang.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Sintered Hardmetal Alloy from Sub-micron Powder Particle for Mechanical Seal and Wear Resistant Application through Powder Metallurgy Routes
Project Number	03-03-02-SF0016
Project Leader and Team Members	Leader: Mohd Asri Selamat Members: Talib Ria Jaafar, Noraizham Mohamad and Shamsul Baharin Jamaludin
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were to develop and produce a hardmetal mechanical seal and wear resistant component through pressing, cold isostatic pressing (CIPping) and hot isostatic pressing (HIPping), followed by the sintering process. The new approach in this research may provide alternatives to produce hardmetal components with reduced sintering temperatures, increasing the 'sintering window', while improving the properties of the hardmetals. The conventional process from machining to Powder Metallurgy may also be replaced. A high end Powder Metallurgy process - CIPping, HIPping and multi-atmosphere sintering of sub-micron hardmetal powders through PM routes may be used. The prototype of cutting tool insert has undergone physical and mechanical properties testing as well as a cutting performance test. The results showed that the properties and tool life of the prototype at laboratory scale were on par, or sometimes superior to commercially available products. The mechanical properties and cutting performance test were conducted on the actual cutting parameters of the turning machine.</p>
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Mohd Asri, S., Mohd Shirul, H. and Putri Normiyani A. H. 2007. <i>Sintering Behaviour, Microstructure and Mechanical Properties of Sintered Fine WC-Co Powder. International Conference on Advancement of Materials and Nanotechnology (ICAMN)</i>, 29 May-1 June 2007, Kedah. 2. Mansor, N.I.I., Diah, N.M., Jaafar, T.R and Selamat, M.A. 2007. The evaluation of microstructure and mechanical properties of sintered sub-micron WC-Co powder. <i>National Metallurgical Conference</i>, 24-26 Nov 2007, Johor.

	<ol style="list-style-type: none"> Manaf S.A., Rahman A.A., Diah N.M., Selamat M.A. and Jaafar T.R. 2008. A study on microstructure, physical and mechanical properties of submicron WC-Co hardmetals through press and cold isostatic pressing (CIP) routes. <i>Malaysian Metallurgical Conference</i>, 3-4 Dec 2008, Selangor. Selamat, M.A., Manaf, S.A., Diah, N.M. and Jaafar, T.R. 2008. Powder metallurgy processing of hardmetal powder; <i>24th RCSSST</i>, 30 Nov – 2Dec2008, Negeri Sembilan.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>SIRIM Berhad (SIRIM) SIRIM Berhad, No. 1, Persiaran Dato' Menteri, Seksyen 2, Peti Surat 7035, 40911 Shah Alam, Selangor. Office: 04-4017100 H/p: 019-5710073 masri@sirim.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Ceramic Based Artificial Coral Material for Application as Fish Aggregating Device (FAD)
Project Number	03-03-02-SF0021
Project Leader and Team Members	Leader: Saidin Karim Member: Rafindde Ramli
Field of Research	Material Sciences
Project Summary	The objectives of the project were to identify and formulate a chemically and mechanically stable FAD material that is environmentally friendly to marine environments; and to fabricate a ceramic based artificial reef material from clay, shell deposit and water treatment sludge residue by slip and gel casting methods.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Techniques for Design and Fabrication of Patient Specific Medical Implants Using CAD/CAM
Project Number	03-03-02-SF0025
Project Leader and Team Members	Leader: Victor Devadass Members: Suryani Abdullah, Zainul Ahmad Rajion, Ab Rani Samsudin, Izhar Abd Aziz and Abdul Rahman Jauhari
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop a technique for the design of Patient Specific Implant that would provide a better anatomical fit as compared to the conventional fixation/reconstruction methods using CAD or Rapid Prototyping. This was followed by developing a cost effective technique for manufacturing a Patient Specific Implant from various materials such as Titanium, PMMA or other bio-compatible materials. All the project objectives were successfully achieved. SIRIM Berhad has started providing commercial services and the cost for a private setup would be high. Currently, the services was provided within SIRIM Berhad, under the National CAD/CAM programme and also known as Biomedical modeling service.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Nanoceramic Photocatalyst for Reduction of Bod from Palm Oil Mill Effluent
Project Number	03-03-02-SF0026
Project Leader and Team Members	Leader: Teng Wan Dung Members: Azhar Abdul Raof, Azlin Hamidi and Rafindde Ramli
Field of Research	Material Sciences
Project Summary	The objectives of the project were to identify and design the nanoceramic photocatalyst for biochemical oxygen demand (BOD) breakdown and to design and develop a photocatalyst membrane filter for the reduction of the BOD of palm oil mill effluent (POME). All of the project objectives were successfully achieved.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Teng, W.D. 2007. Characterisation of sintered compact Nano-TiO ₂ , <i>Nanotechnology Symposium, Nanotech Malaysia</i> , 29 Nov – 1 Dec 2007, Kuala Lumpur. 2. Teng, W.D. and Azlim, H. 2007. Preparation and characterisation of filter support from local silica. <i>Proceedings of the 23rd Regional Conference Solid State Science and Technology</i> , 27-29 Nov 2007, Johor.
Contact Institution/Entity Address	SIRIM Berhad (SIRIM) SIRIM Berhad, No. 1, Persiaran Dato' Menteri, Seksyen 2, Peti Surat 7035, 40911 Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Techniques for Design and Development of Products Related to Craniofacial (head) for Malaysian Population
Project Number	03-03-02-SF0027
Project Leader and Team Members	Leader: Wan Abdul Rahman Jauhari Wan Harun Members: Zulkepli Majid, Halim Setan, Mohd Rodzi Putih, Victor Devadass, Zainul Ahmad Rajion, Izhar Abd Aziz, Mohd Fadly Razikin and Noor Mafuza Mahmor
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop the techniques for design and development of products related to craniofacial such as halfmask, helmets, goggles and spectacles, based on Malaysia's craniofacial database, using 3D digitising techniques. A technique for the design and development of the helmet and goggles have been developed using digitising, modeling and rapid prototyping technologies which takes into account significant landmarks on the human head. The technique developed for the design of craniofacial-related products and the data on significant landmarks can be used in the design services for the relevant industry(ies) for Commercialisation purposes.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis and Development of Novel Nanomaterials for Enhancement of Photocatalytic Activity for Destruction of Organic and Inorganic Toxic Contaminants in Air
Project Number	03-03-02-SF0039
Project Leader and Team Members	Leader: Abdul Kadir Masrom Members: Siti Mariam Mohamad and Mohd Radzi Mohd
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were to develop a synthesis route for the production of nanosized nitrogen doped TiO₂. The synthesis route developed aim to produce TiO₂ with a particle size in the range 10-15 nm, and increasing the nitrogen dopant concentration in TiO₂, making it higher than the doping process on micron-sized TiO₂ or TiO₂ thin films by annealing. The significance of this approach is the shifting of the optical response of TiO₂ from UV to the visible spectral range hence becoming photocatalytically active with an absorbance in visible region of up to 600nm. The non-doped TiO₂ nanoparticles can be used as a standard to study the improvement of photocatalytic performance over the doped TiO₂ nanoparticles i.e. in the visible light regime. The second objective of this project was to study the effect and the performance of the photocatalytic activity of the newly develop TiO₂. This project determined the best process parameters of the synthesis route that produce a more efficient photocatalytic activity using TiO₂. The third objective of the project was to establish the technical and economic feasibility of a photocatalytic reaction technology, utilising nano-TiO₂; providing a system that destroy volatile, non-volatile and other indoor air contaminants at ambient temperatures. Furthermore, the aim of the indoor photocatalytic technology employing this new novel and multicomponent photocatalyst results in an active titania photocatalyst that can be used for visible-light photocatalysis. Several synthesis route for the production of nano-TiO₂ have been developed, producing a myriad of particle sizes ranging from 5 to 85 nm. Nitrogen dopants have been successfully incorporated. The Nitrogen content was unmeasurable due to a delay in getting a suitable XPS. However, the TiO₂ was able to degrade the organic dye under visible light. The study shows that the technology developed was feasible for environment cleanup.</p>

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Metal Injection Moulding (mim) Feedstock Formulation Using Palm Stearin Based Biopolymers Binder for High Performance Applications
Project Number	03-03-02-SF0040
Project Leader and Team Members	Leader: Mohd Afian Omar Members: Engku Abdul Ghafur and Mazli Mustapha
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were to develop a new feedstock formulation using palm stearin based biopolymers for injection molding of metal powders and to determine the process parameters during molding, debinding and sintering using palm stearin based biopolymer binder system. The scientific aspects of binder development and formulations as well as the molding behavior were investigated. Furthermore, the factors affecting the debinding process and kinetics, and the sintering of metallic materials using palm stearin based biopolymer were also studied, with the aim of optimising the overall process through to the final product. All of the project objectives were successfully achieved. Based on the results of the study, SIRIM Berhad will provide consultancy services and expert advice to the industry that is interested in metal injection molding process and technology.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Subuki, I. and Omar, M.A. 2007. Effect of sintering temperature during sintering process on MIM using palm based binder system. <i>Proceedings of International Conference on Engineering and ICT (ICEI)</i>, 27-28 Nov 2007, Melaka. 2. Omar, M.A. and Subuki I. 2007. Rapid debinding of 316L stainless steel injection moulded component using palm based biopolymer binder. <i>Proceedings of Colloquium on Materials, Minerals and Polymers</i>, 10-11 April 2007, Penang. 3. Omar, M. A., Subuki, I., Abdullah, N., Hassan, N., 2008. Injection moulding of metal powder using palm stearin based binder for automotive applications. <i>5th International Conference on Powder Metallurgy for Automotive Parts</i>, 6-8 April 2008, Isfahan, Iran.

	<ol style="list-style-type: none"> 4. Omar, M. A., Subuki, I., Abdullah, N., Hassan, N., 2007. Characterization of the feedstock for MIM using biopolymer binder. <i>Proceedings of Regional Conference on Engineering, Mathematic, Mechanics</i>, 27-28 Nov 2007, Putrajaya. 5. Omar, M.A. 2007. Microstructure evolution during rapid debinding of MIM compact. <i>Proceedings of International Conference on Advancement of Materials and Nanotechnology</i>, 29 May - 1 June 2007, Kedah.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Developing an Imaging Spectrometer Technique for Investigating Reversible Photodimerisation of Optically Active Photochromic Dyes
Project Number	03-03-02-SF0042
Project Leader and Team Members	Leader: Nik Mohd Azmi Nik Abdul Aziz Members: Khong Yoon Loong, Mohamad Zahid Abdul, Mat Tamizi Zainuddin and Ahmad Zaki Shaar
Field of Research	Chemical Sciences
Project Summary	<p>The objectives of the project were to develop an experimental setup of an imaging spectrometer for better understanding on the mechanism of changes in the structure and chemistry of a targeted photochromic dye when irradiated by UV light. The secondary objective was to improve the properties of a specific photochromic dye by optimising the time response and reversibility of colour through the incorporation of the dye into a polymer matrix, adding a stabiliser or providing a barrier to oxygen and chemicals by other means to prolong their lifetime when the light source is removed. The materials for photochromic organic dye such as malachite green and spiropyran derivatives will be designed in a nanostructure 'cage-like' using the sol-gel process. The experimental setup was developed by integrating our own designed sample chamber with a spectrograph. In the chamber, a sample of photochromic thin film was illuminated with visible and UV lights, delivered through fiber optic bundles and the optical spectral produced was detected using a CCD at the exit port of the spectrograph. However, the experiment had to be conducted manually in which each instrument such as the light sources and the spectrograph were independent of each other. There were three main family of photochromic dyes used in this project; spiropyran, spirooxazine and diarylethene. The dyes were doped into the inorganic silicate based matrices and fabricated as thin films on silicon wafer, quartz and glass substrates using spin-coating, drop casting and dip coating techniques. By optimising the chemical stoichiometry of dopants in the matrices, the parameters of sol-gel process and coating techniques, a comprehensive knowledge in controlling such factors in order to produce an efficient photochromic thin films but not on the dyes itself was gained. A single atom spiropyran, but not in their respective environments (liquid and solid), was designed</p>

	and stimulated. Nevertheless, the experimental setup cannot be real time in situ monitored as the individual instrument was not fully integrated under command control software.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. R. Rosfatihah, R. Adnan, M. E. Izat, N. M. A. Aziz. 2008. Electronic Transition of 6-nitro-BIPS and Photomecrocyanine isomers. <i>2nd International Conference on Functional Materials and Devices (ICFMD)</i>, 16-19 June 2008, Kuala Lumpur. 2. Izaat, M. E., Zainuddin, M. T., Rosfatihah, R., Malik, M. Z. A., Adnan, R., Aziz, N. M. A., Khairuldin, M. I. and Isnin, A. 2008. Photochromic Behaviour of 6-nitro BIPS Studied in Interaction Free Environment, Solution and Siloxane Matrix. <i>The APCTP-ASEAN Workshop on Advanced Materials Science and Nanotechnology (APCTP-ASEAN)</i>, 15-21 Sept 2008, Nha Trang, Vietnam. 3. Zainuddin, M.T, A. Malek, M.Z., Ezwan, M.I, Roslim, R., M. Isha, K., N. A. Aziz N. M. A. and Isnin, A. 2008. Effects of ethanol content on photochromism of 6-nitro BIPs in organic nanomatrix siloxane system. <i>2nd International Conference on Functional Materials and Devices (ICFMD)</i>, 16-19 June 2008, Kuala Lumpur. 4. M. I. Khairuldin, M. E. Izat, M. T. Zainuddin, R. Rosfatihah, M. Z. A. Malik, N. M. A. Aziz and A. Isnin. 2008. Effect of thermal treatment on photochromism of 6-nitro-BIPS in inorganic-organic hybrid sol-gel material. <i>Regional Conference on Solid State Science and Technology (RCSSST)</i>, 30 Nov – 2 Dec 2008, Negeri Sembilan. 5. M. T. Zainuddin, M.Z.A. Malek, M.I. Ezwan, R. Roslim, K.M. Isha and N.M.A.N.A. Aziz. 2009. Photochromism of 6-nitro BIPs in Hybrid Sol Gel Matrix Derived from Unsaturated Alkyl Functional Triethoxysilane. <i>Proceedings in First International Conference on Multifunctional, Hybrid and Nanomaterials</i>, 15 – 19 Mac 2009, Tours, France.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Novel Single Layer Polyethylene Barrier Film Using Nanoclay Impregnation
Project Number	03-03-02-SF0043
Project Leader and Team Members	Leader: Rahmad Abd Shukor Members: Norzalia Sulaiman, Hanim Harun, Ahmad Fuad Md Yusuf and Salina Sharifuddin
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were towards altering the package film permeability to extend the shelf life of packed food without significantly reducing the strength of the films. Compounding and blending using different compounding equipments and various parameter settings was completed. Fifteen formulations have been developed with the incorporation of nanoclay and preparation of samples by blown film was successfully tried at Mubiplas Industries. XRD and TEM analysis showed that the nanoclay have exfoliated in 5% formulations. The approach is in the preparation of the polymer nano composite based on melt compounding of the nanoclay filler into the appropriate polymer materials following specific treatment of the clay particles to achieve a high degree of exfoliation. Although its properties is improved and the exfoliation looks fine, the colour of the samples turn brownish, which prevents the mass producing at this stage. Further analysis to improve the formulation is required before any Commercialisation efforts can be pursued.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of High Performance Anisotropic NdFeB Magnet by Die-upset Forging
Project Number	03-03-02-SF0046
Project Leader and Team Members	Leader: Mat Husin Saleh Members: Azizah Shaaban, Patthi Hussain, Fauzi Ismail and Mazlan Mohammad
Field of Research	Material Sciences
Project Summary	<p>The objectives of the project were to develop a high performance isotropic NdFeB bonded magnet that has better properties compared to a conventional bonded magnet. The maximum energy product of 21MGOe was obtained, which is slightly lower than the target but higher than the conventional bonded magnet, which is 12 MGOe. This is due to the limitation in tonnage of the hot press (max 9 ton). A correlation between the amount of deformation and magnetic properties was observed. Generally, the higher the deformation rate, the higher the magnetic properties. Nonetheless, the objective to obtain 25MGOe is slightly on the higher side without anticipating the capability(ies) of the hot press machine available.</p>
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. M. H. Saleh. 2007. Processing and characterization of high performance isotropic NdFeB permanent magnet. <i>Journal of Solid State Science and Technology Letters</i> 14: 75. <p>Proceedings/Conferenced/Seminars:</p> <ol style="list-style-type: none"> 1. M. H. Saleh. 2007. A new approach in TEM sample preparation technique for NdFeB melt spun ribbon. <i>The 6th ASEAN Electron Microscopy Conference</i>, 10-12 Dec 2007, Pahang. 2. M. H. Saleh, N. Roslani, E. A. Othman, F. Ismail and M. Mohammad. 2008. Effect of hot pressing temperatures on microstructure and magnetic properties of die upset NdFeB Magnet. <i>24th Regional Conference on Solid State Science and Technology</i>, 30 Nov - 2 Dec 2008, Negeri Sembilan. 3. M. H. Saleh, F. Ismail, E. A. Othman and M. Mohammad. 2007. Magnetic properties of hot pressed NdFeB magnet. <i>International Conference on Advancement of Materials and Nanotechnology</i>, 29 May - 1 Jun 2007, Kedah.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Fabrication of Step Index Plastic Optical Fiber (SI_POF) Preform Using Co-extrusion Technique for Optical Applications
Project Number	03-03-02-SF0047
Project Leader and Team Members	Leader: Ahmad Zaki Shaari Members: Romzee Ismail, Siti Musalmah Md Ibrahim, Muhammad Khuzaifah Hassan, Md Nizam Abd Wahab, Hasrina Hashim, Mohamad Zahid Abdul and Nik Mohd Azmi
Field of Research	Material Sciences
Project Summary	<p>The objectives of the project were to design and fabricate an extrusion die, to design a mini vertical co-extrusion system, to develop the core and cladding polymeric material for a co-extrusion process, and to improve the preform of step-index plastics optical fiber (SI-POF) using mini co-extrusion facilities by lengthening its preform length by at least 0.5 meter and by reducing its preform diameter to ± 4 mm. In this study, the extrusion die was designed and fabricated. It was further assembled into a co-extrusion system. In addition, a mini vertical co-extrusion system was designed. It was further fabricated and tested for its capabilities to extrude materials. Dye-doped PMMA polymer was successfully developed (dye-doped refractive index polymer ~ 1.4900). Nevertheless, the preform's dimension was not achieved due to the co-extrusion components which was not 100% completely fabricated and assembled. The design and development of equipment also needs further fine-tuning and refinements.</p>
Publications/Products/ Outcomes	Proceeding/Conference/Seminar: 1. A.Z. Shaari, H. Hashim. 2008. Mechanical and Optical Characteristics of Dye-doped Polymer. <i>24th Regional Conference on Solid State Science & Technology</i> , 30 Nov – 2 Dec 2008, N. Sembilan.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Formulation and Development of Modified Phenolic Resin with Polyvinyl Butyral for High Impact Composite Applications
Project Number	03-03-02-SF0050
Project Leader and Team Members	Leader: Ismarul Nizam Ismail Members: Haslan Fadli Ahmad, Mohd Fadzlee Zainal, Salleh Omar and Ismail Zainol
Field of Research	Material Sciences
Project Summary	<p>The objectives of the project were to formulate and develop modified phenolic resin (MOD-PH) using polyvinyl butyral (PVB) and to study the properties of the fibre reinforced phenolic composites using newly developed MODPH. All the project objectives were successfully achieved. For technology transfer, Usahawan PSE Sdn. Bhd. was supplied with 3 kg of PVB-modified phenolic resin for trial production of a prototype PASGT composite helmet shell. The team also advised them in wet lay-up/ hot press technique fabrication parameters. Two helmet shells for NIJ Standard Level 11 Gun Fire Test at STRIDE Batu Arang were successfully tested. We also prepared and sold 6 kg of PVB-modified phenolic resin to Usahawan PSE Sdn. Bhd. for RM1800.00@ RM300.00 /kg. Currently, helmet shells for NIJ Standard Gun Fire Fragmentation Test at HP White, USA and DuPont Test Facilities in France are being prepared. The modified phenolic resin will be sold to this company based on the lab scale quantity due to limitations in large scale production.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none">1. Ismail, I.N, Omar, S., Abidin, M.F.Z., Marzuki, H.F. A.2007. Hygrothermal behaviour and their effects on flexural properties of carbon fiber-epoxy composites prepared by vacuum bagging techniques. <i>Proceedinds of International Conference Of Advanced Materials and Nanotechnology</i>, 2007, Kedah.2. Ismail, I.N, Omar, S., Zainal Abidin, M.F., Ahmad Marzuki, H.F. 2008. Characterization of glass fiber / polyester sheet molding compound (SMC) composites under environmental exposures. <i>Proceedings of 4th National Carbon Fibre and Composite Conference(NCCFC)</i>, 18-20 Aug 2008, Penang.



Additional Information		Industrial Linkages:Usahawan PSE Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Natural Rubber-based Protonic Membrane for Fuel Cell Technology and the Fuel Cell Utilised the Membrane
Project Number	03-03-02-SF0053
Project Leader and Team Members	Leader: Wan Siti Noor Wan Abdul Halim Members: Mohamad Fadzil Adnan, Jaafar Abdullah and Ahmad Fauzi Ismail
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to synthesise a rubber-based protonic membrane by the ion-exchange method, to design a fuel cell component for research or Commercialisation, to study electrochemical and optimisation as well as to produce the prototypes for both types (rubber-based membrane and commercial membrane, Nafion). All of the project objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fabrication of Thin Microporous Layer by Electrophoretic Deposition (EPD) for Gas Separation Membrane
Project Number	03-03-02-SF0059
Project Leader and Team Members	Leader: Rafindde Ramli Members: Zarina Abdul Wahid and Zulaila Abdullah
Field of Research	Material Sciences
Project Summary	The objectives of the project were to formulate a suitable colloidal nanoparticle suspension properties for the electrophoretic deposition (EPD) process, to determine the process parameter of electrophoretic deposition for the formation of thin microporous layer on substrate, and to form thin microporous layer of nanomaterials on the porous substrate with narrow pore size distribution by electrophoretic deposition. All of the project objectives were successfully achieved.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Rafindde R., Zarina A. W.2008.The role of mesoporous gamma alumina layer on adhesion of thin layer of nanosilica membrane. <i>9th International Symposium on Ceramic Materials and Components for Energy and Environmental Applications (CMCEE)</i> , 10-14 Nov 2008 Shanghai, China. 2. Rafindde R. 2008. Conversion of thin mesoporous layer of gamma alumina for gas separation membrane. <i>Regional Conference on Solid State Science and Technology</i> , 30 Nov – 2 Dec 2008, Negeri Sembilan.
Contact Institution/Entity Address	SIRIM Berhad (SIRIM) SIRIM Berhad, No. 1, Persiaran Dato' Menteri, Seksyen 2, Peti Surat 7035, 40911 Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Antimicrobial Coating of Silver Nanoparticle on Fiber by Assisted Ionically Self-Assembled Layer (ISA)
Project Number	03-03-02-SF0064
Project Leader and Team Members	Leader: Abdul Kadir Masrom Members: Norhanita Mohd Yusof, Khatijah Mohd Yusof, Razali Idris, Mohd Noor Abd Wahab and Suhaina Mohd Ibrahim
Field of Research	Material Sciences
Project Summary	The objectives of the project were to develop a coating process on various types of fibres using nanoparticles with antimicrobial function. The specific objectives were to identify a suitable process combination, including surface treatment and ionic solution for layer by Layer (LBL) process for the attachment of nanoparticles of Ag and TiO ₂ on various types of fibres, to identify the suitable process parameters for immobilisation of nanoparticles by LBL technique, and to characterise the thin film coated nanocomposite layers. In this study, a coating process on various type of fibres with nanoparticle with antimicrobial function was developed and suitable process combination including surface treatment and ionic solution for the Layer by Layer (LBL) process for attachment of nanoparticles of silver (Ag) on various types of fibre was identified. However, the attachment of nanoparticles of titanium dioxide (TiO ₂) composite layer was not conducted. The objective to identify suitable process parameters for immobilisation of nanoparticles by LBL technique has also been achieved. The objective of thin film coated nanocomposite layers was partially achieved as the chemical analysis was unable to provide a conclusive data.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Potent Antimicrobial Silver-titania Composite Coatings by Plasma Spraying
Project Number	03-03-02-SF0065
Project Leader and Team Members	Leader: Siti Mariam Mohamad Members: Mohd Noor Abd Wahab, Wan Zuhainis Saad, Norhani Abdullah, Mohd Zakuan Abdullah and Abdul Kadir Masrom
Field of Research	Material Sciences
Project Summary	<p>The objectives of the project were to develop a process for the production of TiO₂/Ag composite coating with antimicrobial properties by employing the plasma spray technique. Several research tasks were performed to achieve the following specific objectives. The secondary objective was to identify a suitable composition and process parameters for the production of TiO₂/Ag composite powder as a feedstock material for the plasma spray. The mixture of TiO₂/Ag with suitable surfactant and binders was identified and formulated. The mixture was produced in granular powder form with suitable characteristics and properties for plasma spraying. The prepared feedstock material (TiO₂/Ag powder) was deposited onto the substrate by the plasma spray technique. The desired coatings and the spraying parameters namely plasma power, gas pressure, powder feed rate and spraying distance was also identified. The newly developed composite coating for their mechanical and physical stability and anti-microbial properties was evaluated and characterised.</p>
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. S. Mariam M., S.Suriani, A.B.Azizah and A.A.Nizam. 2009. Study on Plasma Spraying Parameters of TiO₂ Coatings. <i>Solid State Science and Technology Journal</i> 17: 198-206. <p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. S. Mariam M., S.Suriani, A.B.Azizah and A.A.Nizam. 2008. Study on plasma spraying parameters of TiO₂ coatings. <i>Regional Conference of Solid State Science and Technology</i>, 30 Nov - 2 Dec 2008, Negeri Sembilan.

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Transparent Conductive Films by RF Sputtering Magnetron CVD/PVD
Project Number	03-03-02-SF0067
Project Leader and Team Members	Leader: Mohd Zakuan Abdullah Members: Razali Idris, Abdul Kadir Masrom and Abdul Hakim Hashim
Field of Research	Material Sciences
Project Summary	<p>The main objective of this research was to develop a transparent and conductive thin films (ITO, Ag,ZnO) on glass and PET substrates that can later be applied for the fabrication of electrochromic devices. Several specific objectives have been identified in order to achieve this main objective which were the identification of the optimum process parameters for the thin films deposition by the RF sputtering system such as chamber pressure, RF power, plasma composition (target and gases flow rate), and target distance; the determination of the tolerance transparency and conductivity of deposited thin films for both glass and PET substrates; and the evaluation and characterisation of the transparent and conductive thin films for their mechanical and physical properties such as crystallinity, transparency and conductivity. All of the project objectives were successfully achieved.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none">1. M.Z. Abdullah, M.H. Othman, A.N. Abdullah, A.H. Hashim, A.K. Masrom. 2008.Preliminary study on the development of transparent and conductive thin films by rf sputtering, <i>APCTP–ASEAN Workshop on Advanced Materials Science and Nanotechnology (AMSN)</i>,15-21 Sept 2008, Vietnam.2. M.Z. Abdullah, M.H. Othman, A.N. Abdullah, A.H. Hashim, A.K. Masrom. 2008.Effect of annealing on the optical and electrical properties of ITO thin films deposited by RF sputtering. <i>24th Regional Conference on Solid State Science and Technology(RCSSST)</i>, 30 Nov-2 Dec 2008, Negeri Sembilan.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Titania-based Hybrid Materials Planar Waveguides for Use in Optical Integrated Circuit
Project Number	03-03-02-SF0068
Project Leader and Team Members	Leader: Mohamad Zahid Abdul Malek Members: Mat Tamizi Zainuddin, Ahmad Zaki Shaar, Hasrina Hashim, Nik Mohd Azmi Nik Abd and Aishah Isnin
Field of Research	Material Sciences
Project Summary	The objectives of the project were to formulate a TiO ₂ (titania) based organic-inorganic hybrid materials via the sol-gel process for a high refractive index core layer, to formulate a silicate based materials by RF sputtering for low refractive index buffer and cladding layers, and to develop a high pressure UV polymerisation technique for micropatternable channel and optical integrated circuit on a titania based hybrid thin film. In this study, the sol-gel composition hybrid organic-inorganic VTES:TEOS-TtBu was formulated to achieve a high refractive index in the range of 1.46xx - 1.49xx. The RF technique and the sol-gel process was used to deposit the silicate based thin film. The low refractive index achieved from RF sputtering is 1.45xx but the process required a longer period for a deposition of a thick layer. In contrast, sol-gel composition hybrid organic-inorganic VTES and VTES:TEOS thin film was achieved in the range of 1.43xx-1.45xx. An in-house UV micropattern system for the fabrication of a channel on the thin film was also buildt-up.
Publications/Products/ Outcomes	Proceeding/Conference/Seminar: 1. M. Z. A. Malek.2008. Nanosurface morphology reconstrations in siloxane based hybrid thin filmmaterials during UV-etched sol-gel process refer to Q2. <i>International Conference on Functional, Materials and Devices 2008 (ICFMD)</i> , 16 – 19 June 2008, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Combined Solar-uv Photocatalytic Treatment to Convert Carbon Dioxide to Methane for Higher Value Gas
Project Number	03-03-02-SF0078
Project Leader and Team Members	Leader: Tan Yong Nee Members: Abdul Kadir Masrom, Suhaina Mohd Ibrahim, Izham Bakar, Hassan Ismaila and Chen Sau Soon
Field of Research	Applied Sciences and Technologies
Project Summary	The project focuses on the application of a combined solar-UV photocatalytic reduction of carbon dioxide (CO ₂) in order to produce C ₁ molecules such as methane and methanol. Besides, the study concentrate on the aspect of CO ₂ capture in the form of fixation of the gas in the presence of a photocatalyst and UV rays to convert it to biofuel. The application of this system will enhance the calorific value of biogases by converting the 20-40% CO ₂ to a more efficient fuel.
Publications/Products/ Outcomes	Proceeding/Conference/Seminar: 1. Tan Y. N., Chen S. S., Khairul H. 2008. Photocatalytic Reduction of Carbon Dioxide to Methane Using TiO ₂ in Solar Energy. <i>Progress of Solar Energy Research and Development 2008</i> , 21-22 Oct 2008, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The Development of CNT and PAN Solution as New Hybrid Precursor for Manufacture of Ultra High Modulus Carbon Fiber by Wet Spinning
Project Number	03-03-02-SF0079
Project Leader and Team Members	Leader: Mohamad Ariff Baharom Members: Ismail Ahmad, Suriani Shamsudin, Shahrul Nizam and Mohd Fadzlee Zainal Abidin
Field of Research	Material Sciences
Project Summary	<p>The objectives of the project were to modify the low speed single fibre wet spinning machine into a high speed multiple fibre spinning machine, to study the effect of carbon nanotube mixture in the polymer spinning solution to produce advanced PANfiber, and to study the performance of ultrahigh modulus carbon fibre from advance fibres. In this study, 20 fibre per tow from a single fibre and modification of the metering pump, feeding tank, and spinneret plate 0.5mm to 0.2mm holes was successfully carried out. Besides, CNT in PAN polymer solution and running the spinning process was successfully dispersed. The viscosity of the PAN polymer solution by using selected filtration techniques was successfully optimised. A higher modulus of PAN/CNT fibre compared with PAN fibre was successfully obtained. It was found that 500 fibre/tow was not suitable as the thickness of the spinneret plate is 0.1mm to 500 holes and when the pressurised spinneret bulges, the spinneret provided did not meet specification.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Nanostructured Yttria Stabilised Zirconia (YSZ) Coatings Using Plasma Spray Technique for Thermal Barrier Coating Applications
Project Number	03-03-02-SF0080
Project Leader and Team Members	Leader: Talib Ria Jaafar Members: Siti Mariam Mohamad and Fauzi Ismail
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to identify and optimise the spraying process parameters that is related to the deposition of nanostructured YSZ thermal barrier coating layers on the steel substrate; to determine and evaluate the improvements in physical, mechanical, chemical and tribological properties of the nanostructured YSZ coating system as compared to the conventional coating YSZ system; and to establish the relationship between the plasma spray processing parameters (power, powder flow rate, plasma gas pressure, gun speed) with the properties of nanostructured YSZ TBC deposited materials (hardness, adhesion strength, porosity, roughness, wear, microstructure). All of the objectives were successfully achieved.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Talib, R.J., Istikamah, S., Roslani, N., Mariam, M.S., Fazira, M.F. 2009. Microstructures and characteristics of nanostructured YSZ powders sprayed by atmospheric plasma spraying. <i>International Conference on Materials and Metallurgical Technology (ICOMMET)</i>, 24 - 25 Jun 2009, Surabaya, Indonesia. 2. Fazira, M. F., Norazlan, R., Siti, M. M., Talib, R. J.. 2009. Nanostructured and conventional Yttria Stabilized Zirconia (YSZ) coatings via atmospheric plasma spray technique for thermal barrier coatings applications. <i>4th International Conference on Recent Advances in Materials, Minerals and Environment</i>, 1 – 3 Jun 2009, Penang. 4. Fazira, M. F., Norazlan, R., Siti, M. M., Talib, R. J. 2008. Nanostructured Yttria Stabilized Zirconia (YSZ) coatings using atmospheric plasma spray technique. <i>Malaysian Metallurgical Conference (MMC)</i>. 3-4 Dec 2008, Selangor.



	<p>5. Talib, R.J., Abdullah, M.Z, Hashim, A.H., Shopee, N. I. M. 2008. Thermal barrier coating of Yttria Stabilized Zirconia. <i>Regional Conference on Solid State Science and Technology</i>, 30 Nov – 2 Dec 2008, Negeri Sembilan.</p> <p>6. Talib, R.J., Abdullah, M.Z., Hashim, A.H., Shopee, N. I. M. 2008. Atmospheric plasma sprayed NiAl coatings sprayed on steel substrates. <i>17th Scientific Conference and 18th Annual General Meeting of the Electron Microscopy of Malaysia (EMSM)</i>, 18 - 20 Dec 2008, Kuala Lumpur.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Titanium-niobium Alloy for Potential Medical and Dental Applications
Project Number	03-03-02-SF0087
Project Leader and Team Members	Leader: Mohmad Soib Selamat Members: Mazli Mustapha and Mohd Idrus Sidik
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to explore the powder metallurgy branded elemental technique through conventional press-and-sinter method for producing near-net-shape titanium-niobium samples and to replace the toxic vanadium in Ti-6Al-7Nb alloy which is more biocompatible, easy to polish and has a better surface condition. In this study, material characterisation as well as studies on the mixing, compaction and sintering, physical and mechanical properties were successfully carried out.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Novel RF MEMS Switch Driver for Longer Switch Life and Failure Detection
Project Number	03-02-14-SF0002
Project Leader and Team Members	Leader: Wallace Wong Shung Hui Members: Su Hieng Tiong and Mohd. Alauddin Mohd. Ali
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to develop a generic MEMS switch driver circuit that is capable of optimising the actuation voltage; prolonging the switch lifetime; to investigate RF MEMS's switching characteristics and to use this understanding to develop a mechanism to predict impending switching failure; and to produce a prototype of the RF MEMS switch driver with an integrated switching failure warning mechanism. All of the objectives were successfully achieved.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Wong, W. S. H. and Lai, C. H. 2009. Longer MEMS switch lifetime using novel dual-pulse actuation voltage. <i>IEEE Transaction on Device and Materials Reliability</i> 9: 569 –575. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Wong, W. S. H., Lee, K. C., Su, H. T. and Mohd. Ali, M. A. 2008. A built-in self repairable RF MEMS filter using redundant structures. <i>International Conference on Semiconductor Electronics</i>, 25 – 27 Nov 2008, Johor. 2. Wong, W. S. H. and Lai, C. H. 2009. MEMS switch Contact bouncing mitigation using novel dual- pulse actuation voltage. <i>Nanotech Malaysia</i>, 27 Nov 2009, Kuala Lumpur. 3. Wong, W. S. H. and Lai, C. H. 2009. Novel dual-pulse actuation voltage for longer MEMS switch lifetime, <i>World Congress on Engineering</i>, 1 - 3 July 2009, London, UK.
Contact Institution/Entity Address	Swinburne University of Technology Sarawak (SUTS) Swinburne University of Technology Sarawak, Jalan Simpang Tiga, 93350 Kuching, Sarawak.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fabrication of Membrane Electrode Assembly (MEA) Using Casting Technique
Project Number	03-01-02-SF0006
Project Leader and Team Members	Leader: Abu Bakar Mohamad Members: Abdul Amir H. Kadhu, Norhamidi Muhamad and Mohammad Kassim
Field of Research	Material Sciences
Project Summary	The aims of this project were to determine the optimum catalyst-ink mixture composition for the gas diffusion layer and gas diffusion electrode fabrication. This was followed by fabrication of the anode and cathode layer electrodes for MEA unit making and to validate the MEA fabrications and performances in single cell stack and in multi cell stacks. All the project aims were successfully achieved.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Pengarah, Pusat Pengurusan Penyelidikan & Inovasi, Universiti Kebangsaan Malaysia (UKM), 43600 UKM, Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	High Quality Transparent ZnO Films for High Efficiency Solar Cell Application
Project Number	03-01-02-SF0023
Project Leader and Team Members	Leader: Zahari Ibarahim Members: Riza Muhida, Noor Baa'yah, Kamaruzzaman Sopian
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to investigate the material properties and process parameters of sputtered grown Zinc Oxide thin films to be applied on Si thin film solar cells; to quantify the electrical and optical properties of ZnO thin films suitable for Si thin film based solar cells; and to study the simple structured Si thin film solar cells with optimized ZnO films. All the project objectives were achieved by sol gel and spin coating techniques instead of the sputtering technique.
Publications/Products/ Outcomes	Journal: 1. Siti Muhaimin, A., Noor Baayah, I. and Zahari, I. 2007. Influence of annealing temperature on the optical and structural properties of ZnO thin films deposited by electron beam evaporation. <i>Journal of Solid State Science and Technology Letters</i> 14: 55.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Associate Senior Research Fellow, Solar Energy Research Institute (SERI), Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor. Office: 03-89213583 H/p: 012-3765114 scezi@pkrisc.cc.ukm.my scezi@ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Solvolyis and Hydrotreatment of Biomass to Produce Fuel
Project Number	03-01-02-SF0030
Project Leader and Team Members	Leader: Sarani Zakaria Members: Zahira Yaakob, Jalifah Latip and Mohd. Yusof Othman
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to prepare a steam exploded fibre as a starting material for solvolysis and hydro treatment processes; to determine a suitable catalyst during the solvolysis process; to study the kinetics for the development of the solvolysis reaction; and to determine the active hydrocarbon after the solvolysis and hydrotreatment reactions suitable for fuel candidates. All of the objectives were successfully achieved.
Additional Information	Industrial Linkages: Sime Darby Bhd.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Applied Physics, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Design Advisor Software for Fuel Cell System
Project Number	03-01-02-SF0032
Project Leader and Team Members	Leader: Siti Kartom Kamarudin Members: Meor Zainal Meor Talib, Mohd Sobri Takriff, Zahira Yaakob, Kamaruzzaman Sopian, Abdul Wahab Mohammad, Wan Ramli Wan Daud and Siti Rozaimah Sheikh Abdul
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop the conceptual design from the process synthesis and to design in detail, model and optimise the Fuel Cell system by process analysis. Besides, an expert system and enlarge the knowledge base for fuel cell systems and to verify and evaluate the performance of the developed design advisor software. All of the objectives were successfully achieved.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Chemical & Process Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number e-Mail	Office: 03-8921 6422 ctie@eng.ukm.my/ctie@vlsi.eng.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Advanced Photovoltaic Thermal Air Based (hybrid) Solar Collectors for Simultaneous Production Heat and Electricity
Project Number	03-01-02-SF0039
Project Leader and Team Members	Leader: Mohd. Yusof Othman Members: Baharudin Yatim, Zahari Ibarahim, Mohd Hafidz Rusli and Kamaruzzaman Sopian
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to design, fabricate and analyse a PVT (photovoltaic term collector) followed by evaluation of the constructed collection system that is capable of producing heat and electricity simultaneously. The efficiency of the collector that is constructed in and out of the laboratory and compare the results theoretically and experimentally between the laboratory and field work were studied and evaluated. All of the objectives were successfully achieved.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Adnan Ibrahim, Mohd Yusof Othman, Mohd Hafidz Ruslan, Sohif Mat and Kamaruzzaman Sopian. 2011. Recent Advance in Flat Plate Photovoltaic/Thermal Solar Collector. <i>Renewable and Sustainable Energy Reviews</i> 15: 352-365. 2. Yousef A.Eltbaakh, M. H. Ruslan, M. A. Alghoul, M.Y. Othman, K. Sopian, M. I. Fadhel, 2011. Measurement of total and spectral solar irradiance: Overview of existing research. <i>Renewable and Sustainable Energy Reviews</i> 15: 1403-1426. 3. M.Y. Sulaiman, U.C. Ahamefula, K. Sopian, Z. Ibarahim, M.A. Alghoul, MY. Othman and N Amin, 2010. Exploiting Quantum Confinement for Future Solar Cell Application. <i>Journal of Energy and Power Engineering</i> 4: 26-34. 4. Goh Li Jin, Adnan Ibrahim, Yee Kim Chean, Roonak Daghigh, Hafidz Ruslan, Sohif Mat, Mohd Yusof Othman and Kamaruzzaman Sopian, 2010. Evaluation of Single-Pass Photovoltaic-Thermal Air Collector with Rectangle Tunnel Absorber. <i>American Journal of Applied Science</i> 7: 277-282.



	<p>5. Adnan Ibrahim, Goh Li Jin, Roonak Daghigh, Mohd Huzmin Mohamed Salleh, Mohd Yusof Othman, Mohd Hafidz Ruslan, Sohif Mat and Kamaruzzaman Sopian, 2009. Hybrid Photovoltaic Thermal (PV/T) Air and Water Based Solar Collectors Suitable for Building Integrated Applications. <i>American Journal of Environmental Sciences</i> 5: 618-624.</p> <p>Product: Smart PVT (Photovoltaic-Thermal) Collector</p>
Awards/Certificates	<ol style="list-style-type: none"> 1. International, Invention, Innovation and Technology (ITEX) 2008: 1 Silver Medal 2. Malaysia Technology Expo (MTE) 2009: Certificate of Award
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Semi-solid Metal Processing for Automotive Components
Project Number	03-01-02-SF0047
Project Leader and Team Members	Leader: Mohd Zaidi Omar Members: Zainuddin Sajuri, Che Husna Azhari, Shahrum Abdullah, Norhamidi Muhamad and Syarif Junaidi Sjarifuddi
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to determine the solid-liquid structural break-up mechanisms during partial remelting procedures, to determine the suitable processing temperature windows of candidate materials, and to develop a database of potential metallic alloys for semi-solid processing. In general, all of the objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fatigue Reliability of Magnesium Alloy Metal Matrix Composites for Lightweight Structural Components
Project Number	03-01-02-SF0048
Project Leader and Team Members	Leader: Zainuddin Sajuri Members: Shahrum Abdullah, Mohd Zaidi Omar, Ahmad Kamal Ariffin Mohd and Che Husna Azhari
Field of Research	Material Sciences
Project Summary	The objectives of the project were to determine fatigue properties of magnesium alloy metal-matrix composites, to determine the characteristics of fatigue crack propagation in a loading condition, and to develop a theoretical method on estimating the lifetime of structures and machine components. In this study, the fatigue properties of magnesium alloy were successfully determined and the fatigue properties of its composites were partially determined. The assessment of fatigue properties was done on internally produced Mg matrix composites.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Daud, M. A. M., Omar, M. Z., Sharif, J. and Sajuri, Z. 2009. Effect of solution treatment on fatigue properties of magnesium alloy. <i>International Journals of Mechanical and Materials Engineering</i> 4: 105 – 108. 2. Zulkoffli Z., Syarif J. and Sajuri Z.. 2009. Fabrication of AZ61/SiC composites by powder metallurgy process. <i>International Journal of Mechanical and Materials Engineering</i>. 4: 156 – 159. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Zulkoffli, Z., Daud, M. A. M., Syarif, J. and Sajuri, Z. 2008. Fabrication of magnesium alloy from a fre-alloyed powder using hot die compaction process. <i>13th International Conference on Applied Mechanics and Mechanical Engineering (AMME)</i>, 27 – 29 May 2008, Cairo, Egypt. 2. Daud, M.A.M., Omar, M.Z., Syarif, J. and Sajuri, Z. 2008. Effect of solution treatment of fatigue properties of magnesium alloy. <i>Proceeding of Malaysian Metallurgical Conference</i>, 3 – 4 Dec 2008, Selangor. 3. Daud, M. A. M., Omar, M. Z., Sharif, J. and Sajuri, Z. 2009. Effect of heat treatment on fatigue crack propagation behavior of magnesium alloy. <i>International Conference On Natural and Material Sciences</i>, 3-4 July 2009, Banjarmasin, Indonesia.

	<p>4. Daud, M.A.M., Syarif, J., Omar, M.Z. and Sajuri, Z. 2009. Effect of solution treatment on fatigue crack propagation behavior of magnesium alloy. <i>The 4th International Conference on Recent Advances in Materials, Minerals & Environment (RAMM) and 2nd Asian Symposium on Materials & Processing (ASMP2009)</i>, 1-3 June 2009, Penang.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM) Department of Mechanical & Materials Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor. Office: 03-8921 6865 H/p: 013-3679544 sajuri@vlsi.eng.ukm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Fatigue Life Characterisation of Composite Materials Under Spectrum Loadings
Project Number	03-01-02-SF0051
Project Leader and Team Members	Leader: Shahrum Abdullah Members: Mohd Zaidi Omar, Zainuddin Sajuri, Mariyam Jameelah Ghazali, Che Husna Azhari and Ahmad Kamal Ariffin Mohd
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to study the fatigue life behaviour of Glare composite materials, to study the fatigue life characteristics of composite components under spectrum loadings, and to develop a new fatigue life prediction model of composite materials under spectrum loadings. In general, all of the objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Fatigue Data Editing Algorithm for Road Vehicle Loadings in Time-frequency Domain
Project Number	03-01-02-SF0052
Project Leader and Team Members	Leader: Shahrum Abdullah Members: Ahmad Kamal Ariffin Mohd, Nik Abdullah Nik Mohamed, Mohd. Zaki Nuawi and Mohd. Jailani Mohd Nor
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to study the characteristics and the behaviour of road vehicle fatigue loadings in various time-frequency transforms, to develop a fatigue data editing algorithm with a combination of the time-frequency transforms and cycle sequence effects in fatigue life prediction, and to develop the experimental procedures of durability accelerated fatigue tests using critical automotive components. All the objectives were successfully achieved and the technology has been transferred to the automotive industries such as Proton and APM Springs.
Additional Information	Industrial Linkages: Proton, APM Springs
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Rolling Contact Fatigue (RCF) Studies of Railway Track in Malaysia
Project Number	03-01-02-SF0053
Project Leader and Team Members	Leader: Zainuddin Sajuri Members: Norhamidi Muhamad, Syarif Junaidi Sjarifuddi and Mariyam Jameelah Ghazali
Field of Research	Material Sciences
Project Summary	The objectives of the project were to determine the potential sites for gauge corner cracking and head cracking of railway track caused by rolling Contact fatigue (RCF), to identify the direction and depth of cracks, to determine the crack initiation and propagation mechanisms; and to develop a maintenance strategy for the prevention of catastrophic damage of railway track due to rolling Contact fatigue (RCF). All of the objectives were successfully achieved.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Aziman, M.A., Sajuri, Z., Syarif, J. and Ikhsan, A.W. 2009. Bending fatigue properties of railway trackmaterial. <i>International Journal of Mechanical and Materials Engineering</i> 462-463: 1109-1104. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Sajuri, Z., Syarif, J., Omar, M.Z., Allafi, M.M. and Faiz M.F. 2008. Fatigue and fatigue crack growthbehavior of tool steel, <i>1st International Conference on Materials Science (MATERIALS)</i>, 7 – 9 Nov 2008, Bucharest, Romania. 2. Aziman, M.A., Sajuri, Z., Syarif, J. and Ikhsan, A.W. 2008. Bending fatigue properties of railway trackmaterial, <i>Proceeding of Malaysian Metallurgical Conference</i>, 3 – 4 Dec 2008, Selangor. 4. Akeel, N. A., Sajuri, Z. and Arifin, A.K. 2009. Analysis of wheel/rail Contact of rolling fatigue crack. <i>Mini Symposium on Fracture and Strength of Solids</i>, 4 – 5 June 2009, Penang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Novel Separation Methods in Biodiesel Production Using Solvent Stable Nanofilters Technology
Project Number	03-01-02-SF0054
Project Leader and Team Members	Leader: Abdul Wahab Mohammad Members: Siti Kartom Kamaruddin and Mohd Sobri Takriff
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to design a novel separation scheme for biodiesel production using solvent-stable nanofiltration membranes and to study the performance of the separation scheme with respect to product purity and economic viability. Both objectives were achieved. The model prototype was designed and constructed and commercially available nanofilters membranes were used. However, based on the eight membranes used in the studies, only one was found to be viable. This means that the current polymeric nanofilters technology requires significant improvement in terms of material quality. The performance of the process was quite promising but obviously requires significant improvement in terms of the nanofilters robustness.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Nanomagnetic Thermoplastic Natural Rubber Composites
Project Number	03-01-02-SF0059
Project Leader and Team Members	Leader: Sahrim Ahmad Member: Mustaffa Abdullah
Field of Research	Material Sciences
Project Summary	The objectives of the project were to synthesise Fe ₃ O ₄ nanoparticles using sonochemical and microwave co-precipitation methods and to characterise its magnetic nanoparticles, to prepare the magnetite thermoplastic natural rubber nanocomposites and to determine its properties, and to study the effect of gamma ray irradiation on magnetic and microwave absorbing properties of Fe ₃ O ₄ nanoparticles and magnetite thermoplastic nanocomposites. All of the objectives were successfully achieved.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Applied Physics, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Modelling of Electronic Properties of Semiconductor Quantum Dots
Project Number	03-01-02-SF0061
Project Leader and Team Members	Leader: Geri Kibe Ak Gopir Member: Ahmad Puaad Othman
Field of Research	Physical Sciences
Project Summary	<p>The objectives of the project were to develop computational procedures for total energy minimisation based on Monte Carlo (MC) and molecular dynamics (MD) in self-assembled semiconductor quantum dots, to estimate the electronic and optical properties of the quantum dot system based on available theories, and to identify the input structural parameters of material, composition, geometry and size for the required electronic and optical properties. In general, all of the objectives were achieved. Furthermore, the electronic properties of eigenvalues and eigenvectors of semiconductor quantum dot systems were successfully computed (90%) and the input parameters of material, composition, geometry and size were successfully identified to produce the desired electronic properties of semiconductor quantum dots (90%). In the Commercialisation approach, this programs written in MATLAB and Fortran are to be uploaded to the internet.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Power Quality Remote Monitoring: A Low Cost System Development
Project Number	03-01-02-SF0064
Project Leader and Team Members	Leader: Aini Hussain Members: Azah Mohamed, Aini Hussain and Mohd Hanif Md Saad
Field of Research	Information, Computer and Communication Technology
Project Summary	The objectives of the project were to develop a remote monitoring software for power quality variation over the internet, to develop a simple server base application monitoring equipment to monitor power quality disturbance locally. In general, the objectives were successfully achieved. A remote monitoring software for PQ monitoring over the internet has successfully been developed and tested and a simple server based application monitoring equipment that can monitor PQ signals locally were developed.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Alex, W., Aini, H., Seri Mastura, M., Azah, M. and Ramizi, M. 2008. Development of web-based power quality monitoring system and analysis with asynchronousJavaScript XML (AJAX). <i>9th Seminar on Intelligent Technology and Its Application</i>, 8 May 2008, Surabaya, Indonesia. 2. Alex, W., Aini, H., Azah, M. dan Ramizi, M. 2008. Pembangunan sistem pemantauan kualiti kuasa berasaskan web. <i>Proceedings of Engineering Postgraduate Conference</i>, Oct 2008, Selangor. 3. Alex W., Aini, H. and Azah, M. 2008. Development of a web-based powerquality monitoring system and analysis. <i>Proceeding of the 3rd Scientific Conference</i>, 19 Jan 2008, Bangi.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Deputy Director (Infrastructure and Instrumentation), Centre For Research and Instrumentation Management (CRIM), Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Superconductor-nanomagnet Hybrid Conductors for Energy Transport Applications
Project Number	03-01-02-SF0065
Project Leader and Team Members	Leader: Roslan Abd. Shukor Member: Mohammad Hafizuddin
Field of Research	Physical Sciences
Project Summary	The objectives of the project were to develop a high transport current density superconductor-nanomagnet hybrid conductors, to determine the flux pinning capability of the nanomagnetic rod and powders in enhancing the transport current density, to develop a theoretical model for the interaction of vortex and flux line in superconductor-nanomagnet hybrid system, and to investigate the suitability of the new conductors for next generation energy transport systems. All of the objectives were successfully achieved. This project has shown that the magnetic nanoparticles and nanostructures can enhance the critical current density in high temperature superconductors.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Kong, W. and Abd-Shukor, R. 2007. Effect of nano Cr2O3 addition on (Bi,Pb)-Sr-Ca-Cu-O superconductor. <i>Solid State Science and Technology</i> 15: 1-5. 2. Abd-Shukor, R. and Kong, W.2009. Nanoparticles as flux pinning center in bulk and Ag-sheathed Bi1.6Pb0.4Sr2Ca2Cu3O10, <i>Materials Research Innovation</i> 13: 403-405. 3. Abd-Shukor, R. and Kong, W. 2009. Effect of magnetic nanoparticles Fe3O4 on the transport current properties of Bi-Sr-Ca-Cu-O superconductor tapes. <i>Journal of Applied Physics</i> 105: 07E311.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Applied Physics, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Catalytic Production of Levulinic Acid from Renewable Cellulosic Materials and Carbohydrates
Project Number	03-01-02-SF0066
Project Leader and Team Members	Leader: Zahira Yaakob Members: Abdul Amir H. Kadhu, Abu Bakar Mohamad, Siti Rozaimah Sheikh Abdul, Manal Ismail and Siti Kartom Kamaruddin
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to produce levulinic acid from waste pineapple leaves which was successfully achieved. Findings from the study indicated that the project is viable and was proposed to be taken-up by the agricultural board of Malaysia.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Chemical & Process Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Advanced Power Quality Monitoring Instrument for Real Time Disturbance Recognition and Source Detection
Project Number	03-01-02-SF0071
Project Leader and Team Members	Leader: Azah Mohamed Members: Hilmi Sanusi, Aini Hussain, Salina Abdul Samad and Ramizi Mohamed
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design and develop a prototype power quality monitoring instrument built around a powerful DSP that allows fast data capture and fast data processing; to implement in real-time the calculation of various power quality indices according to Malaysian standards; to implement in real-time the detection and analysis of power disturbances as well as for locating the source of disturbances; to develop an intelligent software tool for improved power quality disturbance recognition and diagnosis. In general, all the four objectives were achieved.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mohammed, E.S., Azah, M. and Salina, A. S. 2007. Power quality disturbance detection using DSP based continuous wavelet transform. <i>Journal of Applied Sciences</i> vol:1 – 10. 2. Salem, M. E., Mohamed, A. and Samad, S. A. 2007, Fast detection and classification of power quality disturbance based on DSP implementation. <i>International Review of Electrical Engineering</i> 2: 163-170. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohammed, E. S., Azah, M., Salina, A. S. and Iskandar, Y. 2007. Software tool for real time power quality disturbance analysis and classification. <i>IEEE 5th Student Conference on Research and Development SCORED</i>, 11 - 12 Dec 2007, Selangor. 2. Muhammad, F. F. and Azah, M. 2008, Towards development of automated power quality disturbance recognition, <i>TNB Technical Conference</i>, 4-6 May 2008, Selangor. 3. Mohammed, E. S., Azah, M. and Salina, A. S. 2007. Real-time power quality disturbance analysis using a DSP-based system. <i>Asia Pacific Conference on Power Quality</i>, 27 -29 Nov 2007, Malaysia.



Awards/Certificates	19th International Invention, Innovation and Technology Exhibition (ITEX) 2008: 1 Silver medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Advanced Algorithms and Computational Methods to Enhance Power System Security and Reliability
Project Number	03-01-02-SF0072
Project Leader and Team Members	Leader: Azah Mohamed Members: Hafizah Husain and Aini Hussain
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to develop a fast dynamic security assessment of power systems using computational intelligence to overcome the problem of large amounts of time domain simulations that is required to evaluate the margins of the security regions; to develop a risk based security assessment tool which accounts for the probability of the system becoming unstable and its consequences; to develop a fast technique for predicting dynamic voltage collapse in an on-line mode considering variation in demands and various system operating conditions; to develop an under voltage load shedding scheme for emergency voltage stability control; and to develop an effective vulnerability assessment tool using computational intelligence techniques for predicting vulnerability of grids to unforeseen catastrophic contingencies.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ahmed, M. A. H., Azah, M. and Aini, H. 2008. Vulnerability assessment of powersystem using radial basis neural network and a new feature extraction method. <i>American Journal of Applied Sciences</i> 5:705-713. 2. Muhammad, N., Azah, M. and Aini, H. 2007, An adaptive undervoltage loadshedding against voltage collapse based on power transfer stability index. <i>Journal of Electrical Engineering and Technology</i> 2: 420-427. 3. Noor Izzri, A. W., Azah, M. and Aini, H. 2008. Transient stability assessment of a power system using probabilistic neural network. <i>American Journal of Applied Sciences</i> 5:1225-1232. 4. Ahmed, M. A. H., Azah, M. and Aini, H. 2007. New method for vulnerability assessmentof power system. <i>Journal of Applied Sciences</i> 7: 841-847.



	Proceeding/Conference/Seminar: 1. Muhammad, N., Azah, M. and Aini, H. 2007, Dynamic voltage collapse prediction using artificial neural network, <i>Proceedings of International Conference on Electrical Engineering and Informatics</i> , 17-19 June 2007, Indonesia.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Faculty of Engineering and Built Environment, 43600 Bangi, Selangor. Office: 03-89216006 azah@vlsi.eng.ukm.my/azah@eng.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Establishment of Malaysian Anthropometrics Data for the Design and Development of Safe and Comfortable Driver's Seat for Road Vehicles
Project Number	03-01-02-SF0073
Project Leader and Team Members	Leader: Baba Md Deros Members: Shahrums Abdullah, Mohd. Jailani Mohd, Ahmad Rasdan Ismail and Rozmi Ismail
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to identify the current status of ergonomic awareness amongst Malaysian road vehicle users i.e. to investigate the critical anthropometrics data that should be incorporated in designing the driver's seat of road vehicles; to collect critical anthropometrics data of the Malaysian population for designing the driver's seat of road vehicles and to design a prototype and conduct laboratory tests of the driver's of road vehicles.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Deros, B.M., Daruis, D.D.I. and Nor, M.J. M. 2008. Vehicle seat comfort: static and dynamic parameters, <i>Prosiding Seminar 2 AMReG</i>, Negeri Sembilan. 2. Dian, D. I. D., Mohd Jailani, M. N., Baba M. D. and Mohammad, H. F. 2008. Whole-body vibration and sound quality of Malaysian cars. Proceedings of the 9th Asia Pacific Industrial Engineering and Management Systems Conference (APIEMS), 3-5 Dec 2008, Bali, Indonesia. <p>Product:</p> <ol style="list-style-type: none"> 1. Malaysian Anthropometrics Data
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fabrication and Materials Performance of Carbon and Natural Silk Laminate Composites for Light Weight Vehicles (LWV)
Project Number	03-01-02-SF0075
Project Leader and Team Members	Leader: Che Husna Azhari Members: Rozli Zulkifli, Andanastuti Muchtar, Mohd Zaidi Omar, Kamaruzzaman Sopian, Ahmad Kamal Ariffin Mohd and Dzuraidah Abd Wahab
Field of Research	Material Sciences
Project Summary	The objectives of the project were to develop a fabrication protocol for carbon and natural silk weaves composites for light weight vehicles (solar car chassis) using a resin transfer molding (RTM); to design the actual solar chassis; and to test the chassis for crashworthiness using an especially constructed program in finite element analysis and materials integrity of the mechanical system. All of the objectives, were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis of SnO ₂ Nanowires for High Sensitivity Gas Sensor
Project Number	03-01-02-SF0076
Project Leader and Team Members	Leader: Dee Chang Fu Members: Muhamad Mat Salleh and Burhanuddin Yeop Majl
Field of Research	Material Sciences
Project Summary	The objectives of the project were to grow SnO ₂ nanowires for a high sensitivity gas sensor and to characterise the SnO ₂ nanowires. All of the objectives were successfully achieved and a prototype of the gas sensor will be tested soon.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Hamzah, A., Dee, C. F. and Majlis, B. Y. 2007. SU-8 and AZ-P4620 as structural materials for microactuator: demonstrated by low actuation voltage MEMS switch. <i>International Conference on Materials for Advanced Technologies</i>, 1-6 July 2007, Singapore. 2. Dee, C. F., Majlis, B. Y., Yahaya, M. and Salleh, M. M. 2007. Growth and characterization of ZnO nanowires, nanowalls and nanobeltson fused silica and alumina substrate <i>International Conference on Materials for Advanced Technologies</i>, 1-6 July 2007, Singapore.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Institute of Micro Engineering and Nanoelectronics (IMEN), Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	System-on-chip for MEMS Accelerometers
Project Number	03-01-02-SF0078
Project Leader and Team Members	Leader: Masuri Othman Members: Roslina Mohd Sidek and Burhanuddin Yeop Majl
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design, fabricate and test the System-On-Chip for MEMS accelerometers. The design, fabrication and testing of the analogue amplifier will be based on switch-capacitor charge differentiation method and voltage amplification with chopper stabilization to be used in capacitive sensing. The fabrication was done in MIMOS wafer fabrication facilities. The design and implementation of 8-bit Three-steps Flash Analog to Digital Converter (ADC) were done to reduce the number of comparator without reducing their resolution. The SOC prototype can be used in many applications such as airbag inflation, gyroscope, moistures and all types of physical sensors that are capacitive-based.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Metal Oxide-polymer Nanocomposite Thin Films for Volatile Organic Compound Gas Sensor
Project Number	03-01-02-SF0079
Project Leader and Team Members	Leader: Mohammad Hafizuddin Jumali Members: Muhamad Mat Salleh and Muhammad Yahaya
Field of Research	Material Sciences
Project Summary	The objectives of the project were to synthesize metal oxides nanoparticles; to fabricate metal oxide-polymer nanocomposite thin films; and to construct and characterise volatile organic compound gas sensors. The first two objectives were successfully achieved but more detailed insight for implementation of objective three need to be required.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Vibro-acoustics Modeling, Prediction and Development of Control Systems for Road Transport Vehicles
Project Number	03-01-02-SF0081
Project Leader and Team Members	Leader: Mohd. Jailani Mohd Nor Members: Mohd Hanif Md Saad, Sallehuddin Mohamed Haris, Shahrum Abdullah and Ahmad Kamal Ariffin Mohd
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to model and validate the characteristics of vibrations and acoustics performance in road transport vehicles; to develop prediction model on the vibro-acoustics performance of road transport vehicle systems; and to incorporate a multi-variety systems technology to control and improve noise, vibration and harshness in road transport. In general, all of the objectives were successfully achieved. Research was conducted on vibro-acoustical human comfort and various on-road measurements. A passenger acoustical comfort index (VACI) was developed for further assessment of human comfort and this index was greatly appreciated by other automotive comfort researchers around the world. An advanced signal processing techniques was developed to characterise various sources of noise and vibration inside the vehicle cabin. A semi-active acoustic absorption panel was developed for noise attenuation. An automotive simulator was fabricated for driving analyses and ride comfort evaluations. This simulator was demonstrated in the Malaysian International Road Safety Exhibition 2009 (MIREX 2009). The prototype of the control system was developed and validated.</p>
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Mohd Jailani, M. N., Baba, M. D. and Dian, D. I. D. 2007. Questionnaire-based survey on drivers' noise and vibration discomfort. <i>Proceedings of the 14th International Congress of Sound and Vibration</i>, 9 -12 July 2007, Cairns, Australia. 2. Hosseini, F., Mohd, M., Nor, M. J. and Kamal Ariffin, A. 2008. Utilisation of inverse techniques for vibration source reconstruction. <i>Proceedings of the 15th International Congress on Sound and Vibration (ICSV15)</i>, 6-10 July 2008, Daejeon, Korea.

	<ol style="list-style-type: none"> Hosseini, F., Mohd. M., Nor, M. J. And Kamal Ariffin, A. 2008. Vibration source estimation inside of machinery. <i>Proceedings of the 13th International Conference on Applied Mechanics and Mechanical Engineering (AMME-13)</i>, 27-29 May 2008, Cairo, Egypt. Darina, I. D., D., Mohd Nor, M. J., Md Deros, B. and Hosseini, F. M. 2008. Whole body vibration and sound quality of malaysian cars. <i>Proceedings of the 9th Asia Pacific Industrial Engineering and Management Systems Conference</i>, 3-5 Dec 2008, Bali Indonesia.
Awards/Certificates	International Exchange of North America (IENA) 2007: 1 Gold Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Junction Diode Using Metal Oxides Nanowires Thin Films
Project Number	03-01-02-SF0082
Project Leader and Team Members	Leader: Muhammad Yahaya Members: Muhamad Mat Salleh and Mohammad Hafizuddin
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to synthesize metal oxides nanowires; to develop a deposition technique for metal oxides nanowires thin films; and to fabricate junction diodes using metal oxides nanowires thin films. All of the objectives were successfully achieved.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> Dee, C. F., Majlis, B. Y., Yahaya, M. and Salleh, M. M. 2008. Electrical characterization cross-linked ZnO nanostructures grown on Si and Si/SiO₂. <i>Sains Malaysiana</i> 37: 281-283. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> Dee, C.F., Majlis, B. Y., Yahaya, M. and Salleh, M. M. 2007. Growth and characterization of ZnO nanowires, nanowalls and nanobelts on fused silica and alumina substrate. <i>International Conference on Materials for Advanced Technologies</i>, 1-6 July 2007, Singapore. Tiong, T. Y., Yahaya, M., Dee, C. F., Salleh, M. M. and Majlis, B. Y. 2007. Growth and characterization of single crystalline tin oxide (SnO₂) nanowires. <i>R&D Nanotechnology Symposium</i>, 29 Nov - 1 Dec 2007, Malaysia. Tiong, T. Y., Yahaya, M., Dee, C. F., Salleh, M. M. and Majlis, B. Y. 2008. Study of the Contact properties of ZnO nanowires with Au/Ag and Au/Pt/Ag, <i>IEEE International Conference on Semiconductor Electronics (ICSE)</i>, 25-27 Nov 2008, Malaysia. Tiong, T. Y., Yahaya, M., Dee, C. F., Lim, K. P., Majlis, B. Y. and Sow, C. 2008. The influence of growth temperature on SnO₂ nanowires. <i>2nd International Conference on Functional Materials and Devices</i>, 16-19 June 2008, Malaysia. <p>Products:</p> <ol style="list-style-type: none"> Metal Oxide Gas Sensor

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Post-tensioned Lightweight Concrete for Load Bearing Structural Elements
Project Number	03-01-02-SF0084
Project Leader and Team Members	Leader: Muhammad Fauzi Mohd Zain Members: Abd. Khalim Abd, Kamaruzzaman Sopian and Khairiah Badri
Field of Research	Material Sciences
Project Summary	The objectives of the project were to determine a range of mix proportion of foamed concrete for optimum density, practical and simplicity; to utilize the potential of the foamed concrete as a sustainable material since no aggregate is required in its production along with the inclusion of Fly Ash and Rice Husk Ash; to develop a semi-structural form of foamed concrete and enhance the use of foamed concrete as an advanced material in construction; and to establish a relationship between serviceability limits achievable with post-tensioned foamed concrete.
Publications/Products/ Outcomes	Journals: 1. Zain, M. F. M. and Abd. S. M. 2008. Multiple regression model for compressive strength prediction of high performance concrete. <i>Journal of Applied Science</i> 9: 155-160. 2. Abd, A. M., Abd, S. M., Ismail, A. and Zain, M. F. M. 2008. Utilization of engineering to optimize concreting productivity. <i>Journal of Applied Science</i> 8: 3479-3484.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Deputy Dean (Research), Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Photoacoustic Cell for Investigations of Solids at Various Temperatures
Project Number	03-01-02-SF0120
Project Leader and Team Members	Leader: Hasan Adli Alwi Member: Mohd Ambar Yarmo
Field of Research	Physical Sciences
Project Summary	The objectives of the project were to develop a low-temperature photoacoustic cell, to test the completed photoacoustic instrument by measuring the thermal diffusivity of solids at various temperature from room temperature to liquid nitrogen temperature, and to develop a general thermal diffusion mechanisms in solids from photoacoustic measurements. The cell was successfully fabricated. It is capable of operating from room to liquid nitrogen temperature.
Publications/Products/ Outcomes	Products: 1. Photoacoustic cell
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Continuous Solar-assisted Dehumidification System for High Quality Dried Lemongrass for Export Market
Project Number	03-01-02-SF0157
Project Leader and Team Members	Leader: Kamaruzzaman Sopian Members: Aminah Abdullah, Mohd. Yusof Othman, Baharudin Yatim and Wan Ramli Wan Daud
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to study the drying characteristics of heat sensitive products such as lemongrass (<i>citronella</i>), to evaluate the performance of a solar-assisted dehumidification system for high quality heat sensitive agricultural product such as lemongrass (<i>Citronella</i>) in the Malaysian climate, to evaluate the performance of individual components of the solar assisted dehumidification system, including the solar collector system and the dehumidification system, to study the quality of dried products that is produced by the solar assisted system and to develop the sizing procedures and cost optimisation model for the solar assisted dehumidification system. All of the objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Single Step Renewable Hydrogen Production System from Agrowaste Using Aqueous Phase Reforming (APR)
Project Number	03-01-02-SF0162
Project Leader and Team Members	Leader: Zahira Yaakob Members: Manal Ismail, Wan Ramli Wan Daud and Abdul Amir H. Kadhu
Field of Research	Engineering Sciences
Project Summary	The project objective was to produce hydrogen from liquid feedstock using heterogeneous catalyst and it was achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Thermocouple Mesh System to Measure Three Dimensional Temperature Profile of Polyolefin Melt Inside Twin Screw Extruder
Project Number	03-01-02-SF0164
Project Leader and Team Members	Leader: Rozaidi Rasid Members: Sarani Zakaria and Sahrim Ahmad
Field of Research	Engineering Sciences
Project Summary	Project objectives were to fabricate the thermocouple mesh to be used as a sensor to study temperature profiles; to fabricate the apparatus that can be used to attach the thermocouple mesh to the extruder; and to use the equipment fabricated to study temperature profiles of polyolefin inside a twin screw extruder. The thermocouple mesh was successfully fabricated, as well as the apparatus. This equipment were later used for the measurement of temperature profiles.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Automated Vision Based Fruit Size Grading System
Project Number	03-01-02-SF0178
Project Leader and Team Members	Leader: Mohd. Marzuki Mustafa Members: Aini Hussain, Che Hassan Che Haron, Badaruzzaman Mohamad and Azman Hamzah
Field of Research	Agricultural Sciences
Project Summary	Project objectives were to develop an affordable automated vision-based size-grading system for exotica papaya for the export market. The low-cost automated vision system for the papaya size grading has been developed successfully. The system has been tested on real-time process and it is more than 95% accurate for papaya size grading.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Slamet Riyadi, Asnor Juraiza Ishak, Mohd. Marzuki Mustafa and Aini Hussain. 2008. Wavelet-based Feature Extraction Technique for Fruit Shape Classification. <i>Proceeding of the 5th International Symposium on Mechatronics and its Applications</i>, (Indexed by IEEE-Explore and ISI) 27-29 May 2008, Amman, Jordan. 2. Riyadi, S., Mustafa, M. M., Hussain, A. and Hamzah, A. 2007. Papaya fruit grading based on size using image analysis. <i>Proceeding of International Conference on Electrical Engineering & Informatics</i>, 17-19 June 2007, Bandung-Indonesia. 3. Riyadi, S., Ashrani A. Abd. Rani, Mustafa, M.M. and Hussain, A. 2007. Shape characteristic analysis for papaya size classification. <i>Proceeding of the 5th Student Conference on Research & Development</i>. Bangi, Selangor. (Indexed by IEEE-Explore and ISI). 4. Slamet Riyadi, Hafizah Husain, Aini Hussain and Mohd. Marzuki Mustafa 2007. Papaya size grading using centroidal profile analysis of digital image", <i>Proceeding of the 6th WSEAS International Conference on Circuit, Systems, Electronics, Control & Signal Processing</i>, 29-31 December 2007, Kairo-Egypt. (Indexed by IEEE-Explore and ISI)
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Electrical, Electronics and Systems Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Ruthenium-Doped Tris(Dithiolene)Tungstate Photocatalyst for Solar Assisted Photoelectrochemical Cell (Solarpec) - water
Project Number	03-01-02-SF0184
Project Leader and Team Members	Leader: Mohammad Kassim Members: Abu Bakar Mohamad, Abdul Amir H. Kadhum, Kamaruzzaman Sopian and Wan Ramli Wan Daud
Field of Research	Applied Sciences and Technologies
Project Summary	Projective objectives were to synthesize and assess ruthenium-doped-tris (dithiolene) tungstate photoelectrocatalyst for hydrogen production from photoelectrolysis of water; to study the reaction mechanisms for the formation of ruthenium-doped-tris (dithiolene) tungstate photoelectrocatalyst; to study and evaluate the performance and efficiency of the heterogeneous ruthenium-doped-tris (dithiolene) tungstate photoelectrocatalyst for photoelectrolysis of water; and to design, fabricate and analyze solar assisted heterogeneous ruthenium-doped-tris (dithiolene) tungstate, single and multiple photoelectrolyser cell assembly for photoelectrolysis of water for hydrogen production. The objectives were partially achieved, three Ruthenium(II) dopants, namely dichlorobis(2,2'-bipyridyl)ruthenium(II), Ru01 dichlorobis(4,4'-dimethyl-2,2'bipyridyl)ruthenium(II), Ru02 and dichlorobis(4,4' dicarboxy2,2'bipyridyl) ruthenium(II), Ru03 had been synthesized. Out of these, three ruthenium complexes, the Ru02 was successfully doped homogeneously on tris (dithiolene) tungstate in ethanol solution.
Publications/Products/Outcomes	Others: 1. Final Year Project Report: Synthesis & Characterisation of Ruthenium(II) Polypyridyl.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of New Binder System for Metal Injection Molding Process Using a Locally Extracted Material
Project Number	03-01-02-SF0206
Project Leader and Team Members	Leader: Norhamidi Muhamad Members: Che Hassan Che Haron, Andanastuti Muchtar and Mohd Zaidi Omar
Field of Research	Applied Sciences and Technologies
Project Summary	The project objectives were to develop a low cost binder system using a tapioca starch; to determine the influence of the processing parameters in the development of a new binder; and to determine the processing parameters in Metal Injection Molding when using the new proposed binder system. All of the objectives were successfully achieved.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Norhamidi Muhamad and Hooman AlGobashi. 2008. Development of a Starch-based Binder in Metal Injection Molding, <i>The International Conference on Advances in Materials and Processing Technologies</i>, 2-5 November 2008, Manama, Bahrain. 2. Norhamidi Muhamad and Hooman AlGobashi. 2009. Thermoplastic starch/lldpe blends as a binder in metal injection molding. <i>International Conference on Flexible Automation and Intelligent Manufacturing FAIM</i>. 6-8 July 2009, Middlesbrough, United Kingdom. 3. Muhamad N. and AlGobashi H. 2008. Application of starch-based binder in metal injection molding. <i>Proceeding Seminar 2, Advanced Manufacturing Research Group AMReG</i>. 17-18 December 2008. Port Dickson, Negeri Sembilan. 4. Hooman AlGobashi and Norhamidi Muhamad. 2008. Rheological Analysis of an Starch Based Binder Metal Injection Molding. <i>Proceeding Seminar 1, Advanced Manufacturing Research Group</i>, 11 June 2008, Seremban, Negeri Sembilan.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Electrodeposition and Characterisation of Nanocrystalline Cuprous Oxide (Cu ₂ O) Films for Photoelectrochemical Solar Cells
Project Number	03-01-02-SF0211
Project Leader and Team Members	Leader: Ibrahim Abu Talib Members: Abdul Razak Daud, Muhammad Azmi Abdul and Ramli Omar
Field of Research	Material Sciences
Project Summary	Project objectives were to characterise the structural, microstructural, optical and electrical properties of the prepared Cu ₂ O films; to explore the feasibility of using the electrodeposition technique to deposit Cu ₂ O thin films; and to fabricate and test the performance of the photoelectrochemical cell made from the developed Cu ₂ O films. Cu ₂ O thin films were deposited on indium tin oxide coated glass using both continuous and pulse current depositions. The characteristics of the deposited film vary, depending on the parameters during and after deposition. The structure and microstructure of the deposited films were successfully characterised. Attempts were also made to characterise the optical and electrical properties. However, since poor coverage and non-uniform single phase Cu ₂ O films were deposited, good and reliable electrical and optical measurements were not obtained.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Modifications and New Developments of Carbide Cutting Tool Geometry for Machining Cast Iron
Project Number	03-01-02-SF0214
Project Leader and Team Members	Leader: Jaharah A Ghani Members: Mohd Nizam Ab Rahman, Shahrum Abdullah, Mohd Zaidi Omar, Dzuraidah Abd Wahab and Che Hassan Che Haron
Field of Research	Engineering Sciences
Project Summary	Project objectives were to modify and develop new geometry of carbide cutting tool using FEM software; to determine the optimum tool geometry conditions when machining cast iron using FEM software; to determine the optimum cutting conditions when machining cast iron using optimum tool geometry using FEM software; to investigate the machinability of cast iron using the new developed carbide cutting tool geometry experimentally and investigate the problems and propose the potential solutions for machining cast iron using carbide tools. All the objectives were successfully achieved.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Jaharah, A. G., Che Hassan, C. H., Ghazali, M. J. Sulong, A. B., Omar, M. Z., Nuawi, M. Z. and Ismail, A. R. 2009. Performance of uncoated carbide tool when machining cast iron in dry cutting condition, International Journal of Modern Physic B, 23: 1796-1802. 2. Jaharah A. G., Wahid S. W., Che Hassan C. H. and Nuawi M. Z, The effect of uncoated carbide tool geometries in turning AISI 1045 using finite element analysis. European Journal of Scientific Research, 28: 271-277. 3. Jaharah A. G., Mohd Nor Azmi Mohd Rodzi, Abdul Rahman A., Mohd Nizam Ab. Rahman and Che Hassan C. H. 2009. Machinability Of FCD 500 Ductile Cast Iron Using Coated Carbide Tool in Dry Machining Condition. International Journal of Mechanical and Materials Engineering (IJMME) 4 (3): 279-284.



	<p>Proceedings:</p> <ol style="list-style-type: none"> 1. Jaharah A. G., Abdul Rahman A., Mohd Nor Azmi, Che Hassan C.H. 2009. Machinability of FCD 500 ductile cast iron using coated carbide tools in dry cutting condition. National Tribology Conference, Rimba Ilmu, 4-5 MAY 2009, UM, Kuala Lumpur. pp.26-31. <p>Others:</p> <ol style="list-style-type: none"> 1. Master Project Report: Prestasi Bendalir Pemotong Ke atas Pemesinan Besi Tuang dengan Perkakas Pemotong Karbida, Mohd Noordin Ibrahim (P37272) 2. Master Project Report: Simulasi Kesan Angin Tersejuk Ke Atas Mata Alat Karbida Semasa Pemesinan Besi Tuang, Aminah Binti Ishak (P 42129). 3. Master Project Report: Simulasi Melarik Besi Tuang Bernod (FCD 700) Menggunakan Udara Mampat Tersejuk, Aida Haryati Binti Muda (P44769)
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fault Diagnosis and Isolation of Smart Engine Mounting System for Automotive Applications
Project Number	03-01-02-SF0218
Project Leader and Team Members	Leader: Mohd Hanif Md Saad Members: Nik Abdullah Nik Mohamed, Mohd. Zaki Nuawi, Sallehuddin Mohamed Haris and Mohd. Jailani Mohd
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to develop a model based fault diagnostic system for active vibration control of engine mounting and to develop an active vibration control system for the engine mounting. Both objectives were achieved.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Wan Azmi Wan Hamzah and Mohd Hanif Md Saad. 2007. A method for determining Stabilizeability of a Class of Switched Systems, Sallehuddin Mohamed Haris, Mohamad Hanif Md Saad and Eric Rogers, Proceedings of the 7th WSEAS International Conference on Systems Theory and Scientific Computation. 24-26, 2007, August. Athens, Greece. pp27-22. 2. Wan Azmi Wan Hamzah and Mohd Hanif Md Saad. 2008. Comparative study of uncertainty estimation using analytical and numerical method, Seminar Kebangsaan Aplikasi Sains Dan Matematik, November. pp. 24-25.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Mechanical & Materials Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Rubber Toughened Polyester Kenaf Fiber Composite
Project Number	03-01-02-SF0223
Project Leader and Team Members	Leader: Sahrim Ahmad Members: Ismail Zainol, Ishak Ahmad and Rozaidi Rasid
Field of Research	Material Sciences
Project Summary	Project objectives were to prepare and produce rubber toughened kenaf composite and to evaluate (mechanical, chemical and thermal properties) the composite produced and to fabricate component such as car door panel using the composite prepared via resin transfer molding machine (RTM). All of the project objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Carbon Based Composite Electrode from Pre-carbonised Oil Palm Empty Fruit Bunches for Electrochemical Supercapacitors
Project Number	03-01-02-SF0226
Project Leader and Team Members	Leader: Mohamad Deraman Members: Astimar Abd Aziz, Ramli Omar, Ibrahim Abu Talib and Mohammad Hafizuddin
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to obtain an optimum fabrication method for preparing the composite electrode of the electrochemical supercapacitor from the carbonisation of a mixture of a few selected electrocatalytic agent and self-adhesive carbon grains (SACG) from fibres of oil palm empty fruit bunches; to characterise the composite electrode; to test the composite electrode's capacitive performance in the electrochemical capacitor and to model the characteristic-performance relationship; and to determine the specification of the SACG used in the fabrication of the composite electrodes and to fabricate a prototype electrochemical supercapacitor using the prepared carbon composite electrode.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Green Envelope and Breathing Construction Materials
Project Number	03-01-02-SF0230
Project Leader and Team Members	Leader: Khairiah Badri Members: Mohd. Zaki Nuawi, Kamaruzzaman Sopian and Muhammad Fauzi Mohd Zain
Field of Research	Material Sciences
Project Summary	Project objectives were to develop sandwich insulating and acoustic panels for building construction from oil palm resources and to determine the mechanical, acoustical and thermal properties in achieving a breathable and comfortable envelope construction materials.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Khairiah Haji Badri, Jumat Salimon, Mamot Said, Mohd Ambar Yarmo, Nazaruddin Ramli and Mohd Firdaus Mohd Yusoff. 2008. <i>Prosiding Seminar Minyak dan Lemak Kebangsaan</i>, UKM: Kumpulan Oleochemical Lubricants, Pusat Pengajian Sains Kimia dan Teknologi Makanan, 18-19 Nov. 2008, UKM, Bangi, Selangor. pp. 239. 2. Nor Rabi'atul 'Adawiyah Norzali, Khairiah Haji Badri and Mohd Zaki Nuawi. 2009. The properties of palm-based polyurethane hybrid composite filled with aluminum hydroxide, In <i>Proceedings of Malaysia Polymer International Conference (MPIC2009)</i>, Polymer Research Center, 21-22 October 2009, Bangi, Selangor. pp. 34-43. 3. Nor Rabi'atul 'Adawiyah Norzali and Khairiah Haji Badri. 2009. The effect of aluminum hydroxide loading on the mechanical, thermal conductivity and acoustic properties of palm-based polyurethane hybrid composite, In <i>Proceedings of The Second UKM-UI Joint seminar</i>, Bandar Baru Bangi: PST Sdn. Bhd.: pp. 37-44. 4. Nor Rabi'atul 'Adawiyah Norzali and Khairiah Haji Badri. 2009. Aluminium hidroksida sebagai perenca tapi dalam poliuretana asas sawit, <i>Kolokium Siswazah FST Ke-9</i>. 24-25 Jun 2009, UKM, Bangi, Selangor, pp. 216-218. 5. Wong Chee Sien and Khairiah Haji Badri. 2008. Kajian perbandingan kestabilan terma dan kerintangan api poliuretana berasaskan minyak isirung sawit dan minyak soya. In <i>Prosiding Seminar Minyak dan Lemak Kebangsaan</i> pp. 75-86.

	<p>6. Badri, K. H., Norzali, N. R. A. and Teo, S. M. 2008. The fire resistivity of palm-based polyurethane with aluminium tri hydroxide. In <i>Proceeding of National Symposium of Polymeric Material</i>, 26-27 November 2008, Universiti Sains Malaysia, Penang.</p>
Awards/Certificates	<p>1. Sustainable Palm-Based Construction Materials, Seoul International Invention Fair (SIIF 2008)/Seoul World Trade Center Korea/KIFA, 10-15 Dec 2008: 1 Gold Medal.</p> <p>2. ITEX 2008 Malam Sarjana Bestari 22007/Hotel Equatorial /UKM, 5 Dec 2007: Young Researcher Award.</p> <p>3. PECIPTA 2007: 1 Gold Medal.</p> <p>4. Malaysia Technology Expo 2007: 1 Silver Medal.</p>
Additional Information	<p>International Linkages: Kyoto University-Prof. Dr. Suichi Hokoi, Architectural Engineering</p> <p>Industrial Linkages: Aylin Sdn. Bhd., Malaysian Palm Oil Board</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Statistical Analysis for Prediction and Optimisation of Strength and Slump of High Performance Concrete
Project Number	03-01-02-SF0238
Project Leader and Team Members	Leader: Muhammad Fauzi Mohd Zain Members: Kamarudin Mohd Yusof and Hassan Basri
Field of Research	Engineering Sciences
Project Summary	Project objectives were to develop the statistical model to predict strength and workability of high performance concrete mixture; to optimise the mix proportions of HPC based on a minimum cost and desired design strength and workability; and to develop a prototype software using statistical analysis for model prediction and optimisation. In general, all objectives were achieved except for the last one because the work is still in progress.
Publications/Products/Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Md. Safiuddin, Al-Mattarneh H. M. A. and Zain, M. F. M. 2007, Analytical study on the slump of fresh high performance concrete. <i>Journal of International Association of Concrete Technology</i> 8: 81-90. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Zain M.F.M., Kamarudin Yusuf, Hassan Basri and Imad Nasierat, 2007. Graphical interface software for optimization of HPC mix design using statistical and numerical methods. <i>World Engineering Congress 2007</i>, 5 – 9 August 2007, Penang, pp: 15-23. 2. Hashem Al-Mattameh, Kamal N. Mustapha, Bashar S. Mohammed, Zain, M.F.M. and Kamarudin Yusof. 2007. Optimization of high performance concrete mix design using advanced numerical analysis. <i>World Engineering Congress 2007</i>, 5 – 9 August 2007, Penang pp: 1-14.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Superheated Steam Drying of Oil Palm Frond Chips in a Vibrating Fluidised Bed Dryer
Project Number	03-01-02-SF0253
Project Leader and Team Members	Leader: Meor Zainal Meor Talib Members: Siti Kartom Kamaruddin, Law Chung Lim, Wan Ramli Wan Daud and Siti Masrinda Tasirin
Field of Research	Engineering Sciences
Project Summary	Project objectives were to study the fluidisability of oil palm chips in a vibrating fluidised bed dryer using hot air and superheated steam; to study the drying kinetics of oil palm frond chips in vibrating fluidised bed dryer using hot air and superheated steam; to design, model and simulate a pilot plant vibrating fluidised bed dryer for producing 5 tonne/hr dry oil palm chips using superheated steam; and to construct and test a pilot plant vibrating fluidised bed dryer for producing 5 tonne/hr dry oil palm task chips using superheated steam. Fluidisability studies was successfully carried out. However it was done without the hot air and superheated steam. The preliminary study of the kinectic was done using simple apparatus.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Mapping the Faulty Behaviors of Defective RF MEMS Filter for Self-Testable Design
Project Number	03-01-02-SF0254
Project Leader and Team Members	Leader: Mohd. Alauddin Mohd. Ali Members: Burhanuddin Yeop Majlis, Su Hieng Tiong, Syed Zahidul Islam and Wallace Wong Shung Hui
Field of Research	Applied Sciences and Technologies
Project Summary	<p>Project objectives were to develop a fault model due to physical defects in RF MEMS filter and also to develop a novel microswitch sensing mechanism to enable self-diagnosis of faulty behaviour in RF MEMS. The relationship between MEMS faulty behaviours and the defects were studied. The required algorithm and structural modification were developed based on the above model. The model was successfully developed by work carried out at SUT. The required algorithm was also developed. An example of RF MEMS filter was also designed, fabricated and tested. However, the MEMS cantilever switches were only designed and simulated but cannot be fabricated with in-house facilities.</p>
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Islam Md.F., Mohd. Ali M.A. and Majlis B.Y. 2008. RF MEMS-based tunable filter for X-band applications, <i>Journal of Applied Sciences</i> 8:189-191. 2. Islam, M.F., Mohd Ali, M.A. and Majlis, B.Y. 2008. Reliability Assessment of Micro-machined Fixed Beam Based on FE-simulation and Probabilistic Sampling. <i>IEEE Transactions on Device and Materials Reliability</i> 8: 664-670. 3. Md. Fokhrul Islam, M.A. Mohd Ali and Burhanuddin Yeop Majlis. 2007. Parallel Coupled Microstrip Bandpass Filter for X-Band Applications. <i>Daffodil International University Journal of Science and Technology</i> 2: 27-31. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Md. Fokhrul Islam, M. A. Mohd. Ali and Burhanuddin Yeop Majlis. 2007. Miniaturized Bandpass Filter for Ku-band Applications. Proceeding of <i>The 5th Student Conference on Research and Development – SCORED</i>, 11-12 Dec. 2007, Bangi, Selangor.

	2. W. S. H. Wong, H. T. Su, K. C. Lee, M. A. Mohd. Ali and Burhanuddin Yeop Majlis. 2007. Performance Degradation of Defective MEMS Tunable RF Filter. <i>Proceedings Asia – Pacific Conference on Applied Electromagnetics</i> APACE 2007, 4-6 Dec. 2007, Melaka.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Compact Instrument for Long-term Fetal Heart Rate Monitoring
Project Number	03-01-02-SF0255
Project Leader and Team Members	Leader: Mohd. Alauddin Mohd. Ali Members: Edmond Zahedi, Shuhaila Ahmad and Muhammad Abdul Jamil Muhammad Yassin
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	Project objectives were to develop a real time algorithm with improved accuracy and requiring minimum number of electrodes for the detection of fetal heart rate (FHR) and to implement the algorithm in a compact ambulatory instrument suitable for long-term monitoring. A real-time algorithm was developed requiring the use of 4 electrodes on the mother's chest and abdomen for the detection of both the maternal and fetal heart rates. The algorithm is implemented on field programmable gate arrays (FPGA) but has not been fully tested.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Kok Beng Gan, Edmond Zahedi, and Mohd Alauddin Mohd Ali. 2009. Trans-abdominal Fetal Heart Rate Detection Using NIR Photoplethysmography: Instrumentation and Clinical Results, <i>IEEE Transactions on Biomedical Engineering</i> 56: 2075-2082. 2. Algunaiddi, M.S., Ali, M.A.M., Gan, K.B. and Edmond Zahedi, Fetal Heart Rate Monitoring Based on Adaptive Noise Cancellation and Maternal QRS Removal Window, <i>European Journal of Scientific Research</i> 27: 565-575. 3. Niranjana Krupa B., Mohd Alauddin Mohd Ali, and Edmond Zahedi, Application of empirical mode decomposition for the enhancement of cardiotocograph signals, <i>Journal of Physiological Measurement</i> 30: 729-743. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Krupa, B.N., Hasan, F.M., Mohd Ali, M.A. and Zahedi, E. 2008. Computerized interpretation of cardiotocographs using Kubli score. Antwerp <i>IFMBE Proceedings</i> 22, 23-27 Nov. 2008, Kuala Lumpur. pp. 962–965.

	2. Abdullah, M.R., Mohd. Ali, M.A. and Rahman, M.S.A. 2008. Sistem teleperubatan untuk pemeriksaan wanita mengandung secara on-line melalui bantuan komunikasi mudah alih. <i>Engineering Postgraduate Conference (EPC)</i> , 21-22 Oct. 2008, Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Chemical and Biochemical Sensors for Capsaicin (Chilli Hotness) Quantification
Project Number	03-01-02-SF0256
Project Leader and Team Members	Leader: Musa Ahmad Members: Ahmed Mahir Mohamed Mokhtar, Aminah Abdullah, Lee Yook Heng and Mohammad Kassim
Field of Research	Chemical Sciences
Project Summary	<p>Project objectives were to prepare and characterise the sensing materials for capsaicin detection based on immobilisation of selected chemical reagents and enzymes in some polymeric supports; to fabricate sensor prototype for capsaicin quantification; and to validate the sensor response by using conventional sensory and instrumental method. All of the above objectives were achieved. Three new optical sensing materials were fabricated and characterised and these included immobilised VOCl_3, Gibbs reagent and HRP enzyme. A simple prototype of optical capsaicin sensor based on immobilised Gibb's reagent had also been designed. The results obtained from this sensor was successfully validated by using HPLC method. The present sensor needs further improvement, especially in terms of its sensitivity before it could be commercialised. The problem encountered during real sample analysis due to strong colouring also needs to be overcome. Nevertheless, the sensor has a very good potential in kitchen industry and joint research with interested industrial partner might be the best approach to be adopted.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Bulk-metallic Glasses and Its Applications: Constitutive Modeling, Finite Element Analysis And Experimental Investigation
Project Number	03-01-02-SF0257
Project Leader and Team Members	Leader: Nik Abdullah Nik Mohamed Members: Syarif Junaidi Sjarifuddin, Ahmad Kamal Ariffin Mohd and Prakesh Thamburaja
Field of Research	Engineering Sciences
Project Summary	Project objectives were to develop a three-dimensional, finite-deformation-based constitutive model for metallic glasses; to implement the constitutive model into a commercially available finite-element code by writing a robust user-material subroutine numerical code; and to verify the constitutive model and the numerical algorithm by comparing its results with physical experiments such as tension, compression, shear, three point bending and forming under various temperatures. All of objectives of the project were achieved.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ekambaram R., Thamburaja P. and Nikabdullah N. 2008. On the evolution of free volume during the deformation of metallic glasses at high homologous temperatures. <i>Journal of Mechanics of Materials</i> 40: 487–506. 2. P. Thamburaja and N. Nikabdullah. 2009. A macroscopic constitutive model for shape-memory alloys: Theory and finite-element simulations. <i>Computer Methods in Applied Mechanics and Engineering</i> 198: 1074-1086. 3. R. Ekambaram, P. Thamburaja and N. Nikabdullah. 2009. Shear localization and damage in metallic glasses at high homologous temperatures. <i>International Journal of Structural Changes in Solids</i> 1:15-29. 4. R. Ekambaram, P. Thamburaja, H. Yang, Y. Li and N. Nikabdullah. 2010. The multi-axial deformation behavior of bulk-metallic glasses at high homologous temperatures. <i>International Journal of Solids and Structures</i> 47: 678-690.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Degradable Biocements Based Nano Hydroxyapatite / Alginate-Gel Protein for Bone Healing
Project Number	03-01-02-SF0259
Project Leader and Team Members	Leader: Roslinda Shamsudin Members: Yusof Abdullah, Abdul Razak Daud and Mohd Reusmaazran Yusof
Field of Research	Material Sciences
Project Summary	Project objective was to develop a non-toxic, biodegradable and also bioactive cement based hydroxyapatite in order to enhance the bone healing. Alginate which was extracted from seaweed was added to produce good injectability cement system with an improvement of mechanical properties. Protein aided in accelerating the setting of the cement and also improved the mass of the bone cell. This cement system shows a good bioactivity by adding a small amount of silicon. A combination of hydroxyapatite (HA) and dicalcium phosphate dihydrate (DCPD) with the formulation of 60%DCPD - 40%HA - 1% alginate - 1% soy protein - 0.8% silicon gave the optimum properties of the cement. The ratio of liquid to powder (L/P) used to obtain a good injectability was 0.30 ml g ⁻¹ . The cement produced is non-toxic and potentially used as bioactive bone cement.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Novel Beta Titanium Alloys for Biomaterials
Project Number	03-01-02-SF0263
Project Leader and Team Members	Leader: Syarif Junaidi Sjarifuddin Djalil Members: Abdul Razak Daud, Mariyam Jameelah Ghazali, Zainuddin Sajuri and Mohd. Alauddin Mohd
Field of Research	Material Sciences
Project Summary	Project objectives were to determine the effect of alloying element on the microstructure and properties of beta Titanium alloy; to determine the parameters of heat treatment and thermo-mechanical process on the alloy; and to develop a low cost new titanium alloy for biomaterials applications. All of the objectives were successfully achieved. The effects of Mo, Cr, Sn and Fe, which were body centered cubic in crystallographic orientation were also investigated. The project developed a Ti-10%Mo-10%Cr and Ti-10%Cr-5%Fe alloys as new low cost Titanium alloys. The project used a relatively new powder metallurgy method, thus sintering and solution treatment are important. Through these treatments, a beta single phase can be obtained.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Novel Dual-phase Steel for Automotive Body via Substitutional Solid-solution Mechanism
Project Number	03-01-02-SF0264
Project Leader and Team Members	Leader: Syarif Junaidi Sjarifuddin Djalil Members: Che Husna Azhari, Che Hassan Che Haron, Mohd Zaidi Omar and Rozli Zulkifli
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to determine the effect of Ni and Cu on the nucleation of the austenite phase and the grain growth of its microstructure at the dual-phase region and the stability of the austenite phase, or fraction and distribution of martensite or bainite after cooling at various cooling rates; to determine the strength of the steel in lieu of the effect of obtained duplex-structure (ferrite+martensite/bainite) and strengthening mechanism of each phases such as solid solution strengthening or dislocation strengthening; to determine effect of substitutional elements and obtain duplex-structure on elongation and work hardening; and to determine the appropriate heat treatment by which the intended duplex-structure and excellent balance of strength and ductility are improved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Study of Long Spanning Profiled Steel Sheet Dry Board (PSSDB) Floor Subject to Lateral Loading
Project Number	03-01-02-SF0265
Project Leader and Team Members	Leader: Wan Hamidon Wan Badaruzzaman Members: Abdul Monayem Akhand, Azrul Abdul Mutalib, Kamarudin Abu Taib, Abd. Khalim Abd, N.E. Shanmugam,. Siti Aminah Osman, Muhammad Fauzi Mohd and Norhaiza Nordin
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to establish the behaviour of longer spanning and higher capacity PSSDB floors and establish the fire rating capacities of various full-scale PSSDB floor panels. The first objective was successfully achieved, whereas the work to meet the second objective is still on-going.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Humid-sensitive Nanometal Oxides Thin Film by Thermal Evaporation Method
Project Number	03-01-02-SF0269
Project Leader and Team Members	Leader: Muhammad Azmi Abdul Hamid Members: Azman Jalar and Roslinda Shamsudin
Field of Research	Material Sciences
Project Summary	Project objectives were to fabricate selected nanometal oxides thin film using the thermal evaporation method; to determine the humidity sensing characteristics of the nanometal oxide thin film prepared by the thermal evaporation method; and to optimise the nanomaterials preparation technique. The selected nanometal oxides such as ZnO, MgO, SnO were been succesfully synthesized. The suitable preparation parameter such as the gas flow rate, evaporation temperatures and type of source for each material synthesized were identified.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Nonionic Surfactants from Palm Oil Derivatives
Project Number	03-01-02-SF0284
Project Leader and Team Members	Leader: Mohd Ambar Yarmo Members: Shahidan Radiman
Field of Research	Chemical Sciences
Project Summary	Project objectives were to prepare and characterise the physical and chemical properties of ethoxylation fatty alcohol based on palm oil derivative at various ethylene oxide chain lengths and various types of fatty alcohols. New heterogenous catalysis and process were discovered during the course of this project. All objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fugacity Dynamic Multi-compartmental Mass Balance Model of Persistent Organic Pollutants
Project Number	03-01-02-SF0302
Project Leader and Team Members	Leader: Abdul Amir H. Kadhum Members: Abu Bakar Mohamad, Mohd Sobri Takriff, Wan Ramli Wan Daud and Zahedi Fisal
Field of Research	Environmental Sciences
Project Summary	<p>The project objectives were to introduce a general fate and risk assessment methodology for comparing and establishing the general features of new and existing non-volatile organic chemicals (NVOCs) fate and their relative risk in the agricultural environment using simple and readily available properties. The multimedia agricultural fate and risk assessment model (MAFRAM) software is a combination of the EQC-2V model describing the fate and transport of NVOCs with the ecological relative risk (EcoRR) approach for assessing the ecotoxicological risk to agro-ecosystem. MAFRAM is an equivalence-based, thus only valid for NVOCs. In this study, the agricultural environment was divided into two main zones, which are the on- and off-farm zones. Each environmental zone was subdivided into six compartments, namely the air, water, soil, sediment, aboveground plants, and roots. The required input data are the chemical-physical properties of the pesticide such as molar mass, partition coefficients, reaction half-lives, and environmental properties such as landscape dimensions for the fate prediction, and biota data (e.g., taxon LC50/LD50) for the risk assessment. The MAFRAM output results included the inter-compartmental transport and transfer rates, the primary loss mechanisms, chemical concentration, amount, residence time and the rank of ecotoxicological risk in each environmental compartment it can also provide several secondary results. The results provided a description of the chemical's fate and risk, and can be displayed in tabular format and in mass balance diagrams, either on the screen or as hard copies. MAFRAM application is illustrated with typical homogeneous region properties. It is run with an illustrative emission rate of 1 kg/h into air for spinosad as a study case.</p>



Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Batiha, M. A., Kadhum A.A.H., Takriff, M.S., Abu Bakar. 2010. MAFRAM - A new fate and risk assessment methodology for non-volatile organic chemicals. <i>Journal of Hazardous Materials</i> 181: 1080-1087. 2. Batiha M.A., Kadhum A.A.H., A.B. Mohamad, M.S. Takriff, Z. Fisal, W.R. Wan Daud, M.M. Batiha. 2009. Modeling the fate and transport of non-volatile organic chemicals in the agro ecosystem: A case study of Cameron Highlands, Malaysia, <i>Process Safety and Environmental Protection</i> 87: 121-134. 3. Mohammad A. Batiha, A., Kadhum, A.A.H., Takriff, M.S., Abu Bakar, M., Zahedi, F. and Wan Ramli, 2008, "An Aquivalence-based Dynamic Mass Balance Model for the Fate of Non-Volatile Organic Chemicals in the Agricultural Environment. <i>American Journal of Engineering and Applied Sciences</i> 1: 252-259. 4. Batiha, M.A., Kadhum, A.A.H., Takriff, M.S., Abu Bakar, M., Zahedi, F. and Wan Ramli, W.D. 2008. Modeling the fate and transport of non-volatile organic chemicals in the agro-ecosystem: A case study of Cameron Highlands, Malaysia. <i>Process Safety and Environmental Protection</i> 87: 121-134. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Batiha, M.A., Kadhum, A.A.H., Zahedi, F., Abu Bakar, M., Wan Ramli, W.D. and Takriff, M.S. 2007. Developing a multimedia model of pollutants dynamic in the agricultural environment. <i>Proceeding of the 2nd regional conference on ecological and environmental modeling</i>. 28-30 August 2007. Universiti Sains Malaysia, Penang. pp. 47.
Additional Information	<p>MAFRAM, (Multimedia Agricultural Fate And Risk Assessment Model) Validation (Class 9,16,42)</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of High Frequency Vibro-acoustic Sensor System for Automotive Engine Performance Monitoring
Project Number	03-01-02-SF0303
Project Leader and Team Members	Leader: Mohd Zaki Nuawi Members: Sallehuddin Mohamed Haris, Aini Hussain, Shahrum Abdullah, Rozli Zulkifli, Mohd Hanif Md Saad, Hasan Adli Alwi and Mohd. Jailani Mohd
Field of Research	Engineering sciences
Project Summary	Project objectives were to develop a new system for automotive engine performance monitoring using high frequency vibro-acoustic signal; to design and fabricate an ultrasound level meter for machine condition monitoring purpose; and to implement the newly developed concept on automotive engine performance monitoring. A new system for automotive engine performance monitoring using high frequency vibro-acoustic signal was developed. Two products were designed and fabricated i.e. Acoustic Level Meter (ALeM (version I & II)) and Vibration Level Meter (ViLeM). A newly developed concept for automotive engine performance monitoring was developed using a novel statistical analysis namely, Integrated Kurtosis-based Algorithm for Z-filter technique (I-kaz).
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Nuawi M. Z., Lamin F., Nor M. J. M., Jamaluddin N. and Abdullah S. 2008. Cluster Analysis to Assist Machine Learning Condition in Machining Process. <i>International Journal of Mathematical Models and Methods in Applied Sciences</i> 2(3): 439-446. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Lamin F., Nuawi M. Z., Soon, A. K., Abdullah S. and Ghani J. A. 2008. A Novel Correlation Method for Machining Signals Denoising. <i>Proc. of International Conference on Mechanical and Manufacturing Engineering (ICME '08)</i>. 21–23 Mei 2008. Johor Bharu. 2. Nuawi M. Z., Lamin F., Nor M. J. M. and Jamaluddin N., Abdullah S., 2008. Clustering of Machining Signal for Verifying Machining Parameter. <i>Proc. of the 1st WSEAS International Conference on Sensor and Signal (SENSIG '08)</i>. 7th – 9th Nov. 2008, Bucharest, Romania. pp. 54-59.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Prediction of Stochastic Fatigue Crack Using Probabilistic Method
Project Number	03-01-02-SF0308
Project Leader and Team Members	Leader: Ahmad Kamal Ariffin Mohd Ihsan Members: Zainuddin Sajuri and Shahrum Abdullah
Field of Research	Engineering Sciences
Project Summary	Project objectives were to formulate and determine the failure probability of a cracked structure and predict the lifetime of structures under loading using simulation tools. The failure probability of the cracked structure had been formulated and determined. The lifetime of structures under loading had been predicted by using simulation tools.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Rahman M. M., Ariffin A. K., Jamaludin N., Abdullah S. and Noor M. M. 2008. Finite element based fatigue life prediction of a new free piston engine mounting. <i>Journal of Applied Sciences</i> 8: 1612-1621. 2. M. H. Fouladi, M. J. Mohd. Nor and A. K. Ariffin. 2008. Spectral analysis methods for vehicle interior vibro-acoustic identification. <i>Mechanical Systems and Signal Processing</i> 23: 489-500. 3. M. R. M. Akramin, A. K. Ariffin, Alshoaibi A. M., M. S. A. Hadi, S. Huzni and N. A. N. Mohamed. 2008. Probabilistic Finite Element for Fracture Mechanics. <i>The Hong Kong Institution of Engineers Transaction</i>. 15: 1-8. 4. Souiyah M., Alshoaibi A. M., Muchtar A. and Ariffin A. K. 2008. Finite element model for linear-elastic mixed mode loading using adaptive mesh strategy. <i>An International Journal of Applied Physics and Engineering</i> 9: 32-37. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Akramin M. R. M., Ariffin A. K. and Mohamed N. A. N., Probabilistic Assessment For Use In Cracked Structures Analysis, <i>Seminar on Engineering Mathematics</i> 2008, 27-29 June 2008, Cameron Highlands, Pahang. pp. 183-187.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Inverse Analysis for Corrosion Detection Problem
Project Number	03-01-02-SF0309
Project Leader and Team Members	Leader: Ahmad Kamal Ariffin Mohd Ihsan Members: Zainuddin Sajuri and Abdul Razak Daud
Field of Research	Engineering Sciences
Project Summary	Project objectives were to develop a three-dimensional boundary element code for corrosion analysis and to identify the corrosion location using an inverse method. A three-dimensional boundary element code for corrosion analysis had been developed and the approximate corrosion location had been identified by using the inverse method.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Safuadi, Ariffin A. K., Daud A. R., Ridha M. and Afwan Halim. 2007. Study on Potential of Reinforced Concrete Surface for Various Pre-Treated Steel. Computational & Experimental Mechanics (CEM) 2007, 27–28 November 2007, Putrajaya. 2. Abu Sufian Md. Zia Hasan, Roszilah Hamid, Ariffin A. K. and Helmi Sanusi 2007. Development method for dynamic characterization of high strength concrete. Seminar Penyelidikan Siswazah, 29-30 Ogos. 2007, ESSET Bangi, Selangor. pp. 5-12. 3. Safuadi, Ariffin A. K., Daud A. R. & Ridha M. 2006. Pengesanan Kakisan Menggunakan Gandingan Kaedah Unsur Sempadan dan Algoritma Genetik, Seminar Penyelidikan Siswazah, 29-30 Ogos 2006, ESSET Bangi, Selangor. pp. 309-315. 4. Syarizal F., Safuadi, Ariffin A. K., Ridha M., Daud A. R. and Ramli N. F. L. 2008. Boundary element method: An application to evaluate the potential on reinforced concrete, Seminar on Engineering Mathematics. 27-29, 27-29 June 2008. Cameron Highlands, Pahang. pp. 64-69. 5. Syarizal F., Safuadi, Ariffin A. K. and Ridha M. 2007. BEM and Magnetic field measurement for direction of corrosion in reinforced concrete. Computational & Experimental Mechanics (CEM). 27–28 November 2007, Putrajaya.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Microexchanger for Liquid-based Thermal Management in High-Performance Semiconductor Package
Project Number	03-01-02-SF0318
Project Leader and Team Members	Leader: Shahrir Abdullah Members: Ibrahim Ahmad, Rozli Zulkifli, Kamaruzzaman Sopian, Burhanuddin Yeop Majlis and Norhamidi Muhamad
Field of Research	Engineering Sciences
Project Summary	Project objectives were to develop a fluid flow formulation and heat transfer models applicable in microchannels, based on the Lattice-Boltzmann equation (LBE); to design and fabricate a wafer-level microchannel cooling plate which is integrated onto a high performance stack die semiconductor package; to design and fabricate an electronic liquid-based thermal management system consisting of the cooling plate, micropumps and all the necessary micropiping accessories; and to perform an experimental test on the performance of the system and optimisation on the system's critical parameters. Generally, all of the objectives were achieved. By collaborating with Pusat Penelitian Elektronika dan Telekomunikasi, Lembaga Ilmu Pengetahuan Indonesia (PPET, LIPI), knowledge on the laser fabrication process has been transferred to UKM and a similar laser equipment has been established in the laboratory to fabricate the microchannel. However, the quality for the component fabricated in IMEN was not fully identical with those fabricated in Indonesia due to the lack of experience in machine handling by local personnel.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Stand-alone Solar Powered Regenerative Proton Exchange Membrane (PEM) Electrolyzer -Fuel Cell System
Project Number	03-01-02-SF0329
Project Leader and Team Members	Leader: Kamaruzzaman Sopian Members: Siti Kartom Kamaruddin, Abu Bakar Mohamad and Wan Ramli Wan Daud
Field of Research	Applied sciences and technologies
Project Summary	Project objectives were to design and optimise a standalone solar powered regenerative electrolyzer-fuel cell system; to fabricate the experimental setup for the standalone solar powered regenerative electrolyzerfuel cell system; to experimentally evaluate and theorise the performance and efficiency of the solarpowered regenerative electrolyzer - fuel cell system; and to develop a cost optimisation model on solar powered regenerative electrolyzer -fuel cell system. All of the objectives were achieved.
Awards/Certificates	1. Invention, Innovation and Technology Exhibition (ITEX) 2009: 1 Silver Medal 2. Penyelidikan Ciptaan Institut Pengajian Tinggi Antarabangsa (PECIPTA 2009): 1 Silver Medal
IP Status	Malaysia patent filed (PI2009 3592).
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Quality Economics Data for Supply Chain Solutions in Manufacturing Companies
Project Number	03-01-02-SF0356
Project Leader and Team Members	Leader: Mohd Nizam Ab Rahman Members: Dzuraidah Abd Wahab, Ahmad Rasdan Ismail and Jaharah A Ghani
Field of Research	Engineering Sciences
Project Summary	Project objectives were to develop an effective quality data to support the Malaysian SMI manufacturing companies in food manufacturing and the implementation of supply chain networks; to design and develop a database to facilitate the quality of supply chain practices and networks for Malaysian SMI manufacturing companies; and to identify the obstacles towards quality supply chain practices and its achievement in Malaysian SMI manufacturing companies and enhance the Malaysian SMI manufacturing companies' competitiveness, quality of products and global achievements. All of the objectives were successfully achieved, however, further studies need to be conducted in order to enhance the database created and further validation work is needed with the relevant industries (not limited to food manufacturer), making the results more comprehensive and robust. The fourth objective is based on a longitudinal style of research and it requires additional support and continuation of analysis. The global supply chain networks are huge and the existence of this database creates a simple and effective outlet for the relevant industries.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fabrication of Improved White Organic Light Emitting Diode for Flat Panel Display
Project Number	03-01-02-SF0358
Project Leader and Team Members	Leader: Muhamad Mat Salleh Members: Burhanuddin Yeop Majlis, Tengku Hasnan Tengku Abdul Aziz, Sahbudin Shaari and Muhammad Yahaya
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to produce a white light emitting diode (white-LED) through the variation of the dopant compositions of the blue light emitting layer; to improve the performance of a white organic LED using nanoparticles; and to fabricate a prototype of a flat, white organic LED display panel. All objectives were successfully achieved. However the lifespan of the device was very short due to encapsulation problem. Further research by material scientists are needed to overcome this problem.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Suhaila Sepeai, Muhamad Mat Salleh and Muhammad Yahaya. 2008. White Light From a Single- Dopant Based on Poly (9,9-Di-N-Hexylfluorenyl-2, 7-Dyl), PHF Doped with Rubrene. <i>J. Solid State Science and Technology</i> 16 (1):188-196. 2. Yap, C.C., Yahaya, M. and Salleh, M.M. 2009. The effect of driving voltage on the electroluminescent property of a blend of poly (9-vinylcarbazole) and 2-(4-biphenyl)-5-phenyl-1, 3, 4-oxadiazole. <i>Current Applied Physics</i> 9 (5):1038-1041. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Suhaila Sepeai, Akrajas Ali Umar, Muhamad Mat Salleh and Muhamad Yahaya. 2008. Electroluminescent from hybrid of Cdse quantum dot-organic light emitting diode. <i>Proceedings 2008 IEEE International Conference on Semiconductor Electronics, ED Chapter, IEEE Malaysia Section</i>, 25-27 Nov. 2008. Johor Bahru, Johor. pp. 263-266. 2. Tengku Hasnan Tengku Aziz, Salleh M. M., Yahaya M. and Akrajas Ali Umar. 2008. Fabrication of CdSe quantum dots-PHF organic hybrid light-emitting diodes. <i>Proceedings 2008 IEEE International Conference on Semiconductor Electronics, ED Chapter, IEEE Malaysia Section</i>. Johor Bahru, Johor. pp.316-318.

	<ol style="list-style-type: none"> 3. Tengku Hasnan Tengku Aziz, Muhamad Mat Salleh, Muhammad Yahaya and Akrajas Ali Umar. 2008. Fabrication of hybrid quantum Dots-Polymer devices. Abstract Book <i>24th Regional Conference on Solid State Science & Technology</i> 30 Nov.-2 Dec. 2008. Port Dickson, N. Sembilan. pp.72. 4. Aziz T.H.T., Salleh M.M. and Yahaya M. 2008. Organic light emitting Diode with the introduction of TiO₂ thin film buffer layer. Book of Abstracts ICFMD, <i>International Conference on Functional Materials & Devices</i>. 16-19 June 2008, Kuala Lumpur: A226.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Gas Sensor Using TiO ₂ Nanoparticles Coated with Bio-Material Thin Films
Project Number	03-01-02-SF0359
Project Leader and Team Members	Leader: Muhamad Mat Salleh Members: Burhanuddin Yeop Majlis, Tengku Hasnan Tengku Abd. Aziz and Muhammad Yahaya
Field of Research	Material sciences
Project Summary	Project objectives were to synthesize TiO ₂ nanoparticles coated with biomaterials utilising the sol-gel method; to study the preparation of thin films using the self-assembly technique; and to fabricate and test the gas sensor through the fluorescence technique and acoustic systems. TiO ₂ nanoparticles coated with the biomaterial (porphyrin derivatives) using the sol-gel method was successfully synthesized. TiO ₂ . These materials were deposited as thin films using the self-assembly technique. The thin films were used as sensing materials for fluorescence and acoustic sensors systems. The sensors were successfully used to detect the presence of various volatile organic compounds.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Yusoff, N. H., Salleh, M. M. and Yahaya, M. 2008. Enhanced the performance of fluorescence gas sensor of porphyrin dye by using TiO₂ nanoparticles. <i>Advanced Materials Research</i> 55- 57: 269-272. 2. Syariena Arshad, Muhamad Mat Salleh, and Muhammad Yahaya. 2008. The performance of quartz crystal microbalance coated TiO₂-Porphyrin nanocomposite thin film gas sensors. <i>Journal of Sensor Letters</i> 6: 1-5. 3. Syariena Arshad, Muhamad Mat Salleh and Muhammad Yahaya, 2008. Quartz crystal microbalance gas sensor for detection of volatile organic compounds using titanium dioxide coated with dye-porphyrin. <i>J. Solid State Science and Technology</i> 16: 75-84. 4. Syariena Arshad, M. M. Salleh and M. Yahaya, 2008. The performance of quartz crystal microbalance gas sensors using thin films of titanium dioxide, porphyrin and titanium dioxide coated with dye porphyrin. <i>Sains Malaysiana</i> 37: 271-275. 5. Nurul Huda Yusoff, Muhamad Mat Salleh and Muhammad Yahaya, 2008. TiO₂ nanoparticles coated with porphyrin dye thin film as fluorescence gas sensor. <i>Sains Malaysiana</i> 37(3):249 -253.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of High Performance Composite Noise Barrier Panels from Local Natural Fibre Materials
Project Number	03-01-02-SF0372
Project Leader and Team Members	Leader: Rozli Zulkifli Members: Azli Arifin, Shahrum Abdullah, Mohd. Jailani Mohd, Che Husna Azhari, Mohd. Zaki Nuawi and Ahmad Rasdan Ismail
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to carry out anti-fungal and fire-resistance chemical treatment on natural fibres as a noise barrier material; to design and fabricate a high performance noise barrier panels using composite materials filled with treated natural fibres; to evaluate the acoustic properties of the high performance noise barrier composite panels using a reverberation room and impedance tube method; and to evaluate the mechanical properties of the noise barrier composite panels for industrial applications. All the objectives have been successfully achieved. The prototype system will have to undergo a pilot testing and optimization before it can be considered for real industrial and automotive applications.
Publications/Products/Outcomes	Journals: <ol style="list-style-type: none"> 1. Rozli Zulkifli, Mohd Nor M.J., M.F. Mat Tahir, A.R. Ismail and Mohd Zaki Nuawi. 2008. Acoustic properties of multi-layer coir fibres sound absorption panel. <i>Journal of Applied Sciences</i> 8: 3709-3714. 2. Rozli Zulkifli, Nor M.J.M., Ismail A.R., Nuawi M.Z., Abdullah S., Tahir M.F.M. and Rahman M.N.A. 2009. Comparison of acoustic properties between coir fibre and oil palm fibre. <i>European Journal of Scientific Research</i> 33: 144-152. 3. Rozli Zulkifli, Mohd Jailani Mohd Nor, Ahmad Rasdan Ismail, Mohd Zaki Nuawi and Mohd Faizal Mat Tahir. 2009. Effect of perforated size and air gap thickness on acoustic properties of coir fibre sound absorption panels. <i>European Journal of Scientific Research</i> 28: 242- 252.

	<p>Proceedings:</p> <ol style="list-style-type: none"> 1. Mohd Jailani Mohd Nor, Rozli Zulkifli, Mohd Faizal Mat Tahir and Ahmad Rasdan Ismail. 2007. Innovative acoustic absorption panel design using natural fibre. <i>Proceedings on Regional Conference on Advances in Noise, Vibration and Comfort</i>. 27-28 Nov. 2007. Putrajaya. pp. 253-260. 2. Mohd Jailani Mohd Nor, Rozli Zulkifli, Mohd Faizal Mat Tahir and Ahmad Rasdan Ismail. 2007. Comparison of acoustic properties between coconut coir fibre and oil palm fibre. <i>Proceedings on Regional Conference on Advances in Noise, Vibration and Comfort (NVC2007)</i>. 27-28 Nov 2007, Putrajaya. pp. 224. 3. Rozli Zulkifli, Mohd Jailani Mohd Nor, Mohd Faizal Mat Tahir and Ahmad Rasdan Ismail. 2008. Acoustic properties of sound absorption panels using multi-layer coir fibres. <i>Proc. 13th International Conference on Applied Mechanics and Mechanical Engineering</i>. 27-29 May 2008. Cairo, Egypt pp. 92-98.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Structural and Tribological Characterisations Of CU-based Alloys as Coating Materials for Connecting Rod Bearings in Automotive Engine
Project Number	03-01-02-SF0375
Project Leader and Team Members	Leader: Mariyam Jameelah Ghazali Members: Talib Ria Jaafar, Zainuddin Sajuri, Mohd Zaidi Omar, Shahrum Abdullah and Syarif Junaidi Sjarifuddi
Field of Research	Engineering Sciences
Project Summary	Project objectives were to identify potential applications for coatings in high temperature environments; to identify the need for improved coatings for performance enhancements; to design consideration and fabrication process and develop a tribological wear map of connecting rods for automotive engines by describing the wear phenomena taking place due to frictional work; and to propose improvements in the technical solutions in order to reduce friction. Cu based alloys were identified as the coating material for high temperature environments. The plasma spray method was selected in this study in order to ensure optimised coating. The tribological wear map has been constructed which describe the relationship between the wear mechanisms and plasma spray parameters involved.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mat Kamal S.E., Ghazali M.J. and Abdullah S. 2008. Failure analysis of Cu-based alloy coatings of connecting rod bearing shell in automotives. <i>2nd Regional Conference on Vehicle Engineering and Technology</i>, 15-17 July 2008, Hotel Istana, Kuala Lumpur. 2. Mat Kamal S.E., Ghazali M.J., Abdullah S. and Mansor N.I.I. 2008. A preliminary investigation on the sliding wear characteristic of connecting rod bearing material. <i>1st Engineering Postgraduate Conference</i>, 21-22 October 2008, Residence Hotel, Kajang, Selangor. 3. Mat Kamal S.E., Mansor N.I.I., Ghazali M.J. & Abdullah S. 2008. Analisis kegagalan salutan aloiasas kuprum pada kelompang gelas penyambung dalam automotif. <i>Malaysian Metallurgical Conference (MMC 2008)</i>, 3-4 December 2008, UKM Bangi, Selangor.

	<ol style="list-style-type: none"> 4. Mat Kamal S.E., Ghazali M.J. and Abdullah S. 2009. Characterisations of Cu-based coated Al7075 via plasma-spray technique – a preliminary study. <i>4th International Conference on Recent Advances in Materials, Minerals & Environment and 2nd Asian Symposium on Materials and Processing (RAMM & ASMP 2009)</i>, 1-3 Jun 2009, Bayview Beach Resort, Pulau Pinang. 5. Ghazali M.J. & Mat Kamal S.E. 2009. Characterisations of Cu-based coated Al7075 via plasma-spray technique. <i>International Conference on Nanotechnology & Advanced Materials (ICNAM 2009)</i>, 4-6 Mei. 2009, Bahrain. 6. Mat Kamal S.E., Ghazali M.J. and Abdullah S. 2010. Effect of plasma spray variables on Cu-Ni coated A7075. <i>8th International Conference on Fracture & Strength of Solids 2010 (FEFS2010)</i>, 7-9 Jun 2010, Hotel Istana, Kuala Lumpur.
Additional Information	Industrial Linkages: AMREC, SIRIM Bhd Lot 34, Jalan Hi-Tech 2/3, Kulim Hi-Tech Park, 09000 Kulim, Kedah.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Nanocrystal Mesoporous ZnO for Dye Synthesized Solar Cell (DSSC)
Project Number	03-01-02-SF0386
Project Leader and Team Members	Leader: Huda Abdullah Members: Brian Yulianto, Mohammad Kassim, Kamaruzzaman Sopian, Che Husna Azhari, Zahari Ibarahim, Syarif Junaidi Sjarifuddi and Noor Baa'yah Ibr
Field of Research	Material Sciences
Project Summary	Project objectives were to prepare nanocrystal mesoporous ZnO with a high surface area; to determine the important parameters in the preparation method of nanocrystal mesoporous ZnO; and to develop a high efficiency dye synthesized solar cell. A ZnO with an average particle size of 10-30 nm was obtained. These particles were assembled into a sheet-like secondary particle of less than 100 nm thick.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Active Sound Absorption Panel Using Agro-based Organic Fibre
Project Number	03-01-02-SF0393
Project Leader and Team Members	Leader: Mohd. Jailani Mohd Nor Members: Rozmi Ismail, Shahrum Abdullah, Mohd. Zaki Nuawi and Baba Md Deros
Field of Research	Engineering sciences
Project Summary	Project objectives were to develop the required analytical and mathematical approach, model and validate the characteristics of sound absorption; and to develop and produce a new active sound absorption system for use in industrial areas. The analytical techniques for the prediction of acoustical behaviour of a coil fibre was developrd. Modeling and validation of the characteristics of absorption of sound have successfully been done. A design of a new active sound absorption system has been proposed, however, further modification and verification of the performance is needed.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Darina Indah Daruis, D., Mohd. Nor, M.J., Hosseini Fouladi, M. And Md Deros, B. 2009. Driver's perception on the Influence of interior sound to vertical whole-body vibration. <i>Proceedings of the 16th International Congress on Sound and Vibration (ICSV16)</i>, 5-9 July 2009, Krakow, Poland. 2. M. H. Fouladi, M.J.M. Nor, A. K. Ariffin and S. Abdullah. 2008. Vibration source estimation inside of machinery. <i>13th International Conference on Applied Mechanics and Mechanical Engineering</i>, 27–29 May 2008, Cairo, Egypt. 3. Mohd Jailani Mohd Nor, Rozli Zulkifli, Mohd Faizal Mat Tahir and Ahmad Rasdan Ismail. 2007. Innovative acoustic absorption panel design using natural fibre. <i>Procs. Regional Conference on Advances in Noise, Vibration and Comfort</i>. 27–28 November 2007, Palm Garden, Putrajaya. pp. 253–260. 4. Mohd Jailani Mohd Nor, Rozli Zulkifli, Mohd Faizal Mat Tahir and Ahmad Rasdan Ismail. 2007. Comparison of acoustic properties between coconut coir fibre and oil palm fibre. <i>Procs. Regional Conference on Advances in Noise, Vibration and Comfort</i>. 27–28 November 2007, Palm Garden, Putrajaya.



	<p>5. Hosseini Fouladi, M., Mohd. Nor, M.J., Inayatullah, O. and Kamal Ariffin, A. 2009. Spectral analysis method for vibration source evaluation in moving vehicle. <i>Proceedings of the 16th International Congress on Sound and Vibration (ICSV16)</i>, 5-9 July 2009, Krakow, Poland.</p> <p>6. Hosseini Fouladi, M., Mohd. Nor, M.J., Kamal Ariffin, A. 2008. Utilisation of inverse techniques for vibration source reconstruction. <i>Proceedings of the 15th International Congress on Sound and Vibration (ICSV15)</i>, 6-10 July 2008, Daejeon, Korea.</p>
<p>Contact</p> <p>Institution/Entity</p> <p>Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM)</p> <p>Universiti Kebangsaan Malaysia (UKM),</p> <p>43600 UKM Bangi,</p> <p>Selangor.</p> <p>Office: 03-8921 6112</p> <p>H/p: 012-209 7571</p> <p>jailani@vlsi.eng.ukm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Recycled PET-glass Fiber Composite for Boat Components
Project Number	03-01-02-SF0415
Project Leader and Team Members	Leader: Ishak Ahmad Members: Anita Ramli, Ibrahim Abdullah, Rusli Daik, Sahrim Ahmad and Che Husna Azhari
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to prepare a glass fibre-polyester composite based on recycled PET; to determine the effect of the fibre surface treatment on the mechanical properties of the composite; and to determine the effect of hydrothermal aging on the mechanical and thermo-mechanical properties of the composite. Glass fibre-polyester composite based on recycled PET was prepared. The effect of silane treatment on the mechanical properties of the composite was studied. The effect of hydrothermal aging on the mechanical properties of the composite was also studied.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Magnetic Elements Doped Silicon and Germanium For Spintronics Applications
Project Number	03-01-02-SF0422
Project Leader and Team Members	Leader: Noor Baa'yah Ibrahim Member: Mustaffa Abdullah
Field of Research	Material Sciences
Project Summary	Project objectives were to prepare a magnetic element doped group IV semiconductor material; to study the properties of the magnetic element doped group IV semiconductor material; and to develop the magnetic element doped group IV semiconductor material suitable for spintronics applications. MnxSi_{1-x} , MnxGe_{1-x} , CoxSi_{1-x} and CoxGe_{1-x} ($x=0-0.5$) samples have been prepared using the solid state reaction process and the physical properties of the samples such as the magnetic, microstructure and composition have also been studied.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Preparation and Characterization of Solid Polymeric Electrolyte of PEO-ZnO-LiClO ₄
Project Number	03-01-02-SF0423
Project Leader and Team Members	Leader: Azizan Ahmad Members: Ibrahim Abu Talib and Mohd. Yusri Abd. Rahman
Field of Research	Chemical sciences
Project Summary	Project objectives were to improve the conductivity of PEO-LiClO ₄ by using ZnO as a filler material; to study the effect of ZnO on the crystallinity and morphology of the electrolyte; and to study the effect of ZnO on the thermal properties of the electrolyte. The ZnO filler did not improve the ionic conductivity of PEO-LiClO ₄ , however, it increased the crystallinity and thermal properties of the solid polymer electrolyte. The increase of salt percentages in the solution also helped to improve the ionic conductivity of the solid polymer electrolyte.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a High Strength Aluminium Alloy Composite Reinforced With Ceramics of Aluminium
Project Number	03-01-02-SF0424
Project Leader and Team Members	Leader: Abdul Razak Daud Members: Yusof Abdullah, Mahdi Che Isa and Muhammad Azmi Abdul H.
Field of Research	Engineering Sciences
Project Summary	<p>Project objectives were to develop a high strength aluminum alloy composites for vehicle structural frames; to characterise the mechanical and corrosion properties of the composites; and to determine the parameters for the production of the composites with outstanding properties for heavy-duty applications. Although all of the objectives were successfully achieved, the first objective's completion is not deemed satisfactory. This is due to the strength of the composites being high and is further improved with heat treatment but is less ductile compared to that of the original aluminum alloy matrix. However, certain properties of the composites could be further improved for different applications. For example, the mechanical and corrosion properties of the composites such as its hardness, strength, wear and corrosion resistance were successfully determined. The parameters for the production of the composites with specific properties have also been obtained, which include mixing temperatures, stirring speed and heat-treatment conditions.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Continuous Solid Feed Processing for Rapid High-Pressure Fractionation of Plant-Based Products
Project Number	03-01-02-SF0426
Project Leader and Team Members	Leader: Masturah Markom Members: Wan Ramli Wan Daud, Abdul Wahab Mohammad and Jamaliah Md Jahim
Field of Research	Engineering Sciences
Project Summary	Project objectives were to develop and design a continuous solid feed processing extractors for a high-pressure fractionation of plant-based products and to determine the cost effectiveness of the continuous processing schemes through simulation. An extractor was fabricated and a continuous extraction involving the solid-liquid/vapor phase model was developed. A prototype of a continuous solid feeding for high-pressure extractor (needs extensive testing for reliability and validation for different solid samples first) was developed.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Nanowire Solid State Dye-sensitized Solar Cells
Project Number	03-01-02-SF0429
Project Leader and Team Members	Leader: Muhammad Yahaya Members: Muhamad Mat Salleh and Mohammad Hafizuddin
Field of Research	Applied Sciences and Technologies
Project Summary	<p>Project objectives were to synthesize metal oxides nanowires using the wet chemical technique; to fabricate and characterise a nanowire dye-sensitized solar cell based on the conducting polymer and polymer electrolyte; and to demonstrate the nanowire solid state dye-sensitized solar cell is capable of high efficiency energy conversion. ZnO nanowire arrays have been successfully synthesized on ZnO-nanoparticles coated substrates using the hydrothermal method. ZnO nanowire dye-sensitised solar cell based on the conducting polymer have been fabricated and characterised.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Yahaya, M., Yap, C.C., and Salleh, M.M. 2009. Energy Conversion: Nano Solar Cell. <i>International Workshop on Advanced Material for New and Renewable Energy</i>, 9-11 June 2009, Jakarta. 2. Yap C.C., Yahaya, M., and Salleh, M.M. 2008. Synthesis of ZnO nanorod arrays on ZnO nanoparticles coated ITO substrate, <i>Regional Conference on Solid State Science and Technology 2008 (RCSSST 2008)</i>, 30 Nov. 2008-2 Dec. 2008,UPM, Serdang, Selangor. 3. C.F. Dee, W. Tjiu, M.M. Salleh, M. Yahaya and B.Y. Majlis. 2007. Growth and characterization of zinc oxide (ZnO) nanowires by solution-grown method, 2007 IEEE <i>Regional Symposium on Microelectronics (RSM 2007)</i>, 3-6 December 2007, Penang. 4. Yahaya, M., Yap, C.C., Jumali, M.H., and Salleh, M.M. 2009. Synthesis of ZnO nanorod arrays on nanoparticles-precoated ITO glass substrate, <i>International Conference For Nanotechnology Industries 2009 (ICNI 2008)</i>, 5-7 April 2009, Saudi Arabia. <p>Products: ZnO Nanowires Solid State Organic Solar Cell</p>

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis and Characterisation of Thermally Conductive Epoxy-Grafted Conjugated Polymers
Project Number	03-01-02-SF0436
Project Leader and Team Members	Leader: Rusli Daik Members: Ibrahim Abdullah and Ishak Ahmad
Field of Research	Material Sciences
Project Summary	The project objective was to develop new conjugated polymers. A series of six new conjugated polymers had been successfully synthesized. The study on thermal conductivity of all the polymers has been carried out successfully. The approach of producing the materials as well as the thermally conductive materials produced are patentable.
Publications/Products/ Outcomes	Products: Heat Dissipating Polymer Nanocomposites
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Associate Professor Dr. Rusli Daik School of Chemical Sciences and Technology, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Micro Direct Methanol Fuel Cell (DMFC) System for Portable Applications
Project Number	03-01-02-SF0455
Project Leader and Team Members	Leader: Siti Kartom Kamarudin Members: Siti Rozaimah Sheikh Abdul, Kamaruzzaman Sopian, Zahira Yaakob, Burhanuddin Yeop Majlis and Wan Ramli Wan Daud
Field of Research	Engineering Sciences
Project Summary	Project objectives were to design in detail, from the conceptual stage, to actual model and optimize the micro DMFC system; to fabricate, integrate and develop the micro components using the microelectromechanical system (MEMS); and to conduct the long-term performance test of the fuel cell system. All the above objectives were achieved, however, the fabrication was done using a conventional CNC machining tool, due to the equipment's constraint and break-downs.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Ahmad, M.M., Kamarudin, S.K., Daud, W.R.W. and Yaakub, Z. 2010. High power passive DMFC with low catalyst loading for small power generation. <i>Energy Conversion and Management</i> 51: 821-825. 2. Hashim N., Kamarudin, S. K. and Daud, W. R. W. 2010. Reka bentuk dan pembangunan mikro sel fuel methanol langsung (μSfml) untuk aplikasi mudah alih. <i>Sains Malaysiana</i> 39: 1015-1023. 3. Hashim, N., Kamarudin, S. K. and Daud, W. R. W. 2010. Reka bentuk dan pembangunan mikro sel fuel methanol langsung (μSfml) untuk aplikasi mudah alih. <i>Sains Malaysiana</i> 39: 1015-1023. 4. Hashim N., Kamarudin S.K., Daud W. R. W. 2009. Design, fabrication and testing of a PMMA-based passive single cell and a multi-cell stack micro DMFC. <i>International Journal of Hydrogen Energy</i> 34: 8263-8269.
Awards/Certificates	<ol style="list-style-type: none"> 1. Seoul International Invention Fair 2008: 1 Gold medal. 2. World Intellectual Property Organisation 2008: WIPO Award Certificate: Award for Best Woman Invention. 3. Taiwan Invention Products Promotion Association 2008: BEST INNOVATION AWARD



	4. Invention, Innovation Industrial Design Technology 2008: 1 Gold medal.
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent filed (P1 20092260); Direct Methanol Fuel Cell Assembly. 2. Malaysia Patent filed (P1 20092617); Passive Micro Direct Methanol Fuel Cell Assembly.
Additional Information	International Linkages: MoU with Gunma University, Kiryu Jepun
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fabrication of Micro Components by Metal Injection Molding Process
Project Number	03-01-02-SF0457
Project Leader and Team Members	Leader: Norhamidi Muhamad Members: Ja'afar Sahari @ Shaa, Che Hassan Che Haron and Mohd Zaidi Omar
Field of Research	Applied Sciences and Technologies
Project Summary	<p>Project objectives were to develop a cost effective technique for the production of micro components and study the influence of the process parameters in Metal Injection Molding for the production of microcomponents. The knowledge acquired from the project formed the basis of the newly approved project to produce the orthodontic component using the Micro Injection Molding Processes. The findings in this study cannot be commercialised as of yet. However, the knowledge from this project being used in the Arus Perdana project, that was recently approved by UKM, to produce the orthodontic component by Micro Injection Molding. One local company has shown interest to participate in the project and a technofund application with this company as a partner is currently being prepared and will be submitted.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mohd Halim Irwan Ibrahim, Norhamidi Muhamad, Abu Bakar Sulong. 2009. Rheological investigation of water atomised stainless steel powder for micro metal injection molding, <i>International Journal of Mechanical and Manufacturing Engineering</i> 4: 1-8. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Norhamidi Muhamad, Abu Bakar Sulong, Murtadhahadi, Che Hassan Che Harun, Khairur Rijal Jamaludin, Mohd Halim Irwan Ibrahim. 2008. Kaedah penyediaan bahan suapan yang optimum untuk proses pengacuanan suntikan logam (MIM). <i>Malaysian Metallurgical Conference</i> (MMC 2008) 3-4 Disember 2008, UKM, Bangi, Selangor. 2. Mohd Halim Irwan Ibrahim, Norhamidi Muhamad, Abu Bakar Sulong, Murtadhahadi. 2008. Rheological properties of SS316L powder for micro metal injection molding, <i>J. of Applied Technology</i>, May 2008, UKM, Bangi, Selangor.



	<ol style="list-style-type: none"> 3. Mohd Halim Irwan Ibrahim, Norhamidi Muhamad, Khairur Rijal Jamaludin, Ahmad S., Mohamed Nor N.H, Murtadhahadi. 2008. <i>Pengoptimuman parameter dalam pengacuan suntikan logam mikro (μMIM)</i>. Seminar AMREG 08, 12 Jun 2008, Seremban, Negeri Sembilan. 4. Mohd Halim Irwan Ibrahim, Norhamidi Muhamad, Abu Bakar Sulong, Murtadhahadi, Jamaludin K.R., Ahmad S. and Nor N.H.M. 2008. Water atomised stainless steel powder for micro metal injection molding: Optimization of rheological properties. <i>Malaysian Metallurgical Conference (MMC 2008)</i>, 3-4 Dis. 2008, UKM Bangi, Selangor. 5. Norhamidi Muhamad, Murtadhahadi, Che Hassan Che Harun, Abu Bakar Sulong, Khairur Rijal Jamaludin, Sufizar Ahmad, Mohd Halim Irwan Ibrahim and Nor Hafiez Mohamad Nor, 2008. Kesan Suhu Penyuntikan Yang Tidak Optimum Terhadap Kecacatan Jasad Anum Pada Proses Penyuntikan Logam (MIM), Seminar Amreg 1 - 12 Jun 2008, Seremban, Negeri Sembilan.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Webcam Based Visual Servo System for Autonomous Robot Control in Agriculture Applications
Project Number	03-01-02-SF0459
Project Leader and Team Members	Leader: Sallehuddin Mohamed Haris Members: Azli Arifin, Kasmiran Jumari, Shahrum Abdullah, Mohd. Zaki Nuawi and Mohd Hanif Md Saad
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to develop a robotic control system that will enable a robot to locate an object in an agricultural setting using a consumer grade monocular webcam; to develop a visual odometry system using a consumer grade monocular webcam; and to develop a control algorithm that provides a stabilizing control for the visual servo system. All of the objectives were achieved, however, a field test involving an agricultural setting has yet to be performed.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Shojaeipour, S., Haris, S.M., and Khairir, M.I., 2009. Vision-based mobile robot navigation using image processing and cell decomposition. In Visual Informatics: Bridging Research and Practice, <i>Lecture Notes in Computer Science</i> 5857: 90-96. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Haris, S.M. and Zakaria, M.K., 2009. Position control of a two-link robotic manipulator using optical flow. <i>Proceedings of the Regional Engineering Postgraduate Conference</i> 2009, 20-21 October 2009, Putrajaya. 2. Haris, S.M., Zakaria, M.K., and Nik Abdullah, N., 2009. Position control of a two-link satellite tracker manipulator using optical flow. <i>Proceedings of the International Conference on Space Science & Communication</i>, 26-27 October 2009, Port Dickson, Negeri Sembilan, pp. 200-204. 3. Shojaeipour, S., Haris, S.M., Khalili, K. and Shojaeipour, A., 2010. Motion planning for mobile robot navigation using combine quad-tree decomposition and voronoi diagrams. <i>Proceedings of the 2nd International Conference on Computer and Automation Engineering (ICCAE)</i>, 26-28 February 2010, Singapore. pp. 90-93.



	4. Haris,S.M., Gholami, E. and Shojaeipour, A., 2010. Webcam-based Mobile Robot Path Planning using Voronoi Diagrams and Image Processing. In Recent Advances and Applications of Electrical Engineering. <i>Proceedings of the 9th WSEAS International Conference on Applications of Electrical Engineering</i> (AEE '10), 23-25 March 2010, Penang, pp. 151-156
Additional Information	International Linkages: 1. Prof Oscar F. Aviles, Universidad Militar Nueva Granada, Colombia
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Photonic Crystal Devices for Optical Communications
Project Number	03-01-02-SF0464
Project Leader and Team Members	Leader: Sahbudin Shaari Members: Hayati Hussin and Abang Annur Ehsan
Field of Research	Engineering Sciences
Project Summary	<p>Project objectives were to develop an optical communication power splitting and wavelength splitting (multiplexing) device(s) using photonics crystal fabricated on silicon substrates. The device comprises of photonic crystal sharp filter, photonic crystal power splitters/ couplers for fibre to home (FTTH-PON) and wavelenth division multiplexing (WDM) devices for FTTH-PON and WDM networks. The novelty of these devices is the use of photonic crystals. This project was also targeted on bulk application by using nanoscale methods and techniques. From the experiment, the photonic band-gap relationship for "about 200 nm pillars on silicon with a spacing of 50 nm" was established. The "defect engineering" method was introduced into the photonic crystal.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Azliza Juliana Adnan, T Imran and Sahbudin Shaari. 2007. T-junction photonic crystalwavelength demultiplexer", OECC / IOOC 2007, 9-13 July 2007, Yokohama. 2. Azliza Juliana Adnan, T Imran and Sahbudin Shaari. 2007. T-junction photonic crystal optical communication 3-wavelength demultiplexer. <i>CLEO-Korea Photonics, Seoul Photonic crystal Multiplexer/ Demultiplexer Device for Optical Communications</i>", 26-31 Aug. 2007, Seoul, Korea. 3. Azliza Juliana Adnan, Sahbudin Shaari, Mohamad, R., Lambak, Z., and W. Y. Chan. 2007. "Photonic Crystal 1310/1490/1550 nm Demultiplexer," in <i>Conference on Lasers and Electro-Optics/Pacific Rim 2007</i>, (Optical Society of America, 2007), paper ThE3_6, 26 Aug 2007, America. 4. Azliza Juliana Adnan, <i>Sahbudin Shaari</i>, R. Mohamad, Zainuddin Lambak, and W. Y. Chan. 2007. Note that full-text PDFs from conferences typically contain, Select Another Publication, <i>Current OSA Journals Adv. Conference on Lasers and Electro-Optics/Pacific Rim 2007</i>, 26 Aug 2007, 1-3.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Multiphase Flow Investigation Using Tomography Technique
Project Number	03-01-02-SF0483
Project Leader and Team Members	Leader: Mohd Sobri Takriff Members: Siti Kartom Kamaruddin, Jaafar Abdullah and Jamaliah Md Jahim
Field of Research	Engineering sciences
Project Summary	Project objectives were to develop a three dimensional visualization device that employs electrical tomography technology; and to characterize a mutiphase flow behaviour in the chemical and biochemical processes by employing tomography technique. The first objective was fully achieved. The tomography techniques, along with CFD simulation successfully visualized (3D) the dynamics of fluids in the test vessel. The second objective was only partially achieved, based on the fact that the Electrical Resistance Tomography (ERT) worked on the basis of resistivity difference of the different phases, making ERT an unsuitable suitable device for a multiphase system that has a small conductivity or resistivity difference.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Mohd Sobri Takriff, Azmi Ahmad and Siti Kartom Kamaruddin. 2010. ERT imaging of gas-liquid mixing in agitated vessel. <i>Journal of Chemistry and Chemical Engineering</i> 4: 24-28. 2. Mohd Sobri Takriff, Ahmad Azahari Hamzah, Siti Kartom Kamarudin and Jaafar Abdullah. 2009. Electrical resistance tomography investigation of gas dispersion in gas-liquid mixing in an agitated vessel. <i>Journal of Applied Sciences</i> 9: 3110-3115. 3. Mohd Sobri Takriff & Taslim. 2009. Pulp bleaching in oscillatory flow mixer. <i>IEM Journal</i> 70: 14-17. 4. Ismail Mustapha, Mohd Sobri Takriff, Siti Kartom Kamaruddin and Nor Pa'iza Mohamad Hasan. 2010. Imaging of gas-liquid flow distribution in pipe using capacitance tomography and compare with CFD model. <i>Journal of Malaysian Society for Non-Destructive Testing</i> 4: 21.



	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Takriff, M.S and Abdullah, J. 2009. ERT visualization of gas-liquid mixing in an agitated vessel. <i>The 3rd Int. Workshop on Process Tomography</i>, 17-19 April 2009, Japan. pp 1-8. 2. Mohd Sobri Takriff, Ahmad Azahari Hamzah, Siti Kartom Kamaruddin and Jaafar Abdullah. 2009. Electrical resistance tomography investigation of electrical resistance tomography flow distribution in gas-liquid mixing in an agitated vessel. <i>The 3rd International conference on chemical and bioprocess engineering</i>, 5 Jan. 2009. Kota Kinabalu, Sabah. pp 380-383.
Additional Information	<p>International Linkages: Nihon University, Japan and Washington University, St Louis, USA</p> <p>Industrial Linkages: Edwar Technology, Indonesia</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM)</p> <p>Universiti Kebangsaan Malaysia,</p> <p>43600 UKM Bangi,</p> <p>Selangor.</p> <p>Office: 03-8921 6102</p> <p>H/p: 012-338 8507</p> <p>sobri@eng.ukm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Thermal Interface Material's Surface Thermal Properties Index for Flip Chip Ball Grid Array
Project Number	03-01-02-SF0495
Project Leader and Team Members	Leader: Azami Zaharim Members: Rozaidi Rasid, Shahrir Abdullah, Azami Zaharim, Nowshad Amin and Kamaruzzaman Sopian
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to identify a new material forming between the layer of a thermal interface material with the die and the lid; to design and fabricate a new tool in order to optimize the material's thermal resistance during heat transfer; to perform a series of experimental tests on the performance of the surface thermal properties for the thermal interface material; and to develop an index of the surface thermal resistance to derive a more accurate thermal resistance for thermal interface material. All of the objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Vision Based Automated Driver System for Intelligent Navigation System
Project Number	03-01-03-SF0019
Project Leader and Team Members	Leader: Ahmad Saifizul Abdullah Members: Mohamed Rehan Karim, Noor Azuan Abu Osman and Mohd Zamri Zainon @ Baharom
Field of Research	Engineering Sciences
Project Summary	Project objectives were to develop a reliable and ready-to-use visual system for vision based automated driver system on a full scale car; to design a vision based automatic steering control; to design a millimeter-wave based adaptive cruise control system; and to conduct a real-time implementation of the proposed systems on a full scale car on Malaysia's roadway system. All of the objectives was achieved. A compact stand-alone system should be developed in order for the system to be commercialised. The algorithm developed in this research shall be downloaded to the compact system which consists of a mini camera, a central processing unit and an actuator.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Sharifuddin, A. F., Saifizul, A. A., and Arof, H. 2008. Real-time automatic threshold feature for lane detection algorithm. <i>10th International Conference on Application of Advanced Technologies in Transportation</i> , 27-31 May 2008, Athens, Greece.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Effects of Scouring on Integral Bridge and Semi-Integral Piers During Low and High Flows
Project Number	03-01-03-SF0023
Project Leader and Team Members	Leader: Ismail Othman Members: Faridah Othman and Shatirah Mohamed Akib
Field of Research	Engineering Sciences
Project Summary	Project objectives were to study the flow parameters in relation to scouring; to study the effects of different bed materials on scouring; to study the scouring effects on the stability of the pier and abutments of integral bridge and semi-integral piers to determine the vegetation's (<i>Epipremnum aureum</i>) role in decreasing the scour rate at the integral bridge and semi-integral piers; and to study the effects of maximum loadings on the integral bridge towards the formation of the scour hole and compare the experimental results with simulation modeling. All except the last objective was achieved.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Shatirah Akib, Faridah Othman, Ismail Othman, and Mohammad Sholichin Marzuki. 2007. Environmentally friendly countermeasure for integral bridge scour. <i>8th APRU Doctoral Students Conference</i>, 30 Jul.-3Aug. 2007, Keio University, Tokyo. 2. Shatirah Akib, Faridah Othman and Ismail Othman. 2008. Scour behaviour on singly and doubly row pile integral bridges. <i>United Kingdom Malaysia Engineering Conference</i>, 15 Jul. 2008, University College London. 3. Shatirah Akib, Ismail Othman, Faridah Othman, and Mohammad Sholichin Marzuki. 2008. Scour at semi-integral bridge piers and pile groups. <i>International Junior Researcher and Engineer Workshop on Hydraulic Structures</i>, Aula Magna, 30-31 July -1 August 2008, Faculty of Engineering, University of Pisa, Italy.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Hardware In-the-loop Simulation for Control System Designs of Mini Scale Rotorcraft
Project Number	03-01-03-SF0024
Project Leader and Team Members	Leader: Zahari Taha Members: Raja Ariffin Raja Ghaz, Yap Hwa Jen and Norhafizan Ahmad
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to develop a HIL simulator to test the guidance, navigation, aircraft control laws and mission functionality and as much of the hardware of a mini scale rotorcraft in real-time without the risk of crashing in a flight test. The test result of the simulation can be used to reduce the likelihood of failure by detecting bugs and deficiencies in the laboratory. A HIL simulator has been designed and the hardware implemented in a model scale helicopter.
Publications/Products/Outcomes	Journals: 1. Nughoro, G., and Taha, Z. 2007. Modelling and visualisation of a model-scale autonomous helicopter. <i>International Journal of Systems Simulation</i> 1: 123-138. 2. Nugroho, G. and Taha, Z. 2007. Helicopter motion control using model-based sliding mode controller, special issue for Hnicem. <i>Journal of Advanced Computational Intelligence and Intelligent Informatics (JACIII)</i> 12: 342-347.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Improvement of Peat and Clay Soilsf Construction Industry
Project Number	03-01-03-SF0031
Project Leader and Team Members	Leader: Roslan Hashim Member: Zubaidah Ismail
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to identify all of the parameters influencing the engineering behaviour of natural peat and clay soils as fill materials and foundation soils; to determine the effects of modifying the natural peat and clay soils on their engineering properties; to develop the technique to improve natural peat and clay soils into suitable fill materials; to develop the technique to improve natural peat and clay soils into suitable foundation soils; and to determine the effects of the foundation configuration on the engineering performance. All of the objectives were achieved but further research is required to develop an actual field model in order to compare the project findings with the data from an actual applied condition.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Aerated and Non-aerated Power Cohesion Measurement Methods
Project Number	03-01-03-SF0036
Project Leader and Team Members	Leader: Ezzat Chan Abdullah @ Chan Beng Kuan Member: Abdul Aziz Abdul Raman
Field of Research	Engineering sciences
Project Summary	The objectives of the project were to develop an online device to measure the flow and fluidisation characteristics of fine powders by measuring their cohesive strength. The cohesive strength of powders were successfully measured through 2 different categories i.e. the aerated and non-aerated means. A new device, Warren Spring - University of Malaya Cohesion Tester (WUMCT), was developed which has the capability of directly measuring the cohesion strength of powder. However, the fluidisation characteristics of powder are not measured as the amount of powder needed for this test is rather large.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Utilisation of Incinerator Ash as Construction Material
Project Number	03-01-03-SF0044
Project Leader and Team Members	Hashim Razak
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were to develop strategies and methodologies for the use of incinerator ash as CLSM in the context of fresh and hardened state performance, on environmental effects and the guidelines. Studies have indicated the feasibility of using the ash based on the required performance is in conformance with the standards for CLSM. The environmental concerns were Addressed and were within the limits set by USEPA. The guidelines have also been proposed and established.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Naganathan, S., Abdul Razak, H. and Abdul Hamid, S.N. 2008. Preliminary Investigation of Incinerator slag as controlled low-strength material. <i>International Conference on Construction and Building Technology</i>, 16th-20th June, Kuala Lumpur. 2. Naganathan, S. and Abdul Razak, H. 2008. Fresh properties and compressive strength of controlled low-strength material made with incinerator slag and quarry dust. <i>Asian Concrete Federatio International Conference</i>, 11-13 November 2008, Vietnam. 3. Abdul Razak, H., Naganathan, S. and Abdul Hamid, S.N. 2008. Controlled low-strength material using industrial hazardous waste Incinerator slag and refined kaolin. <i>11th East Asia Pacific Conference on Structural Engineering & Construction (EASEC-11)</i>, 19– 21 Nov 2008, Taiwan. 4. Naganathan, S., Abdul Razak, H. and Abdul Hamid, S.N. 2008. Performance assessment of incinerator slag as CLSM. <i>7th International Congress on Concrete: Construction's Sustainable Option</i>, 8–10 July 2008, Dundee, United Kingdom.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Steel Connections Behaviour Under Fire Loading
Project Number	03-01-03-SF0056
Project Leader and Team Members	Leader: Nor Hafizah Ramli @ Sulong Members: Ismail Othman and Mohd. Zamin Jumaat
Field of Research	Engineering sciences
Project Summary	<p>The objectives of the project were to investigate the steel connection behaviour at elevated temperatures; to validate the available connection model using experimental data; to examine the joint behaviour through analytical and parametric studies; and to propose new findings in the current design guidance. The modeling of the connection and its influence on the beam and floor response was carried out successfully by using ADAPTIC finite element program. Detailed parametric studies on the effect of several parameters such as connection configurations, load ratio, temperature effects, restraint conditions, effect of cooling phase and isothermal/anisothermal loading conditions have been executed. Investigations of fire condition on the connection, beam and composite floor system based on Gurun Fire Test was thoroughly examined. The findings are beneficial in assessing the structural response with respect to fire conditions, progressive collapse and earthquake-fire situations.</p>
Publications/Products/Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Ramli Sulong, N.H., Elghazouli, A.Y., Izzuddin, B.A. and Ajit, N. 2010. Modelling of beam-to-column connections at elevated temperature using the component method. <i>Steel and Composite Structures</i> 10(1):23-43. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ramli Sulong, N. H. and Ajit, N. 2009. Analytical Investigation of Connection Influence on the Floor System in Gurun Fire Test. <i>7th Asia Pacific Structural Engineering and Construction Conference, APSEC-EACEF</i>, 4-6 Aug 2009, Langkawi. 2. Ajit, N. and Ramli Sulong, N. H. 2009. Investigation on Beam-to-Column Connection of Steel Sub-Frame under Fire. <i>International Conference for Technical Postgraduates TECHPOS</i>, 14-15 Dec 2009, Kuala Lumpur.



	<ol style="list-style-type: none">3. Ramli Sulong, N.H., Elghazouli, A.Y., Izzuddin, B.A. and Ajit, N. 2008. Deformation Capacity and Ductility Demand of Steel Connections at Ambient and Elevated Temperature. <i>5th European Conference on Steel and Composite Structures, Eurosteel</i>, 3– 5 Sep 2008, Graz, Austria.4. Ramli Sulong, N. H. and Ajit, N. 2008. Connection Performance in Gurun Fire Test, <i>International Conference on Construction and Building Technology (ICCBT)</i> 16– 20 June 2008, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Investigation on Ultimate Behavior of Steel and Steel-concrete Structural Shell Systems for Enclosing Large Spaces , Numerical and Experimental Analysis
Project Number	03-01-03-SF0058
Project Leader and Team Members	Leader: Ismail Othman Member: Nor Hafizah Ramli @ Sulon
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop an efficient composite shell roof system that optimally utilizes the material, thus yielding an economical design; to avoid the dependency on many full-scale experiments which are expensive and time consuming; and to provide the structural designers with means by which they can perform and create design calculations for the composite shell system. The first and second objectives were successfully achieved, however, the team ran into a snag for the third objective. The main reason was the unpredictable nature of the failure mode, which makes it difficult for structural designers to predict and create countermeasures in the system.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Ramli Sulong, N. H., Ibrahim, Z., Othman, I. and Osman, S.A. 2007. Effect of Wind Loading on the Temporary Works of High-Rise Structures. <i>3rd World Engineering Congress 2007</i> , 15th – 17th Aug 2007, Penang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Robotic Drilling System with Haptic Interface
Project Number	03-01-03-SF0060
Project Leader and Team Members	Leader: Zahari Taha Members: Norhafizan Ahmad, Yap Hwa Jen and Raja Ariffin Raja Ghaz
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design and develop a robot simulation system, focusing on robotic drilling; to develop and integrate a haptic interface that interfaces human, robots and virtual objects in a virtual environment; and to design, fabricate and integrate an automatic drilling system with an industrial robot manipulator. A robotics drilling simulation system had been designed, a force/torque measurement for robotic system was developed, a special robot drilling system was fabricated and the force measurement and the robot position control was integrated using serial communications. An open architecture control system is under development. The integration of a haptic interfaces that interface human, robot and virtual object in the virtual environment, however, were not achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Investigation into Minimal Cutting Fluid Application Technique in High Speed Milling Operation
Project Number	03-01-03-SF0063
Project Leader and Team Members	Leader: Mohd Hamdi Abd Shukor Member: Khaled Abdel Rahman Abou El Hossein
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop a minimal cutting fluid delivery system for a high speed milling operation; to determine the performance of minimal cutting fluids application in pulsed jet form in the high speed milling of hardened steel using coated carbide ball end-mill; to compare the performance of machining with minimal cutting fluid application in pulsed jet form with machining with conventional flood application and dry machining. The objectives of this study were successfully achieved. In addition, we manage to improve the laboratory prototype which can be further developed for commercialization. A patent application was filed for the first prototype. In addition, the new improved design will also be submitted for a patent. Further analysis and investigation will be continued to improve the design to make it viable for Commercialisation.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Hamdan, A. A., Hamdi, M., Lam, C. W. and Abou-El-Hossein, K. A. 2008. Optimization of Cutting Fluid in Minimal Quantity Lubricant (MQL) in Machining of AISI 01 Hardened Steel using PVD Coated Carbide Inserts. <i>International Conference on Science & Technology: Applications in Industry & Education, University Teknologi MARA</i>, 12– 13 Dec 2008, Pulau Pinang. 2. Hamdan, A. A., Hamdi, M. and Abou-El-Hossein, K. A. 2008. Optimization Of High Speed Milling Parameters Using Taguchi Method. <i>International Conference on project Management (ICOPM)</i>, 18– 20 Nov 2008, Petaling Jaya.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Quantitative Assessment System for Mental and Upper Limb Muscle Fatigue on Repetitive Task Load in Manufacturing Industries
Project Number	03-01-03-SF0064
Project Leader and Team Members	Leader: Siti Zawiah Md. Dawal Members: Raja Ariffin Raja Ghaz, Norhafizan Ahmad, Zahari Taha and Zubaidah Ismail
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop a methodology in diagnosing upper limb muscle fatigue due to repetitive tasks; to develop a model to assess and analyze upper limb muscle fatigue for repetitive tasks in the manufacturing industries. All of the objectives were successfully achieved.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Zadry, H.R. and Dawal, S. Z. 2007. Muscle and Mental Fatigue on Repetitive Tasks in Industry. <i>International Conference on Ergonomics (ICE)</i>, 3-5 Dec 2007, Kuala Lumpur. 2. Dawal, S. Z., Shin, Y.L., Makhtar, N. and Ismail, Z. 2007. The relation between mental processing and upper limb muscle activity in repetitive work. <i>Eight Pan Pacific Ergonomics Conference (PPCOE)</i>, 17-19 Oct 2007, Bangkok, Thailand. 3. Santy, Adibah Aimi, and Md Dawal, S. Z. 2008. Effect on Upper Limb and Lower Back during Prolong Sitting. <i>9th Asia Pasific Industrial Engineering and Management Systems Conference</i>, 3-5 Dec 2008, Bali, Indonesia. 4. Santy and Dawal, S. Z. 2008. Development of Quantitative Assessment System of Muscle Fatigue in Light Assembly Seating Task: A Future Research. <i>The 9th Asia Pasific Industrial Engineering and Management Systems Conference</i>, 3-5 Dec 2008, Bali, Indonesia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The Development and Fabrication of Miniature Heat Exchangers
Project Number	03-01-03-SF0065
Project Leader and Team Members	Leader: Bushroa Abdul Razak Member: Farazila Yusof
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to design, develop, and analyze a miniature heat exchanger that can be used in electrical and electronic appliances; to obtain the mechanism and procedures for fabricating a miniature heat exchanger using precision manufacturing process and joining technology; to evaluate the physical and mechanical properties of the miniature heat exchanger; and to evaluate the performance of the miniature heat exchangers in real applications. A miniature heat exchanger has been developed from the stage of designing the heat exchanger block and heat transfer analysis through computational fluid dynamic software and fabrication of miniature channel with a CNC milling machine. The CNC machine is used during the fabrication of miniature heat exchanger. A 1mm ball nose tools were used to machine the miniature channel of the heat exchanger block. The joining technology was explored to combine the two copper plates using the brazing method. The joining ability of brazing was estimated by the mechanical properties through microstructural observation and mechanical testings. The performance of the miniature heat exchanger assembly was evaluated and compared with the current liquid cooling applied to electronics. The miniature heat exchanger performed well compared to a large-scale liquid cooling system.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Engineering Automated Rapid Maxillary Expander for Dento-facial Applications
Project Number	03-01-03-SF0070
Project Leader and Team Members	Leader: Noor Azuan Abu Osman Members: Siti Mazlipah Ismail, Azizuddin Kamaruddin, Rosnah Mohd Zain, Zainal Ariff Abdul Rahman, Noor Azlin Yahya, Zamri Radzi and Ahmad Saifizul Abdullah
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop and fabricate a smart and automated Rapid Maxillary Expander; to develop a Rapid Maxillary Expander that is biologically efficient in an arch expansion; and to develop a Rapid Maxillary Expander that does not rely on patient's compliance. The project has successfully developed and assembled a pre-programmed maxillary expander. The device is fully functional in that it is capable to automatically move to produce an expansion effect to the jaw. This completely eliminated the need for patient intervention during the expansion period.
Publications/Products/ Outcomes	Journal: 1. Sharizli, A. A., Zabir, F. A., Abu Osman, N. A., Radzi, Z. and Shaifizul, A. A. 2007. Preliminary Design of An Automated Rapid Maxillary (RME) Expander for Dento-facial Applications. <i>Journal of Biomechanics</i> 40 (S2):459.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Organic Solar Cells
Project Number	03-01-03-SF0071
Project Leader and Team Members	Leader: Khaulah @ Che Som Sulaiman Member: Richard Anak Ritikos
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to fabricate an electrode/donor/acceptor heterojunction based on organic semiconductor materials; to investigate the fundamental issues of photogexcitation physics of charge carriers such as singlet exciton, carrier mobility, surface morphology as well as charge transport; and to analyse and improve the photovoltaic performance of the organic solar devices. All three objectives have been achieved. However, the performance of the organic solar cell still needs further improvements.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> Yusli, M. N., Way Yun, T. and Sulaiman, K. 2009. Solvent effect on thin film formation of polymeric solar cells. <i>Materials Letters</i> 63(30):2691-2694. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> Abdul Hapip, A. I. and Sulaiman, K. 2008. Thermal annealing effect of poly (hexylthiophene/gallium-8-hydroxyquinoline (P3HT/GaQ3) bulk heterojunction solar cells. <i>Proceedings of seminar on Progress of Solar Energy Research & Development</i>, 21– 22 Oct 2008, Pusat Tenaga Malaysia. Lim, L. W. and Sulaiman, K. 2009. Fabrication and Characterization of Poly (3-hexylthiophene) Thin Film Photovoltaic Device and Light Emitting Diode. <i>Proceedings of Frontiers in Physics: 3rd International Meeting, American Institute of Physics</i>, 12–16 Jan 2009, Awana Genting. Malaysia.
Awards/Certificates	<ol style="list-style-type: none"> The Belgian and International Trade Fair For Technological Innovation, Brussels. 2007: 1 Gold Medal Ukrainian Academy of Science, the Brussels Innova and Energy Expo 2007: Special Award. The Malaysian Solid State Science & Technology Society, 24th Regional Conference on Solid State Science & Tech 2008: Certificate of recognition (Top ten poster award)



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Novel Nanocatalysts for Environmental Pollution Protection and Bio-Medical Applications
Project Number	03-01-03-SF0072
Project Leader and Team Members	Leader: Iskandar Idris Yaacob Members: Mohd Rafie Johan and Abdul Hadi
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were to synthesize a novel nanosized catalytic materials for air pollution control purposes; to study the formulation procedure and characteristics of the synthesized nanocatalyst; to investigate the performance and catalytic activity of the synthesized nanocatalyst in reducing gas pollutants; and to fabricate an air pollution control system using the synthesized nanocatalyst. A novel nanocatalysts (Pd/CeO₂) for air pollution control has been successfully synthesized. The synthesized nanocatalyst has been characterised using a battery characterization procedure and the catalytic activity of the synthesized nanocatalyst in reducing a simulated gas pollutants has been studied. However, the study on biomedical applications was excluded in this research and the fabrication of the air pollution control system using the synthesized nanocatalyst was not performed due to the budget constraints.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Generation of Pulsed Plasma Streams and Particle Beams For Applications in Nano Scaled Material Surface Modification
Project Number	03-01-03-SF0073
Project Leader and Team Members	Leader: Wong Chiow San Members: Kurunathan Ratnavelu and Yap Seong Ling
Field of Research	Physical Sciences
Project Summary	The objectives of the project were to characterise the plasma streams and ion beams produced during pulsed plasma discharge and to demonstrate the feasibility of their applications in nanoscaled material surface modifications.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Wong C.S. 2007. Plasma Technology Research and Development at University Of Malaya. <i>J. Sci. & Technol. In the Tropics</i> 3: 11-19. 2. Ngoi, S. K., Yap, S. L., Wong, C. S. and Saadah, A. R. 2008. Ion Beam Measurements of a Dense Plasma Focus Device Using Cr 39 Nuclear Track Detectors. 1017: 347-352. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Rahbari, R.G., Yahya, R., Hamdi, M., Yap, S.L., Ngoi, S.K., Wong, C.S. and Leong, L. 2009. High Energy Ion Beam Combustion of Tio2-B-Al Mixture. <i>Aip Conference Proceedings</i>, 12– 16 Jan 2009, Kuala Lumpur. 2. Lim, L. K., Ngoi, S. K., Yap, S. L., Wong, C. S. and Saadah, A. R. 2009. Ion Beam and Plasma Jet Generated By A 3 Kj Plasma Focus. <i>Aip Conference Proceedings</i>, 12 –16 Jan 2009, Kuala Lumpur.
Additional Information	International Linkages: Chulalongkorn University, Thailand.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Production of Palm Biodiesel from RBD Palm Oil Using Continuous Membrane Reactor
Project Number	03-01-03-SF0074
Project Leader and Team Members	Leader: Abdul Aziz Abdul Raman Members: Nik Meriam Nik Sulaiman, Mohamed Kheireddine Aroua and Saeid Baroutian
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to determine the optimal membrane type and operational parameters in producing palm diesel from RBD palm oil using a membrane reactor; to identify techniques to overcome potential fouling problems in membranes by RBD palm oil; and to evaluate the suitability of using ethanol as the reactant instead of commonly used methanol in the membrane reactor. All the original objectives of the project were completely achieved. In fact, the objective were extended to include immobilised solid catalyst on a membrane surface. Participated in ITEX 09, Malaysian Invention, Innovation, Industrial Design and Technology Exhibition and won a gold medal. A patent is being drafted and it is only a matter of time before a partner is identified to commercialise the project.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Baroutian, S., Aroua, M. K., Raman, A. A. A. and Sulaiman, N. M. N. 2010. Potassium Hydroxide Catalyst Supported on Palm Shell Activated Carbon for Transesterification of Palm Oil. <i>Fuel Processing Technology</i> 91(11): 1378–1385. 2. Baroutian, S., Aroua, M. K., Raman, A. A. A. and Sulaiman, N. M. N. 2010. Viscosities and Densities of Binary and Ternary Blends of Palm Oil + Palm Biodiesel + Diesel Fuel at Different Temperatures. <i>Journal of Chemical and Engineering Data</i> 55(1): 504–507. 3. Baroutian, S., Aroua, M. K., Raman, A. A. A. and Sulaiman, N. M. N. 2010. A Packed Bed Membrane Reactor for Production of Biodiesel using Activated Carbon Supported Catalyst. <i>Bioresource Technology</i> 102(2):1095-1102. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Baroutian, S., Aroua, M. K., Raman, A. A. A. and Sulaiman, N. M. N. 2010. Efficient Triglyceride Transesterification in a Packed-bed Membrane Reactor. <i>CHEMECA 2010</i>, 26– 29 Sep 2010, Adelaide, Australia.



	<ol style="list-style-type: none"> 2. Abdul Aziz, A.R., Baroutian, S., Aroua, M. K. and Sulaiman, N. M. N. 2010. Combination of Alkali Transestrification and Membrane Separation to Produce High Quality Palm Biodiesel. <i>CHEMECA 2010</i>, 26–29 Sep 2010, Adelaide, Australia. 3. Raman, A. A. A., Sulaiman, S., Baroutian, S., Aroua, M. K. and Sulaiman, N. M. N. 2009. Waste To Biodiesel: Direct And Indirect Routes To Your Fuel Tank!. <i>1st AUN/SEED- Net Regional Workshop on New/Renewable Energy</i>, 12– 13 Mar 2009, Bandung, Indonesia.
Awards/Certificates	<ol style="list-style-type: none"> 1. International Invention, Innovation and Technology Exhibition (ITEX) 2009: 1 Gold Medal 2. Malaysian Technology Expo (MTE) 2009: 1 Silver Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Electrodeposition of Semiconductor Thin Films for Device Applications
Project Number	03-01-03-SF0080
Project Leader and Team Members	Leader: Wan Jeffrey Basirun Member: Saravanan Nagalingam
Field of Research	Material Sciences
Project Summary	The objectives of the project were to prepare semiconductor thin films by electrodeposition from their ions in solutions; to identify the most optimum conditions for electrodeposition in order to control parameters which produces these semiconductor thin films and also measure physical properties such as the band gap of each electrodeposited thin films as well as study their relation to the elemental ratios; and to study the practical applications of these thin films, for example by using them as electrodes in battery systems. Although outside the scope of this project, their applications can be tested in optoelectronic devices and solar energy materials for interested researchers who are willing to share their experience.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Mehdi Ebadi, Alias, Y. and Basirun, W. J. 2009. Influence of magnetic field on the mass electrodeposition and investigation of corrosion rate on Ni and Ni-Co alloy. <i>Asian Journal of Chemistry</i> 21(8):6343-6353. 2. Mehdi Ebadi, Alias, Y. and Basirun, W. J. 2009. Influence of Permanent Perpendicular Magnetic Field on the Electrodeposition of Nickel. <i>Asian Journal of Chemistry</i> 21(9): 7354-7362. 3. Mehdi Ebadi, Basirun, W. J. and Alias Y. 2010. Influence of Magnetic Field on the Electrodeposition of Ni-Co Alloy. <i>Journal of Chemical Science</i> 112(2):1-7. 4. Mehdi Ebadi, Basirun, W. J., Alias, Y. and Mohammadreza Mahmoudian 2010. Electrodeposition of quaternary alloys in the presence of magnetic field. <i>Chemistry Central Journal</i> 4:14. 5. Mehdi Ebadi, Basirun, W. J., Alias, Y. and Mohammad R. Mahmoudian. (2011). Normal and Anomalous Codeposition of Ni-Co-Fe-Zn Alloys from EMIC/EG in the Presence of an External Magnetic Field. <i>Metallurgical and Materials Transactions A</i>, DOI: 10.1007/s11661-011-0605-3.



	6. Mohamad, S. A., Basirun, W. J., Ibrahim, Z. A., Arof, A. K. and Ebadi, M. (2011). Controlled potential electrodeposition and characterization of ZnTe thin films on Indium Tin Oxide, Advance Material Research.
IP Status	Malaysian Patent filed (PI2010700034); Enhancement of electrodeposition current density and electrodeposition rate of Nickel-Cobalt alloy by using an external magnetic field in a non-aqueous electroplating bath
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Molecular Rationalisation of the Stability Of Glycolipid Bilayers
Project Number	03-01-03-SF0083
Project Leader and Team Members	Leader: Rauzah Hashim Members: Richard Bryce and Thorsten Heidelberg
Field of Research	Chemical Sciences
Project Summary	The objectives of the project were to correlate the stability of self assembled bilayers to the chemical structure of the applied glycolipid (structure property correlation); and to provide a structure property optimisation tool for glycolipid based bilayer applications (e.g. drug delivery system). All the objectives were successfully achieved. The objectives were to correlate the stability of self assembled bilayers to the chemical structure of the applied glycolipids (structure property relationship) and also to provide a structure optimisation tool for glycolipid based bilayer applications (e.g. drug delivery system).
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Behavior of High Performance Reinforced Concrete Beams for Repeated Loads and Fatigue
Project Number	03-01-03-SF0118
Project Leader and Team Members	Leader: Mohd. Zamin Jumaat Member: Sudharshan Naidu A/L Rama
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to investigate the behaviour of high performance reinforced concrete (HPRC) beams under static, repeated and fatigue loading conditions; to find new repair and strengthening materials to be used for HPRC beams, subjected to repeated loads and fatigues; and to propose suitable methods of repairing and strengthening of HPRC beams subjected to repeated loads and fatigues. All the objectives were achieved except to investigate the behaviour of high performance reinforced concrete beams under repeated and fatigue loading conditions because the electronic device of the testing equipment was burnt during the time of testing. Thus, the fatigue tests on control and strengthened high performance reinforced concrete beams could not be completed. The fatigue test on the reinforced concrete beam and strengthened reinforced concrete beams were completed. However, since the structural behaviour of strengthened reinforced concrete beams and high performance reinforced concrete beams under a static loading condition were found to be similar, it could be assumed that the same strengthening materials and methods of reinforcing concrete beams would also be applicable for high performance reinforced concrete beams for repeated loading condition.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The use of Zircon (ZrSiO ₄) Matrix to Immobilise Radioactive Materials and Wastes
Project Number	03-01-03-SF0126
Project Leader and Team Members	Leader: Yusoff Mohd. Amin Members: Roslan Md. Nor and Hasan Abu Kassim
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to determine the mechanism of radiation damage in zircon by physical methods as well as by computer simulations; to determine the effect of radiation damage on the rate of leaching of radionuclides present in zircon; to study the effect of temperature, pH and pressure on the rate of leaching of radionuclides present in zircon as a function of nuclides concentration; and to fabricate the zircon matrix doped with radioactive elements. The first three objectives has been achieved. The final objective is difficult to be achieved as very high temperature is needed to synthesize a zircon matrix. It is currently unfeasible with the available furnace.
Publications/Products/ Outcomes	Journals: 1. Amin, Y. M., Mohammed Al-Ruqeishi M. S., Chew, S. H. and Wong, C. S. 2008. Relative Thermoluminescence Response of TLD-100, TLD-200 and Ge-doped Optical Fiber to 8.05 keV X-ray, <i>Malaysian Journal of Science</i> , 27 (2): 91-95. 2. Amin, Y. M. 2006. Study of radiation damage in zircon (ZrSiO ₄) crystals using fission tracks and dspacing values of (112) plane. <i>J. Fizik Malaysia</i> 27(1):21-25.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Cathode Materials For Lithium Ion Batteries
Project Number	03-01-03-SF0128
Project Leader and Team Members	Leader: Abdul Kariem Mohd Arof Members: Tan Winie and Ramesh s/o T.Subramaniam
Field of Research	Material Sciences
Project Summary	Lithium transition metal oxides, LiMPO ₄ (M=Mn, Fe, Ni) have been prepared by the sol gel method. The materials were characterized using X-ray diffractometry and optical spectroscopy. Electrochemical properties of the cathode materials were evaluated using cyclic voltammetry (CV). This work has been extended to inverse spinel materials by one MSc and one PhD candidate.
Publications/Products/Outcomes	Journal: 1. Sanusi, A., Basirun, W. J., Kufian, M. Z. and Arof, A. K. 2009. Redox behaviour of crystalline LiFePO ₄ prepared by chemical precipitation and low temperature sterilisation. <i>Materials Research Innovations</i> 13:207-209.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Develop an Injectable, Biocompatible and In-Situ Crosslinkable Bone Fracture Cement
Project Number	03-01-03-SF0129
Project Leader and Team Members	Leader: Wan Abu Bakar Wan Abas Members: Chai Yoke Chin and Kim Kah Hwi
Field of Research	Material Sciences
Project Summary	The objectives of the project were to modify the current developed biocompatible material into pre-clinical prototype of injectable and in-situ crosslinked bone fracture filler/ bone cement. A special delivery device or applicator will concurrently be developed. Generally, all the objectives were achieved.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Chai, Y. C., Wab Wan Abas, Kim, K. H. and Johgalingam, V. T. 2005. Bone regeneration of PCLTF-filled non-critical size rat tibia defect. <i>The 8th Annual Meeting of Tissue Engineering Society International (TESI)</i> , 22-25 Oct 2005, Shanghai, China.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	A Study on Rare Earth Permanent Magnet in Linear Generator
Project Number	03-01-03-SF0132
Project Leader and Team Members	Leader: Wan Nor Liza Mahadi Member: Hew Wooi Ping
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to evaluate and analyse the performance of rare earth permanent magnets such as Neodymium Iron Boron (NdFeB) and Samarium Cobalt (SmCo) permanent magnets that need to be used in linear generator application using finite element analysis (FEM); and to investigate the flux variation and thermal effect on rare earth permanent magnets in linear generator application. NdFeB performance was evaluated and analysed (including the flux variation and its thermal effect) but evaluation on SmCo could not be conducted.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Preparation and Fabrication of Resonant Cavity Organic Light Emitting Diode (RC-OLED) Containing Small Molecules Of Tris (8-Hydroxyquinoline Aluminum), Alq3 for Colour Generation and Visual Displays
Project Number	03-01-03-SF0133
Project Leader and Team Members	Leader: Wan Haliza Abd Majid Members: Khairul Anuar Mat Sharif and Noor Hasnah Moin
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to fabricate RC-OLED by using Alq3 as the electron-transport layer or emission layer; to characterize the RC-OLED by obtaining its electrical and photo luminescence properties; to compare the various theoretical predictions of RC-OLED with the experimental results; and to enhance the efficiency of the RC-OLED by varying the optical distance between the Fabry-Perot (FB) mirrors in the RC-OLED. The team managed to fabricate the RC-OLED using Alq3 and characterise it to obtain its electrical and photoluminescence properties. Unfortunately, the team did not manage to compare the theoretical predictions of RC-OLED with the experimental results and to enhance its efficiency.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Programmable High Efficiency Permanent Magnet Linear Electrical Motor For Linear Piston Pump Application
Project Number	03-01-03-SF0136
Project Leader and Team Members	Leader: Hamzah Arof Member: Hew Wooi Ping
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design and develop a 100 W slotless permanent magnet linear motor prototype; to design and develop a 0.1 HP high pressure piston linear pump prototype; and to design and develop a programmable control system for the systems. The machine was developed with some modifications in order to integrate with the linear pump and to achieve better performances. The pump was developed by adapting from an existing high pressure pump and the PIC microcontroller based control system unit has also been developed however the final test has not been performed due to time constraint.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Novel and Sustainable Construction System for Flood Control Using Neuro-fuzzy Logic
Project Number	03-01-03-SF0142
Project Leader and Team Members	Leader: Ramani Bai V. Members: Mohamed Nor Mohamed Desa and Faridah Othman
Field of Research	Environmental Sciences
Project Summary	There are five major objectives framed under this research work which are to identify the occurrence of floods for responding to what is required, in what quantities and for whom, to develop a decision support tools on flood prediction using Artificial Neural Network (ANN) and Neuro-fuzzy logic (NFL) models, to compare the performances of flood prediction by ANN and NFL models and hence to implement a comprehensive flood control construction system, to prepare a comprehensive flood control plan based on the chosen model through this study and also to conduct post-research evaluation (PPE) after the research is completed focusing on the outcome to determine whether the research meet the goals outlined at its beginning.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Ramani, Bai. V. 2007. Prediction of spatial distribution of flood potential using Integrated GIS based Neural Network models. <i>Course notes of Regional workshop on Flood Disaster Risk Management (FDRM-8) Asian Disaster Preparedness Center</i> , 8-19 Oct 2007, Bangkok, Thailand. 2. Ramani, Bai. V. Woo Chaw Seng, Faridha Othman and Gopinath Ramadas. 2007. Neural Networks based Data Mining and Knowledge discovery in Dam operation and control. <i>Proc. of INFORMATICS07</i> , 27-28 Nov 2007, Kuala Lumpur.
Awards/Certificates	PECIPTA 2007: 2 Bronze Medals
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Studies on Palm Oil Biomass Properties and Energy Data for Combustion Enhancement in Boilers
Project Number	03-01-03-SF0146
Project Leader and Team Members	Leader: Mohd Zamri Zainon @ Baharom Members: Noor Azuan Abu Osman, Ahmad Saifizul Abdullah and Nik Nazri Nik Ghazali
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to determine a solution for combustion performance in the palm oil biomass boilers through detail evaluation on the properties and energy data from palm oil biomass, where it will lead to the experimentation on the biomass and biomass-fossil mix fuel combustion tested directly in the boilers both for power generation and industrial applications; to optimise the application of various palm oil wastes, such as empty fruit bunch, fibre, shell and palm oil effluent, to be converted into renewable energy. It will also provide suggestions on the safety and cleanliness of the exhaust gas from the biomass and mix fuel from the boilers. Whilst this study was carried out, more specific objectives were generated and achieved: production of new energy data collection for palm oil biomass; development of a new marketable training software for palm oil mill operation; the design of a lab-scale combustion chamber with good measurement capabilities; attempted to develop bio-oil and bio-gas collector through pyrolysis; a forecast for energy saving through biomass application in coal-fired plants; residue and exhaust gas data for current combustion. The project managed to develop a new marketable training software for palm oil mill operation and a laboratory scale design of a combustion chamber with good measurement capabilities.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Energy Efficient Nano Coating to Control Solar Radiation through the Glasses of Building Windows
Project Number	03-01-03-SF0158
Project Leader and Team Members	Leader: Mohd Faizul Mohd Sabri Members: Masjuki Hassan, Saidur Rahman Abdul Hakim and Mohd Rafie Johan
Field of Research	Material sciences
Project Summary	<p>The objectives of the project were to develop a window glass that will minimise solar heat gain and maximize daylighting for a tropical climate country; to investigate optical properties such as visible transmittance, shading coefficient, U-value and ultraviolet transmittance; to investigate the thermal performance such as solar heat gain; and to estimate energy savings and emission reductions as a result of advanced glazing. All of the objectives were generally achieved. A multilayer coating of crystalline TiO₂/Ag/TiO₂ for energy efficiency applications was successfully developed. We also investigated transmittance, shading coefficient, and U-value were evaluated for the multilayer coatings as well as its individual layers and used for estimating energy savings. The application of the coatings to a customized window glazing has allowed the evaluation of its solar heat gain. As a result, the energy savings and emission reductions were assessed based on the thermal performance and solar heat reflectivity of the prepared energy-efficient coatings. So far, the investigations shows that the developed coatings have high adhesion strength, wear resistance and hardness which makes it suitable for commercial applications in window glazing. But its optical performance require further improvement and study as it is subpar for commercialisation standards.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The Use of a HPHX System for Reducing Energy Consumption of Treating Ventilation Air in Hospitals in Tropical Climates.
Project Number	03-01-03-SF0160
Project Leader and Team Members	Leader: Yau Yat Huang Members: Shaifulazuar Rozali, Masjuki Hassan and T.M. Indra Mahlia
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop a Transient Systems Simulation Program (TRNSYS) Fortran source code to predict the possible onset of film condensation and use an iterative approach to predict theoretically the temperature distribution across the HPHX, and its overall effectiveness; to utilize the custom-built TRNSYS codes to theoretically estimate the hour-by-hour air states, as well as the energy consumption of the existing HVAC system for a typical operating theatre located in a tropical building; to experimentally verify the dehumidification enhancement and energy savings of a vertical HPHX for tropical building HVAC systems; to experimentally study the enthalpy change for the air passing through the cooling section (i.e. excluding reheat effect) with or without HPHXs in a tropical HVAC system, and also the reheat recovery with HPHXs in the same system; and to use the information and data obtained to build an empirical TRNSYS models for estimating the hour-by-hour air states as well as the entire Typical Meteorological Year (TMY) energy consumption of a typical operating theatre located in a tropical building. All of the project objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	High Power Converter for the Realisation of Facts Controllers
Project Number	03-01-03-SF0171
Project Leader and Team Members	Leader: Saad Mekhilef Members: Hew Wooi Ping, Ahmad Maliki Omar and Nasrudin Abd Rahim
Field of Research	Engineering Sciences
Project Summary/Objective	The objectives of the project were to design a high power converter for the realization of FACTS controllers; to integrate the traditional FACTS devices with energy storage system (ESS) that will increase the FACTS device functionality; to develop a modified sinusoidal PWM using FPGA chips as the main switching controller; to determine the suitable bridge topology for the system; and to test the complete system in an actual environment. All of the objectives were successfully achieved except for the last one.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Ustun T. S. and Mekhilef S. A. Quasi. 2009. Resonant Soft Switching 48-pulse PWM inverter with closed loop current control for the Realization of Static Synchronous Series Compensator (SSSC). <i>Australian Journal of Basic and Applied Sciences</i> 3(3):1814-1826. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ustun T. S. and Mekhilef S. A. Quasi. 2008. Resonant Soft Switching 48-pulse PWM inverter with closed loop current control for the realization of FACTS devices. <i>Australasian Universities Power Engineering Conference (AUPEC)</i>, 14-17 Dec 2008, Sydney, Australia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Polymer Composite with Improved Crack Resistance for Dental Restoration Applications
Project Number	03-01-03-SF0183
Project Leader and Team Members	Leader: Zamri Radzi Members: Gan Seng Neon, Sharifah Bee O A Abd Hamid, Noor Hayaty Abu Kasim, Noor Azlin Yahya, Shamsul Muhamad, Nor Himazian Mohamed, Norzakiah Mohamed Zam and Rohana Ahmad
Field of Research	Material Sciences
Project Summary	The objectives of the project were to develop a biocompatible polymeric composite material; and to determine potential applications for the polymeric composite in dental restoration with improved properties.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Palm Oil Based Dental Polymers
Project Number	03-01-03-SF0190
Project Leader and Team Members	Leader: Noor Hayaty Abu Kasim Members: Norzakiah Mohamed Zam, Noor Azina Ismail, Gan Seng Neon, Nor Himazian Mohamed, Rohana Ahmad, Zamri Radzi, Noor Azlin Yahya and Shamsul Muhamad
Field of Research	Category : Material Sciences
Project Summary	The objectives of the project were to refine and optimise an existing polyurethane prototype polymer, derived from palm oil for dental appliances; to characterise the physical, mechanical and biological properties of the dental polymers; to develop an environmental friendly dental polymer with improved handling characteristics; and to develop a dental polymer that could be locally manufactured and provide costs advantages over existing products. The targeted output for this project was a polymer suitable as base materials for dental appliances. However, we managed to synthesized two different polymers i.e. a prototype polymer which has the potential to be used as base materials for dental appliances and a laboratory scale resin system prototype for dental composites. The resin system prototype for dental composites is ready for upscaling.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Shahabudin, N., Abu Kasim, N. H. and Gan, S. N. 2008, Fluxural Strength of PMMA Modified with Palm-oil Based Polyol, <i>Proceedings of International Association for Dental Research (IADR) Conference</i>, 30 June-2July 2008 Toronto, Canada. 2. Al-Sanabani, F., Abu Kasim, N. H. and Gan, S. N. 2008. Conversion of a New Monomer for Dental Resin Application. <i>International Association for Dental Research South East Asian Division 22nd Annual Scientific Meeting, South East Asia Association for Dental Education 19th Annual Meeting</i>, 8–10 Oct 2008, Manila, Phillipines. 3. Shahabudin, N., Abu Kasim, N.N. and Gan, S.N. 2008. Modification of PMMA Dental Resin with Palm Oil Based Polyol. <i>International Association for Dental Research South East Asian Division 22nd Annual Scientific Meeting, South East Asia Association for Dental Education 19th Annual Meeting</i>, 8–10 Oct 2008, Manila, Phillipines.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	A Novel Process for Recovery of Polyphenols from Fruit Processing Wastes
Project Number	03-01-03-SF0252
Project Leader and Team Members	Leader: Che Rosmani Che Hassan
Field of Research	Engineering Sciences
Project Summary	The general aim of this study is to develop an effective process for the recovery of the phenolic compounds from the fruit waste, a by-product of the fruit processing industry. Special emphasis is given to the optimisation of the extraction and hydrolysis methods of phenolic compounds, as well as to their separation and identification techniques. The aims of the specific studies are to characterise polyphenols in selected fruit processing by-product, to increase the extraction yield of polyphenols and also to investigate the influence of membrane filtration technique on the polyphenols recovery from the fruit processing by-product.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis, Structural and Electrochemical Studies of Supramolecular Arrays based on Organic Ions: P-Sulfonato-Calix [N]Arenes and Phosphonium Cations
Project Number	03-01-03-SF0286
Project Leader and Team Members	Leader: Yatimah Alias Members: Irene Ling and Ahmad Azmin Mohamad
Field of Research	Chemical Sciences
Project Summary	<p>The objectives of the project were to synthesize novel compounds based on supramolecular tectons; to understand the factors influencing their mode of interactions and building novel arrays of the solid state supramolecular complexes based on the p-sulfonatocalix[n]arenes (n=4,5,6,7 and 8); to identify and predict the structural motifs in these molecular solids; to develop an environmentally friendly electrochemical method for the synthesis and mechanical studies of some new supramolecule; and to develop the concept of inclusion and disruption of the usual mode of associations and the ability of the phosphonium cations/p-sulfonatocalix[n]arenes system to generate extensive self-assembled arrays taking into account the ratios of ions pH and conductivities of the solutions using a combinatorial approach. A comprehensive synthesis and structural elucidation of supramolecules involving p-sulfonatocalix[4] arene and various organic and inorganic compounds have been done. Achieved the level of predictability and behavioural of the multi-component complexes in both solid and solution state. Understood the strategies in developing more complicated host-guest systems, which includes the molecular motifs and factors governing the self-assembled structures. However, electrochemical studies of supramolecules are still on-going due to the need for highly pure compounds.</p>
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Subramaniam, P., Alias, Y. and Weng, N. S. 2009. 1,1',2,2'-tetramethyl-3,3'-(p-phenylenedimethylene) diimidazol-1-ium dibromide. <i>Acta Cryst. E</i>, 2009, E65, o1828. 2. Ling, I., Alias, Y., Sobolev, A. N. and Raston, C. L. 2010. Lanthanoid assisted self assembly of imidazolium cations in organic bi-layers. <i>CrystEngComm</i> 12:1869-1875.

	<ol style="list-style-type: none"> Subramaniam, P., Alias, Y. and Weng, N. S. 2009. 1,1',2,2'-tetramethyl-3,3'-(p-phenylenedimethylene) diimidazol-1-ium bis (hexafluoridophosphate). <i>Acta Cryst. E</i>, 2009, E65, o1830. Subramaniam, P., Alias, Y. and Weng, N. S. 2009. 1,1',2,2'-tetramethyl-3,3'-(p-phenylenedimethylene) diimidazol-1-ium bis(tetrafluoridoborate). <i>Acta Cryst. E</i>, 2009, E65, o1829. Ling, I., Alias, Y., Sobolev, A. N. and Raston, C. L. 2010. Calixarene C8-imidazolium interplay as a design strategy for penetrating organic bi-layers. <i>Cryst. Eng. Comm</i> 12(2):573-578. Ling, I., Alias, Y., Sobolev, A. N. and Raston, C. L. 2010. p-Sulfonatocalix[4]arene-pyrrolidinium complexation in building multicomponent layered arrays. <i>Cryst. Growth and Design</i> 10:1312-1318.
Awards/Certificates	<ol style="list-style-type: none"> Research, Creativity and Innovation Expo 2009: 1 Silver medal Best Chemistry PhD thesis, <i>Irene Ling</i> 2010 (Institut Kimia Malaysia) Front cover design of <i>New Journal of Chemistry</i>, September issue, Volume 34, 2010.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Developing a Durable Chip Seal Pavement in Malaysian Road Conditions
Project Number	03-01-03-SF0287
Project Leader and Team Members	Leader: Mohd Rasdan Ibrahim Member: Mohamed Rehan Karim
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop a durable chipseal pavement for Malaysian roads. Results showed that a higher percentage of rubber crumb, mixed with bitumen, gives an overall better performance. Adhesion tests for the bitumen still need to be conducted.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Ionic Conductivity In Filler-doped Modified Chitosan-Based Electrolyte
Project Number	03-01-03-SF0289
Project Leader and Team Members	Leader: Abdul Kariem Mohd Arof Member: Tan Winie
Field of Research	Material Sciences
Project Summary	The objectives of this project are to produce a new chitosan derivatives by modifying the present chitosan structure i.e., hexanoyl chitosan (H-chitosan) and phthaloyl chitosan (P-chitosan) and then to find a suitable aprotic solvent that is capable of dissolving the new chitosan derivatives and to develop a high room temperature conducting polymers from these chitosan derivatives by adding suitable salts and fillers. H-chitosan was prepared by acyl modification of chitosan. While P-chitosan was prepared by phthaloylation of chitosan. The modified chitosan were characterised by impedance and infrared spectroscopies, x-ray diffraction and by thermal methods.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Muhammad, F. H., Subban, R. H. Y. and Winie, T. 2009. Electrical studies on hexanoyl chitosan-based nanocomposite polymer electrolytes. <i>AIP Conference Proceedings</i> 1136:61-65. 2. Muhammad, F. H., Subban, R. H. Y, Majid, S. R., Winie, T. and Arof, A. K. 2009. Characterisation of Al₂O₃ doped hexanoyl chitosan-LiCF₃SO₃-EC polymer electrolytes. <i>Materials Research Innovations</i> 13:181-183. 3. Winie, T., Ramesh, S. and Arof, A. K. 2009. Studies on the structure and transport properties of hexanoyl chitosan-based polymer electrolytes. <i>Physica B</i> 404:4308-4311.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Study on High Temperature Corrosion Behaviour of Nickel Aluminide Based Composite Fabricated via Reaction Synthesis
Project Number	03-01-03-SF0292
Project Leader and Team Members	Leader: Iskandar Idris Yaacob Members: Hendrik Simon Cornelis Metselaar and Iswadi Jauhari
Field of Research	Material Sciences
Project Summary	<p>The objectives of the project were to synthesize a single phase intermetallic nickel-aluminide with the addition of high temperature strenghteners and corrosion resistant elements using combined mechanical alloying and reactive sintering method to formulate an optimum composition of intermetallic nickel aluminide nanocomposites by varying the amount of the nanoceramic dispersant and characterise the mechanical properties and chemical stability of intermetallic composites; to investigate the interface interactions between the intermetallic matrix and the dispersed phase nanoceramic; and to determine the corrosion kinetics by evaluating the mass gain with time of the intermetallic composites under oxidising environment. Alloying elements such as Zr, Cr, Mo and B were successfully incorporated with the single phased intermetallic nickel-aluminide using the combined mechanical alloying and the reactive sintering method and the optimum compositions for nanocomposites were investigated by adding small weight percent of nanoceramic zirconium dioxide (ZrO₂). It was found that 5 wt% of nanoceramic is the optimum composition, resulting in improved mechanical properties and corrosion resistance. The reduced elastic modulus, E_r, measured from compression testing of the composite shows a comparable value to the plasma melted intermetallic. The dispersion strengthening effect was achieved through a stable interaction between the matrix and the dispersed phase nanoceramic. The kinetics for both the intermetallic and its nanocomposites were found to be parabolic after evaluating the mass gain with time under mixed gaseous 1% SO₂/air environment. The results and findings were published in international journals and presentations in international conferences.</p>

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Novel Polyols from Natural Resources to Produce Polymers
Project Number	03-01-03-SF0294
Project Leader and Team Members	Leader: Rosiyah Yahya Members: Mohd Tahir Abdul Rahman, Aziz Hassan and Gan Seng Neon
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to synthesize novel polyols from natural resources to produce polymers optimising the synthetic reaction conditions and the properties of the final product. A natural rubber-based polyol was successfully synthesized and the optimised synthetic conditions with the correct properties of the Flexible PU foam produced from the rubber-based polyol with the appropriate formulation was obtained.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Understanding the Formation of Nanostructured Mo/MoOx - A Structural-activity Elucidation
Project Number	03-01-03-SF0295
Project Leader and Team Members	Leader: Sharifah Bee O A Abd Hamid
Field of Research	Material Sciences
Project Summary	The objectives of the project were to study the step-wise solid state formation of supramolecular MoOx through in-situ techniques and to study the potential of such supramolecular MoOx for selective light alkanes (C1-C4) oxidation.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of the External Finger Fixator to Correct Flexion Deformity
Project Number	03-01-03-SF0314
Project Leader and Team Members	Leader: Noor Azuan Abu Osman Members: Herman Shah Abd Rahman and Tunku Sara Tunku Ahmad Yahaya
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop a new design for an external finger fixator to rectify severe fixed flexion deformity and improve the working device based from the previous external finger fixator. A manufactured prototype was successfully developed. The device is fully functioning and makes use of the basic principle that a gentle force, produced by an extension and flexion force and applied over time, will stimulate the growth of the contracted soft tissues.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Armour Materials through Superplastic Boronising of Duplex Stainless Steel
Project Number	03-01-03-SF0318
Project Leader and Team Members	Leader: Iswadi Jauhari
Field of Research	Material Sciences
Project Summary	In this study, a new technique of boronising is used to produce boride steel with much better properties compared to the one produced by the conventional method. The technique is superplastic boronising. The objectives of study are to develop armour materials from duplex stainless steel through superplastic boronising and also to produce ultra-hard layer of boride with layer of more than 250 µm and surface hardness of more than 4000 Hv.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Data Mining on Hidden Parameters of Water Quality Index for Safe Drinking Water Using Artificial Neural Networks and Fuzzy Logic Systems
Project Number	03-01-03-SF0322
Project Leader and Team Members	Leader: Ramani Bai V. Members: Abdul Rani Abdullah Bagin and Md. Ghazaly Shaaban
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to study the present categorisation methods for estimating the changing status and usability of surface water without health hazards; to employ a data mining approach for discovering hidden parameters in water quality index using Fuzzy logic; to compare the performance of the Fuzzy logic in assessment of water bodies with that of the present categorisation method by a cross validation; and to re-design the water quality index (WQI) by DOE of Malaysia and the endorsement for its modified concept and implementations.
Publications/Products/Outcomes	Journals: 1. Ramani, Bai. V., KyungOh, Lee., Ghazaly Shaaban, Md. and Gopinath, R. 2007. Optimization of river water quality index and river classification. <i>International Journal of Principles and Applications of Information Science and Technology</i> . 2. Ramani, Bai. V., Ghazaly Shaaban, Md., Pauzi Abdullah, Md. and Sadia Ata. 2007. Development of new water quality model using Fuzzy Logic system for Malaysia. <i>IWA Journal of Water Science and Technology</i> . 101-106.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Mixing Dynamics in Gassed and Ungassed Liquid-Solid Systems in Relation to Chemical and Bio-Reactor Operations
Project Number	03-01-03-SF0325
Project Leader and Team Members	Leader: Shaliza Ibrahim Members: Abdul Aziz Abdul Raman and Mohamad Suffian Mohamad Annuar
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to investigate the effects of influencing parameters on the suspension of particles under gassed and ungassed conditions; to relate the observations in a simulated condition to real systems of cell culture and chemical process; and to compare the process performance at different scales and configurations. All of the objectives were successfully achieved and research results were presented.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Aziz, A. R., Sulaiman, N. M. and Ibrahim, S. 2008. Effects of Curved-Blade Impeller Characteristics on Gas-Liquid Mass Transfer Coefficient. <i>Asian Conference on Mixing</i>, 7-9 Oct 2008, Yonezawa, Japan. 2. Ibrahim S., Aziz, A. R. and Takriff, M. S. 2008. Mixing Research and Practices in Malaysia. <i>Asian Conference on Mixing</i>, 7- 9 Oct 2008, Yonezawa, Japan.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Pylon Materials in Transtibial Prosthesis
Project Number	03-01-03-SF0326
Project Leader and Team Members	Leader: Noor Azuan Abu Osman Members: Hanie Nadia Shasmin, Mohd Zamri Zainon @ Baharom and Lydia Abdul Latif
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to produce pylons from inexpensive materials and using low-cost manufacturing techniques to help low-income amputees; to develop bamboo as a pylon with excellent performance for walking that is extremely durable, strong and cosmetically pleasing; to compare the motion analysis, especially of gait on transtibial amputees using either the bamboo pylon or the conventional pylon. A prosthetic socket and pylons are well known factors that affect comfort and function in a knee prosthesis use. The mechanical component that is in Contact with the residual limb, along with its design, will determine the type of interaction the amputee has with their artificial limb(s). Since prosthetic sockets are custom-made for each amputee, its fabrication process is costly, skill intensive and dependent on the prosthesis. As a whole, the hydrocast socket, fabricated with minimal dependency on skill and bamboo pylon used, performed considerably well. The socket interface pressure shows minimal significant differences in kinetic and kinematic parameters. The analyses performed suggested that the developed casting technique and the bamboo pylon is a viable option to cater for the low income amputee population that needs good fitting prosthetic sockets.</p>
IP Status	Malaysia Patent filed (PI 20083335)
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Development of PMSM Inverter Drive Suitable for Industrial Water Pump System
Project Number	03-01-03-SF0327
Project Leader and Team Members	Leader: Siti Rohani Sheikh Raihan Member: Nasrudin Abd Rahim
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design and develop a PMSM inverter drive for an industrial water pump system; to investigate the harmonics created and the electromagnetic compatibility of the drive system; to improve the performance, efficiency, compatibility, and reliability of the inverter drive system and integrate the inverter drive system with the industrial water pump system; and to finalise the inverter drive system as a completed product. All of the objectives were successfully achieved.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Sheikh Raihan, S. R. and Ab. Razak, M. Z. 2008. Algorithm Development of Microconverter-based Pressure Controller. <i>International Conference on Knowledge/IT Based Development (ICKBD)</i> , 22–24 June 2008, Madinah, Saudi Arabia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Innovative Semi-flexible Pavement for Roads Using Local Materials
Project Number	03-01-03-SF0330
Project Leader and Team Members	Leader: Mohamed Rehan Karim Member: Hilmi Mahmud
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to develop a highly resistant and durable pavement layer that would meet the stringent requirements of varying traffic and environmental condition at reasonable costs using local materials; to determine the behaviour and properties of semi-rigid (or semi-flexible) pavement mixes; to develop the mix design procedure for semi-rigid (or semi-flexible) pavement mixes; and to develop the appropriate construction techniques for the application of the pavement mix. The first three objectives were achieved to some extent, within the limitations of the quality of the base materials used whilst the last objective was only partially achieved since field trials were not conducted. The technology will be made available to any contractor for application on their road projects.</p>
Publications/Products/Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Koting S., Mahmud H. and Karim M.R. (2007). Influence of Superplasticizer Type and Dosage on the Workability and Strength of Cementitious Grout for Semi-Flexible Pavement Application. <i>Journal of the Eastern Asia Society for Transportation Studies</i> 7:2156-2167. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Karim M. R., Koting S. and Mahmud H. 2008 Properties of an innovative semi-rigid pavement surfacing: Influence of superplasticizers and water/cement ratio on workability and strength of cementitious grout. <i>Proc. International Congress on Advances in Civil Engineering</i>, Sept. 2008, Cyprus. 2. Husain N. M., Mahmud H. B., Karim M. R. and Hamid N. B. A. A. 2010. Effects of aggregate gradations on properties of grouted Macadam composite pavement. <i>Proc., 2nd International Conference on Chemical, Biological and Environmental Engineering (ICBEE 2010)</i>, Nov 2010, Cairo, Egypt.

	<ol style="list-style-type: none"> Husain N. M., Mahmud H. and Karim M. R. 2010. Optimum binder for porous mixtures made by various aggregate gradations and its properties towards producing grouted macadam composite pavement, <i>Proc. GEOTROPIKA in CDRM</i>, 7pp. 30th Aug 2010, Kota Kinabalu. Koting S., Karim M. R., Mahmud H. and Hamid N. A. 2009. Mechanical Properties of Cement-Bitumen Composites for Semi-Flexible Pavement Surfacing. <i>The 8th Proceedings of the Eastern Asia Society for Transportation Studies</i>, 16th – 19th Nov 2009, Surabaya, Indonesia. Vol.7, 2009, pp1-14. Husain N. M., Karim M. R. and Mahmud H. 2009. Characterization of Superplasticized Blended Cement Grout for the Application on Semi-Rigid Pavement. <i>The 8th Proceedings of the Eastern Asia Society for Transportation Studies</i>, 16th – 19th Nov 2009, Surabaya, Indonesia. (7): 1-11.
Awards/Certificates	UM Expo 2009: 1 Silver Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Polyvinylidene Fluoride Nanocomposite Solid Polymer Electrolytes
Project Number	03-01-03-SF0331
Project Leader and Team Members	Leader: Nor Sabirin Mohamed Members: Siti Aishah Hashim Ali, Ri Hanum Yahaya Subban, Salmiah Ibrahim, Shahrul Amir, Shahizat Amir and Hashlina Rusdi
Field of Research	Material Sciences
Project Summary	<p>The main objectives of the project were to develop solid polymer electrolytes with characteristics suitable for applications in solid-state batteries. For this research, PVDF and PVDF-HFP were used as the host polymer and modifications on this nonconducting polymer were carried out using different doping salts such as lithium perchlorate (LiClO₄), lithium triflate (LiCF₃SO₃) and ammonia triflate (NH₄CF₃SO₄). The conductivity of the polymer-salt solid polymer electrolytes was enhanced by incorporating different types of fillers (such as Al₂O₃, ZrO₂, SiO₂ and TiO₂) in order to achieve conductivities in the range suitable for application in solid state batteries (above 0.1 mS/cm). The thermal characteristics of the solid polymer electrolyte films prepared was determined by performing Differential Scanning Calorimetry (DSC), the structural properties was determined by X-ray diffraction (XRD) and Fourier microscopy infrared spectroscopy (FTIR). Transference number corresponding to ionic (ion) transport was evaluated using Wagner's dc polarization method. A few electrolyte systems using different types of salts were successfully prepared and characterized. The highest conductivity achieved was in the order of 10⁻³ S cm⁻¹. The thermal studies showed that the system was stable up to 130°C. However, the glass transition temperature could not be determined due to the limitation of our equipments. Transference number measurements showed that the electrolytes are ionic conductors. The performance of batteries fabricated using selected electrolytes indicated that they had potential for application lithium and protonic polymer batteries.</p>
Publications/Products/Outcomes	Journals: 1. Muda, M., Kamarulzaman, N. & Mohamed, N. S. 2011. PVDF-HFP-NH ₄ CF ₃ SO ₃ -SiO ₂ nanocomposite polymer electrolytes for protonic electrochemical cells. <i>Key Engineering Materials: Composite Science and Technology</i> 471-472:373-378.

	<p>2. Rudhziah, S., Muda, N., Ibrahim, S., Rahman, A. A. & Mohamed, N. S. 2011. <i>Proton conducting polymer electrolytes based on PVDF-HFP and PVDF-HFP/PEMA blend. Sains Malaysiana</i> 40:7.</p> <p>Proceedings/Conferences/Seminars:</p> <p>1. Amir, S., Hashim Ali S. A. and Mohamed N. S. 2009. A DLA Model Approach in the simulation of fractals in PVDF-HFP/PEMA-NH₄CF₃SO₃-Cr₂O₃ nanocomposite polymer electrolyte membranes. <i>Proceedings of Malaysian Polymer International Conference</i>, 21st – 22nd Oct 2009, Putrajaya.</p> <p>2. Ibrahim, S., Hashim Ali, S. A. and Mohamed, N. S. 2008. Conductivity studies on PVDF- HFP nanocomposite solid polymer electrolytes. <i>Proceedings of the Seminar on Science and Technology</i>, 29th – 30th Oct 2008, Labuan, Sabah.</p> <p>3. Ibrahim, S. Mohamed, N. S. and Hashim Ali, S. A. 2008. Conductivity studies on PVDF-HFP-LiCF₃SO₃ solid polymer electrolytes. <i>Prosiding Seminar Penyelidikan PASUM</i>, Universiti Malaya. Kuala Lumpur.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Application of Experimental Modal Analysis (EMA) in Damage Detection and Structural Health Monitoring (SHM) for Real Civil Engineering Structures
Project Number	03-01-03-SF0381
Project Leader and Team Members	Leader: Zainah Ibrahim Members: Zubaidah Ismail and Hashim Razak
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop a model testing technique and guidelines on full scale civil engineering structures for damage detection and structural health monitoring purposes. The objective was only partially achieved.
IP Status	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ibrahim, Z., Hashim, H. and Abdul Razak, H. 2009, Modal Identification of a Damaged Building Structure by Output-Only Analysis. 1st. <i>International Seminar on Sustainable Infrastructure and Building Environment in Developing Countries (SIBE)</i>, 2-3 Nov 2009, Bandung, Indonesia. 2. Hashim, H., Ibrahim, Z. and Abdul Razak, H. 2009, Finite element modelling of damaged structure. 1st. <i>International Seminar on Sustainable Infrastructure and Building Environment in Developing Countries (SIBE)</i>, 2-3 Nov 2009, Bandung, Indonesia. 3. Hashim, H., Ibrahim, Z. and Abdul Razak, H. 2009. Modal Testing Procedures on Damaged Structure. <i>Asia Pacific Conference on Defense and Security Technology</i>, 6-7 Oct 2009, Kuala Lumpur. <p>Others:</p> <ol style="list-style-type: none"> 1. Huzaifa Hashim 2010. Dynamic Testing and Condition Assessment of a Full Scale Damaged Structure. Master of Engineering Science (by Research). Department of Civil Engineering, University of Malaya. Kuala Lumpur.
Contact Institution/Entity	Universiti Malaya (UM)
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Development of Fuzzy Bayesian Network Control System of a Variable Speed Supercharger for Gasoline Engine
Project Number	03-01-03-SF0404
Project Leader and Team Members	Leader: Hamzah Arof
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to develop a practical system to allow a supercharger connected to a gasoline engine to operate at a range of speed not directly proportional to the engine's rpm. The variable speed supercharger will be controlled by a fuzzy Bayesian network, designed to vary its speed for an optimum engine operation over the whole range of engine rpm for the most efficient states as a function of air-fuel ratio, engine temperature, output power, load, ignition timing, and other peripherals. A continuously variable transmission system will be adapted as driving mechanism for the supercharger under the command of an advanced fuzzy Bayesian network for real time operations. The algorithm will be implemented in a DSP based system. The objectives were only partially achieved with the mechanical configuration of the project successfully developed, along with the modeling and control of the system based on data collected from the engine dyno. The time for the data collection process took longer than usual due to problems with the engine dyno, its mechanical parts and the engine itself. This inadvertently created a time constraint, hampering the team's efforts. The research prototype was developed and the validation of the prototype depends on the testing data from the engine dyno. Minor modification is expected after data collection in order to accommodate rules and regulations of the road and transport department.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	In situ Polymerisation of Ethyleneimine (EI) in Palm Shell Based Activated Carbon for Gas Separation Applications
Project Number	03-01-03-SF0409
Project Leader and Team Members	Leader: Wan Mohd Ashri Wan Daud Members: Yin Chun Yang and Mohamed Kheireddine Aroua
Field of Research	Engineering sciences
Project Summary	The objectives of the project were to study the characteristic and functional group of the palm shell based activated carbon impregnated with Ethyleneimine (EI) (include BET surface area, pore volume, micro pore volume, and pore size distribution), study the kinetic reaction and adsorption capacity of gases (CO ₂ , CH ₄ and other gases) of the activated carbon palm shell that was impregnated with Ethyleneimine (EI). All of the objectives were successfully achieved, although several tests could not be conducted due to unavoidable cause such as equipment malfunctioning or long queues.
IP Status	Journals: 1. Wan Mohd Ashri Wan Daud and Amir housmand, Textural characteristics, surface chemistry and oxidation of activated carbon- A review. <i>Journal of Natural Gas Chemistry</i> 2010, 19 (3): 267-279 2. Wan Mohd Ashri Wan Daud and Amir Housmand. 2011. Investigating possible ways to graft amine groups on surface of activated carbons for CO ₂ adsorption 46 (7) 1098-1112.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaya (UM) University of Malaya, 50603 Kuala Lumpur. Office: 03-7967 5297 ashri@um.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Nanocomposite Based Eco-friendly Solder For Microelectronic Packaging Applications
Project Number	03-01-03-SF0426
Project Leader and Team Members	Leader: A.S.Md. Abdul Haseeb Members: Iskandar Idris Yaacob, Masjuki Hassan and Mohd Rafie Johan
Field of Research	Material Ssciences
Project Summary	Four objectives of this project were achieved before the completion of this project. Two methods viz., 1) paste mixing, and 2) ball milling were developed for the production of nanocomposite solders. The effects of the addition of the various nanoparticles (Mo, Ni, Co and Cu) were evaluated on the microstructure and properties of the composite solders. The long term stability of the nanoparticle reinforced solder was also determined. Interfacial reactions between the substrate and nanoparticle added solders were characterised. All the objectives were completely achieved.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Tay S. L., Haseeb A. S. M. A. & Johan M. R. 2011. Addition of cobalt nanoparticles into Sn-3.8 Ag-0.7Cu lead-free solder by paste mixing. <i>Sold. Surf. Mount. Tech.</i> 23:1. 2. Aemi Nadia and Haseeb A. S. M. A. 2011. Understanding the Effects of Addition of Copper Nanoparticles to Sn-3.5 Ag Solder Soldering & Surface Mount Technology, <i>Emerald</i> 23(2). 3. Haseeb A. S. M. A. and Tay S. L. 2011. Effects of Co nanoparticles into Sn-3.8Ag-0.7Cu solder on interfacial structure after reflow and ageing. <i>Intermetallics</i> 19(5):707-712. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Tay S.L., Haseeb A. S. M. A. and Johan M. R. 2009. Effect of aging time on interfacial microstructure of Sn-3.8Ag-0.7Cu solder reinforced with Ni nanoparticles. <i>11th Electronic Materials and Packaging Conference</i>, 1st – 3rd Dec 2009, Penang. 2. Haque A., Won Y. S., Haseeb A. S. M. A., and Masjuki H. H. 2010. Die Attach Properties of Zn-Al-Ge High Temp Solder. <i>IEMT conference</i>, 30 Nov-2 Dec 2010, Melaka.



	3. Tay S. L., Haseeb A. S. M. A. and Mohd. Rafie Johan 2009. Spreading rate and wetting behaviour of Sn-3.8Ag- 0.7Cu lead-free solder with the addition of cobalt nanoparticles. <i>International Conference on Advances in Mechanical Engineering (ICAME 2009)</i> , 25-26 June, 2009, Shah Alam, Selangor.
Awards/Certificates	International Invention, Innovation and Technology Exhibition, (ITEX) 2010: 1 Gold Medal
Additional Information	International Linkages: University of New South Wales (UNSW) Industrial Linkages: <ol style="list-style-type: none"> 1. Collaborated with Free Scale Semiconductor 2. This project also led to the establishment of new link and start of new projects with On Semiconductor
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaya (UM) University of Malaya, 50603 Kuala Lumpur. Office: 03-7967 5266 H/p: 016-271 3260 haseeb@um.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Study of Corrosion and Tribo-Corrosion of Automotive Components and Their Durability in Palm Oil Based Biofuel
Project Number	03-01-03-SF0430
Project Leader and Team Members	Leader: A.S.Md. Abdul Haseeb
Field of Research	Engineering Sciences
Project Summary	The project objectives were to evaluate corrosion and tribo-corrosion of ferrous and non-ferrous metals, commonly encountered in automobile fuel supply systems and engines, in palm oil based biofuel; to characterise the degradation of elastomers in biofuel derived from palm oil; to determine the effects of palm oil based biofuel on the durability of components of fuel system and engine.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Haseeb A. S. M. A., Sia S. Y., Fazal M. A. and Masjuki H. H. 2010. Effect of Temperature on Tribological Properties of Palm Biodiesel. <i>Energy</i> 35:1460–1464. 2. Haseeb A. S. M. A., Masjuki H. H., Siang C. T. and Fazal M. A. 2010. Compatibility of elastomers in palm biodiesel. <i>Renewable Energy</i> 35: 2356-2361, DOI: 10.1016/j.renene.2010.03.011. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Fazal M. A., Jahirul M.I., Husnawan M., Haseeb A. S. M. A. and Masjuki H. H. 2008. Study on Tribological Performance of Palm Oil Based Biofuel. 2nd <i>International Conference on Advanced Tribology iCAT</i>, 3-5 Dec 2008, Singapore. 2. Fazal M. A., Haseeb A. S. M. A., Jahirul M. I. and Masjuki H. H. 2008. Effect of Biodiesel on Engine Parts. <i>CUTSE International Conference</i>, 24-27 Nov 2008, Miri, Sarawak. 3. Sia S. Y., Haseeb A. S. M. A., Fazal M. A., Jahirul M. I. and Masjuki H. H. 2009. Effect of temperature on the tribological performance of palm biodiesel. <i>National Tribology Conference, Rimba Ilmu, University of Malaya</i>, 4-5 May 2009, Malaysia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of brain control wheel chair for the elderly and disable individuals
Project Number	03-01-03-SF0444
Project Leader and Team Members	Leader: Norrima Mokhtar
Field of Research	Engineering Sciences
Project Summary	The objectives of the projects were to develop a wheel chair platform which consists of batteries, DC motor, gearbox, microcontroller, wireless communication system, vision system, sensor system and EEG on board system; to do the interfacing between brain and wheel chair platform; to do the classification of EEG brain signal to control the wheel chair. Applications of the study was to help elderly and paralysed person controls his wheel chair movement and direction via brain signals (less effort on switching control); to enable paralysed persons independently have control over their motion; to enable teleoperated wheel chair/robot using brain signal. All objectives have been achieved. However, the performance of the systems need to be upgraded due to slow response of the wireless EEG device and classification method.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Ramli R., Mokhtar N., Arof H., Anwar M. S. M., Hamzah N. H. M. and Ibrahim F. 2009. The Development of Trackit-LabVIEW Interfaced Software. <i>International Conference for Technical Postgraduates 14th – 15th Dec 2009</i>, Kuala Lumpur. 2. Ramli R., Mokhtar N., Arof H., Anwar M. S. M., Hamzah N. H. M. and Ibrahim F. 2009. Interfacing Trackit made easy with LabVIEW. <i>National Instruments ASEAN Virtual Instrumentation Application Contest</i>, 13th Feb 2009, Singapore.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Cost Effective Cement Matrix Composites
Project Number	03-01-15-SF0035
Project Leader and Team Members	Leader: Khairul Nizar Ismail Members: Che Mohd Ruzaidi Ghaz, Shamsul Baharin Jamaludin, Kamaruddin and Mohd Mustafa Al Bakri Abd
Field of Research	Material Sciences
Project Summary	The objectives of the project were to determine the effect of recycling plastics as an additive in the cement matrix composite; to develop a cost effective cement matrix composites recycle polymer/plastic wastes; to study crack propagations and the interface bonding development in the cement matrix composites; and to study the strength of the cement matrix composites. The objectives were partially achieved and the production cost of the product (lab scale) is higher compared to a similar product in the market (different materials).
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Mokhzani Khair Ishak, Khairul Nizar Ismail, Wan Mohd Sabki Wan Omar, Kamarudin Hussin, Mohd Asri Ab. Rahim, Umar Kassim, Libren Francis Dublin and Norfadhilah Ibrahim. 2009. Reutilization of Waste Tire into Concrete-Rubber Composite. <i>International Conference on Building Science and Engineering (ICON-BSE 2009)</i> 14th–15th December 2009, Universiti Tun Hussein Onn, Malaysia. 2. Mokhzani Khair Ishak, Khairul Nizar Ismail , Wan Mohd Sabki Wan Omar, Kamarudin Hussin and Libren Francis Dublin. 2008. Propertie of Lightweight Polystyrene Aggregate. <i>The International Conference on Science & Technology : Application in Industry & Education (ICSTIE)</i>, 12-13 Dec 2008, UiTM Penang. 3. Mokhzani Khair Ishak, Khairul Nizar Ismail , Wan Mohd Sabki Wan Omar, Kamarudin Hussin and Libren Francis Dublin. 2008. Comparison of Physico-Mechanical Properties and Water Absorption of OPC Cement on Newly Developed Rubber Added Brick. <i>International Conference on XRays and Related Tecnique in Research and Industries (ICXRI)</i>, 2-6 June 2008, Universiti Malaysia Sabah.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Ultrasonic Tomographic Imaging Instrument for Measuring Oxygen Transfer Rate in Bioreactor
Project Number	03-01-15-SF0036
Project Leader and Team Members	Leader: Mohd Hafiz Fazalul Rahiman Members: Norasmadi Abdul Rahim, Mohd Shukry Abdul Majid, Abdul Haqi Ibrahim and Hafizawati Zakaria
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design and develop a tomographic measurement sections using ultrasonic transducers based on non-invasive techniques; to design and develop tomographic concentration profile using the digital signal processor and measure oxygen transfer rate in bioreactor using suitable methods; to design and develop the digital signal processor system for controlling the ultrasound projections, samples and hold circuits triggering, the operation and synchronisation of data acquisition system; and to develop a high-speed image reconstruction programme for imaging the concentration profile of oxygen distributions and measuring the oxygen transfer rate by using a suitable object-oriented programming. All the objectives of the project have been achieved.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mohd Hafiz Fazalul Rahiman , Ruzairi Abdul Rahim and Zulkarnay Zakaria. 2008. "Design and Modelling of Ultrasonic Tomography for Two Component High Acoustic Impedance Mixture". <i>Elsevier Sensors & Actuators: A. Physical</i>. 147 (2): 409-414. 2. Mohd Hafiz Fazalul Rahiman and Ruzairi Abdul Rahim. 2008. "A Novel Hybrid Binary Reconstruction Algorithm for Ultrasonic Tomography". <i>Sensors & Transducers Journal</i>. 89 (3): 93-100. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohd Hafiz Fazalul Rahiman , Zulkarnay Zakaria, Ruzairi Abdul Rahim, Megat Ali M. S. A., A. F Salleh and N. F. Mohd Nasir. 2007. "Application of Ultrasonic Tomography Method for Analysing Two Phase Liquid/ Gas Flow: A Case Study of Ultrasonic Transceivers Application" at the <i>2nd Colloquium in Engineering Technology (CET2007)</i>, 25th – 26th Oct 2007, Kangar, Perlis.



<p>Publications/Products/ Outcomes</p>	<ol style="list-style-type: none"> 2. Mohd Hafiz Fazalul Rahiman , Zulkarnay Zakaria and Ruzairi Abdul Rahim. 2008. "Ultrasonic Process Tomography Imaging Sensor: An Analysis on Transceivers Sensing Method". <i>Proceedings 4th International Colloquium on Signal Processing and its Applications (CSPA 2008)</i>, 7th – 9th March 2009, Kuala Lumpur, Malaysia. 3. Ruzairi Abdul Rahim, Mohd Hafiz Fazalul Rahiman, Zulkarnay Zakaria and Ahmad Faizal Salleh. 2007. "Analysis of Ultrasonic Transceivers Sensing Method in Ultrasonic Tomography". <i>Proceedings of the International Conference on Robotics, Vision, Information and Signal Processing (ROVISP07)</i>, 28th – 30th Nov 2007, Pulau Pinang, Malaysia. 4. Mohd Hafiz Fazalul Rahiman, Zulkarnay Zakaria and R Ruzairi Abdul Rahim. 2008. "Ultrasonic Process Tomographic Imaging Sensor: An Approach Utilising Transceivers Method". <i>Proceedings International Conference on Computer and Communication Engineering (ICCCE08)</i>, 13th – 15th May 2008, Kuala Lumpur, Malaysia.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Malaysia Perlis (UniMAP) Universiti Malaysia Perlis, (UniMAP) Kampus Kubang Gajah, 02600 Arau, Perlis.</p> <p>Office: 04-979 8008 H/p: 019-575 4010 hafiz@kukum.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Biofriendly Sacrificial Anode from Magnesium Alloys for Underground Structure Corrosion Protection
Project Number	03-01-15-SF0038
Project Leader and Team Members	Leader: Shaiful Rizam Shamsudin Members: Mahdi Che Isa, Mohd Nazree Derman, Shamsul Baharin Jamaludin, Abdul Razak Daud, Siti Radiah Mohd Kamarudin, Roslinda Shamsudin, Ruhiyuddin Mohd Zaki and Mohd Fitri Mohamad Wahid
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were to identify and evaluate the feasibility of corrosion protection methods by sacrificial anode; to develop a new low cost and biofriendly magnesium alloy with specific chemical composition to be used as a high performance sacrificial anode. A new formulation of Mg sacrificial anode has been successfully designed and fabricated. It effectively protect buried iron based structures in a simulated soil environment. The product has the capability to enhance the corrosion properties, which is equal to, or better than a current commercial High Potential Mg Anode. This biofriendly Mg sacrificial anode was developed without the addition of hazardous additive elements such as Hg and Pb. As a replacement, Ca, Mn and Al are used as its alloying elements. Overall, both of the objectives were achieved. However, there are some issues of the materials development and testing that has not fully satisfied the research team. Several factors affects the anode's performance. The facts of accepted levels for anode performance must be typically above -1.70 VSCE and 50% of open circuit potential (OCP) and current efficiency respectively. In this project, the present OCP for Mg anodes only reached a maximum of -1.6 V vs SCE (which is lower than our target of 1.7 V vs. SCE). Meanwhile, the current efficiency rarely exceeds 50% (its only around 38- 42 %). A new improved formulation of Mg sacrificial anode has been successfully designed and fabricated.</p>
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Rizam S.S., Mahdi C.I., Nazree D. M., Firdaus A.M.H., Daud A.R. and Loshniban T. 2009. Effect of Ca on the Performance of Mg-Mn Sacrificial Anodes by Electrochemical Corrosion Techniques. <i>25th Regional Conference on Solid State Science and Technology 2009 (RCSSST)</i> , 21-23 Dec 2009, Penang.



	<ol style="list-style-type: none"> Rizam S.S., Nazree D. M., Mahdi C.I., Azmi K., Daud A.R., Mazlee M.N., Firdaus A.M.H. and Sasirehka G. 2009. Potentiodynamic Polarization of Mg-0.22Ca Alloys Containing Minor Element of Aluminium. <i>Malaysian Metallurgical Conference (MMC)</i>, 1-2 Dec 2009, Perlis. Firdaus A.M.H., Rizam S.S., Shamsul J.B. and Derman M.N. 2009. The Effect of Heat Treatment on the Anode Efficiency of Magnesium Sacrificial Anode. <i>Malaysian Metallurgical Conference (MMC)</i>, 1-2 Dec 2009, Kuala Perlis. Rizam S.S., Sasirehka G., Firdaus A.M.H., Mahdi C.I., Nazree D. M., Daud A.R. and Azrem A.A. 2009. Effect of Small Addition of Aluminium on Electrochemical Corrosion Behaviour Of Magnesium-Calcium Sacrificial Anode. <i>Underground Environment. Malaysia International NDT Conference & Exhibition (MINDTCE)</i>, 21-22 July 2009, Kuala Lumpur. Firdaus A.M.H., Rizam S. S., Shamsul J.B., Derman M.N., Fitri M.W.M. and Mahdi C.I. 2009. Effect of Solution Treatment on Mg Galvanic Anodes in CaSO₄ – Mg(OH)₂ Aqueous Solution. <i>Malaysia International NDT Conference & Exhibition (MINDTCE)</i>, 21-22 July 2009, Kuala Lumpur. Rizam S.S., Azmi K., Nazree D. M., Shamsul J.B., Azrem A.A., Firdaus A.M.H., Mazlee M.N., Mahdi C.I., Daud A.R., Roslinda S. 2008. Development of a Lid Sealed Furnace for the Production of Magnesium Alloys. <i>Malaysian Metallurgical Conference (MMC)</i> 3-4 December 2008, UKM, Bangi, Selangor. <p>Products: BioHiMAG: Biofriendly and High Potential Magnesium Sacrificial Anode (a) Test piece sample (b) New furnace design (c) New formulation sacrificial anode</p>
Awards/Certificates	<ol style="list-style-type: none"> Ekspo Rekacipta & Pameran Penyelidikan Unimap 2010: 1 Gold Medal Expo Inovasi Islam 2010: 1 Gold Medal Engineering Invention & Innovation Exhibition UniMAP 2010: 1 Gold Medal ENVEX Best Award Category C

	4. Engineering Invention & Innovation Exhibition 2010: ENVEX Best Award Category C.
IP Status	Malaysian Patent filed (PI2011001297) (An Alloy and a Sacrificial Anode Produced Therefrom)
Additional Information	<p>International Linkages: King Abdul Aziz City for Science and Technology, (KACST), Kingdom of Saudi Arabia.</p> <p>Industrial Linkages: Saudi Water Treatment Co., Ltd. (SWTC), Kingdom of Saudi Arabia.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Personal Service Robot Inherently Motivated by Learning Human Emotion
Project Number	03-01-15-SF0041
Project Leader and Team Members	Leader: Ramachandran Nagarajan Members: Zunaidi Ibrahim, Mohd Rizon Mohamed, Paulaj Murugesu Pandiyan, Sazali Yaacob, Muhajir Ab. Rahim and Kenneth Sundaraj
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to study personalised emotions through facial action units (AUs); to collect real time data sets of the positional transition of AUs for various emotions; to develop an expert system for recognizing facial emotions through AUs and personal robots which can take up tasks in accordance to emotions; and to test the applications of the emotion controlled robot. All of the objectives were achieved, however, instead of developing a robot, it was bought using the allotted fund.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Gandhi B. M., Nagarajan R. and Desa H. 2009. Particle Swarm Optimisation algorithm for facial emotion detection. IEEE Symposium in Industrial Electronics and applications (ISEIA), 4-6 Oct 2009, Kuala Lumpur. 2. Bashir M. G., Nagarajan R. and Sazali Yaacob. 2009. Application of PSO in Face emotion using Action Units, <i>International Conference on Man-Machine Systems (ICoMMS)</i>, 11th – 13th Oct 2009, Batu Ferringhi, Penang. 3. Karthigayan M., Nagarajan R., Rizon M. and Sazali Yaacob. (2007). Improvement in the Performance of Face Emotion Classification Using Genetic Algorithm and Neural Network. <i>Malaysia-Japan Symposium on Advanced Technology (MJISAT)</i>, 12-15 Nov 2007, Kuala Lumpur. 4. Karthigayan M., Nagarajan R., Rizon M., and Sazali Yaacob. 2007. Personified Face Emotion Classification using Optimised data of three features. <i>Third Intl Conf on Intelligent Information Hiding and Multimedia Signal Processing, (IIHMSP)</i>, Nov 26-28 2007, Kaohsiung, Taiwan.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Portable Multi Channel Biosensor Using Nanogap Capacitor for Biomedical (DNA Hybridization) Detection
Project Number	03-01-15-SF0046
Project Leader and Team Members	Leader: Uda Hashim Members: Johari Adnan, Rizalafande Che Ismail, Mohd Khairuddin Md, Nur Hamidah Abdul, Sohiful Anuar Zainol and Harbant Singh
Field of Research	Applied Sciences and Technologies
Project Summary	<p>A biosensor is an integrated receptor-transducer device which provides either qualitative or quantitative analytical information. There are many potential applications of biosensor and DNA based biosensors are normally applied for gene expression, polymorphisms and comparative genomic hybridization. This research is to develop a nanogap based dielectric biosensor for label-free medical diagnostic analytical measurement. Biosensor with electrode distances 75 nm and highly sensitive and selective is proposed in this research. The different size of finger and finger gap in one device will be developed. The target application is the label-free detection of bio-molecular interaction for medical diagnostic analytical measurement. The fabrication process of the biosensor is based on conventional photolithography, e-beam evaporation and wet etching process. Sacrificial layer technique is applied in this research to form nanometer gap size between bottom and top electrode. Metallic electrode will be developed in this research and gold is used to form the bottom and top electrode. Gold was chosen because of its properties that inert to atmosphere conditions and resistance to saline solution for bio-molecules immobilisation and hybridisation. For morphological and physical characterisation, SEM, TEM and AFM are will be used while for electrical characterization, SPA and IV-CV system is used to determine the conductivity, capacitance and resistivity of the device. DNA is used as a sample for testing and the DNA extraction and preparation is done prior to immobilization. To test the DNA hybridisation, the SPA and IV-CV system are used for DNA characteristics such as capacitance, conductivity, resistivity, selectivity and sensitivity test.</p>

Publications/Products/ Outcomes	Conferences/Proceedings/Seminars: <ol style="list-style-type: none"> 1. Taib A.M., Hashim U. and Yusof N.A. 2009. Fabrication of Interdigitated Nanogap Biosensor for Marker Free Detection. <i>Proceeding Abstract 25th Regional Conference on Solid State Science and Technology (RCSSST)</i>, 21st – 23rd Dec 2009, Penang. 2. Asmah Mat Taib, Hashim U. and Yusof N. A. 2009. Label Free Electrical Detection of DNA Hybridization with Nanometer Gaps Biosensor. <i>Proceeding Abstract International Conference on Nanotechnology (ICONT)</i>, 14th – 17th Dec 2009, Langkawi Island, Kedah. 3. Asmah Mat Taib, Hashim U., and Yusof N. A. 2009. Nanogap Biosensor for Medical Diagnostic Using Label Free Detection Technique. <i>Proceeding Malaysia International Conference on Trends in Bioprocess Engineering</i>, 12th – 13th Dec 2009, PWTC, Kuala Lumpur. 4. Asmah Mat Taib, Hashim U. 2009. Fabrication of nanogap Based Dielectric Biosensor for Label-Free DNA Analysis. <i>Proceeding Nanotech Malaysia Conference</i>, 27th – 29th Oct 2009, Kuala Lumpur Convention Centre, Kuala Lumpur. 5. Asmah Mat Taib, Hashim U., Yusof N. A., Thikra S. Dhadhi. 2009. Design and Fabrication of Nanogap Biosensor for Label-Free DNA Analysis. <i>Prodeeding Abstract Engineering Posgraduate Conference</i>, 18-19 July 2009, Dragon & Phoenix, Jejawi, Malaysia. 6. TH S. Dhadhi, Hashim U., N. M. Ahmed & A. Mat Taib. 2009. A Review on the Electrochemical Sensors and Biosensors Composed of Nanogaps as Sensing Material. <i>Proceeding Abstract Engineering Posgraduate Conference</i>, 18-19 July 2009, Dragon & Phoenix, Jejawi, Malaysia.
Awards/Certificates	<ol style="list-style-type: none"> 1. Bio Malaysia 2010: 1 Gold Medal 2. Expo R&D UMP: 1 Silver Medal 3. ENVEX 2010: 1 Gold Medal and Special Award
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fluid Flow Dependence on Quartz Microchannel Processing
Project Number	03-01-15-SF0050
Project Leader and Team Members	Leader: Prabakaran Poopalan
Field of Research	Physical Sciences
Project Summary	The objectives of the project were to fabricate deep, square microchannels of 3-10 microns in a 4 inch quartz (silica) wafers via plasma etching; to characterise the microchannels for dimensional and profile accuracy via a needle profiler and scanning electron microscope (SEM); and to characterise the microchannels for a surface profile using an atomic force microscope (AFM) and fluid flow conditions through the microchannels. Generally, the objectives were achieved with the exception of an exact square microchannel etching which was not achieved due to the departure from using an aluminum sacrificial mask (which gets contaminated by the plasma etcher and cannot be cleaned) to platinum. However, Pt is tough to remove and the fluid flow has not been quantified due to extensive time required to set-up an optical interferometric metrology system which principally employs a Twyman-Green Interferometer.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Detecting Structural Steel Damage Using Non-destructive Vibration Testing
Project Number	03-01-15-SF0052
Project Leader and Team Members	Leader: Paulaj Murugesu Pandiyan Members: Sazali Yaacob, Shah Fenner Khan Mohamad, Hafizawati Zakaria, Mohd Noor Arib Md Rej and Mohd Hafiz Fazalul Rahima
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to develop a low cost vibration instrumentation system to assist the Non Destructive Testing (NDT) process by distinguishing the defects on steel before being thoroughly inspected by NDT. The original project objectives were to identify the suitable accelerometers to be used in the vibration test, formulate methodologies and experimental procedures to receive and record the changes in the frequency response function (FRF) from Non Destructive vibration test for damaged and undamaged steel structures, conduct a simple comparison study and differentiate the changes in FRF data recorded from damaged and undamaged steel structure, and design and develop a portable damage detecting system that will be able to digitally process the signal (FRF) and determine whether there is any damage or cracks in the steel structure. Suitable accelerometers were identified and were used in the vibration test. An experimental framework was fabricated to hold the steel plate and experimental procedures were formulated to record the frequency response function (FRF) from the non-destructive vibration test for damaged and undamaged steel plate. The complete data collection was carried out and data were recorded for the damaged and undamaged vibration signals during the non-destructive vibration test. Feature Extraction algorithms were developed to extract the features from the vibration signals recorded from the steel plate. A simple neural network model was developed and trained using back propagation algorithm to classify the vibration signal based on the features extracted from the vibration signal, and a simple and portable damage detection system which digitally process the signal, extract the features and classifies as either healthy or faulty, was designed and fabricated.</p>



Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Paulraj M. P., Mohd Shukry A. M., Sazali Yaacob, Mohd Hafiz F. R., R. Pranesh Krishnan. 2009. Damage Detection in Steel Plates using Discrete Cosine Transformation and Artificial Neural Networks. <i>International Conference on Man Machine Systems (ICOMMS)</i> , 11-13 Oct 2009, Penang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development a Prototype of Autonomous Mobile Robot For Navigation Mapping System in Hazardous Environment
Project Number	03-01-15-SF0061
Project Leader and Team Members	Leader: Abdul Hamid Adom Members: Abdul Rahman Mohd Saad, Ramachandran Nagarajan, Sazali Yaacob, Ahmad Faizal Salleh and Mohd Rizon Mohamed
Field of Research	Biotechnology
Project Summary	The objective of this project is to develop a prototype model of autonomous mobile robot which have the elements such as be able to analyse and recognise the unknown geographical elements, and that geographical information is embedded in environmental digital map, be able to create and update the path by integrating the exploited information and the prediction on unexploited environment and also be able to exploit and reach the goal or given target successfully.
Contact Institution/Entity Address	Universiti Malaysia Perlis (UniMAP) Universiti Malaysia Perlis, Kampus Kubang Gajah, 02600 Arau, Perlis.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a New Palm Oil and Agro-filler Based Industrial Wax Product for Engineering Applications
Project Number	03-01-15-SF0064
Project Leader and Team Members	Leader: Bhuvnesh Rajamony Members: Mohd Zahiruddin Md Zain and Lee Chang Chuan
Field of Research	Applied Sciences and Technologies
Project Summary	Until now, no research has been investigated on the use of lignocellulosics as filler for industrial wax products for use in engineering applications. To the best of the applicants' knowledge, no previous work has been carried out nationally or worldwide on the use of palm oil based wax material in the manufacture of a strong industrial wax. The objectives of this study are to develop and produce a new value added industrial wax from palm oil and agro-filler wastes, to determine the properties and characteristics of the new industrial wax and also to verify machining and dimensional accuracy of the product in real applications.
Contact Institution/Entity Address	Universiti Malaysia Perlis (UniMAP) Universiti Malaysia Perlis, Kampus Kubang Gajah, 02600 Arau, Perlis.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Studies on the Production and Properties of Metal Filled Polymer as High Filler Loading Composite
Project Number	03-01-15-SF0065
Project Leader and Team Members	Leader: Che Mohd Ruzaidi Ghazali Members: Mariatti Jaafar, Mohd Afian Omar Kamaruddin and Shamsul Baharin Jamaludin
Field of Research	Material Sciences
Project Summary	The objectives of the project were to produce a metal filled composite using metal powder and polymer (thermoset and thermoplastic); to identify a suitable method in producing high filler loading composite system; to determine the optimum amount of the metal powder used in the system; and to identify the potential application of the composites. All of the objectives were achieved, with the team identifying that the curing or heating conditions played important roles in the fabrication of the metal filled composite. This metal filled composite is suitable for use in brake pad materials. However, a conductivity/resistivity test was not conducted on the sample.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	3-D based Inspection for Surface Mount Components in a Printed Circuit Board Assembly (PCBA) Using Fringe Projection
Project Number	03-01-15-SF0072
Project Leader and Team Members	Leader: Vithyacharan A/L Retnasam Member: Prabakaran Poopalan
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to determine the lighting choice between collimated and non-collimated PCB and the fringe choice for the type of surface mounted component to be inspected; to identify the optimal camera setting for the optimum field of view (FOV) inspection; and to produce a 3-D mask for next sequential inspection on PCBAs. All of the objectives were achieved, with the exception of the last objective where extra time was required for completion.
Publications/Products/Outcomes	Journal: 1. K. Sundaraj and V. Retnasamy. 2008. Homogeneous Surface Metrology Using Structured Fringe Projection, Computers and Simulation in Modern Science Volume I , Published by World Scientific and Engineering Academy and Society Press 71-76, SSN: 1790-2769, ISBN: 978-960-474-010-9, Year 2008.
Contact Institution/Entity Address	Universiti Malaysia Perlis (UniMAP) Universiti Malaysia Perlis, Kampus Kubang Gajah, 02600 Arau, Perlis.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of CMOS ISFET based pH Sensor for Biomedical Applications
Project Number	03-01-15-SF0075
Project Leader and Team Members	Leader: Uda Hashim Members: Ramzan Mat Ayub, Mohamed Zulkali Mohamed, Mohamad Zahid Abdul, Sohiful Anuar Zainol, Mohd Khairuddin Md and Mohd Noor Ahmad
Field of Research	Industry
Project Summary	<p>The Ion Sensitive Field Effect Transistor (ISFET) is a potentiometric pH sensor that is easily adapted to a wide range of chemical, biochemical and biomedical applications. The operation of an ISFET is based on the surface adsorption of charges from the test solution in the solid-electrolyte interface that is part of the gate of the ISFET. As a result of this process, the threshold voltage of the ISFET is modulated. This project describes the design, simulation, fabrication and characterisation of ISFET for pH measurement of an aqueous solution. The ISFET is fabricated in-house in the Micro Fabrication Cleanroom Laboratory (MFCL) at Universiti of Malaysia Perlis (UniMAP) by using standard CMOS process technology. Silicon nitride was used as an ion sensitive membrane and it was deposited by using Plasma Enhanced Chemical Vapour Deposition (PECVD) technique. A total of six masks were used in this fabrication to create the CMOS ISFET. The ISFET fabricated is aimed at pH measurement of aqueous solution. In order to obtain an accurate characterisation of the ISFET, a semiconductor characterisation system (SCS) comprises of a micro probe station and a parameter analyser was utilised. For the analysis of ISFET in test solution, an Ag/AgCl electrode is used as a reference electrode and three types of standard aqueous pH buffer solutions of pH 4, pH 7 and pH 10 were used during the experiment of ISFET analysis. The sensitivity of the ISFETs measured is 40mV/pH for n-channel ISFET and 30mV/pH for p-channel ISFET. These results demonstrated that the in-house fabricated CMOS ISFET is functional as expected.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Hashim U. and Chin S. F. 2006. Simulation of NMOS in Standard CMOS Process using Synopsys' TSUPREM-4



	<p>and MEDICI. <i>Malaysian Technical Universities Conference on Engineering and Technology (MUCET)</i>, 19th – 20th Dec 2006, Universiti Teknologi Tun Hussein Onn, Malaysia.</p> <ol style="list-style-type: none"> Chin S. F., Hashim U., and Md Arshad M. K. 2007. CMOS ISFET Based pH Sensor using Si₃N₄ Membrane: Towards Biomedical Application. <i>International Conference on Advancement Materials and Nanotechnology (ICAMN)</i>, 29th May – 1st June 2007, Langkawi, Kedah. Chin S. F., Hashim U. and Md Arshad M. K. 2007. Development of N-Well CMOS Process in a University Microfabrication Laboratory. <i>2nd Regional Conference on Engineering Education (RCEE)</i>, 3rd – 5th Dec 2007, Johor Bahru. Hashim U., Chin S. F., and Md Arshad M. K. 2007. Low Cost Mask Processing Technology Concept for Large Dimension ISFET Fabrication. <i>Regional Symposium on Microelectronics (RSM)</i>, 3rd – 6th Dec 2007, Penang. Hashim U., Chin S. F., Md Arshad M. K., Abdul Rahman K., and Mohd Yusof M. F. 2007. CMOS Based Sensors Research at UniMAP: CMOS ISFET. <i>Malaysia Japan International Symposium on Advanced Technology (MJISAT)</i>, 12th – 15th Nov 2007, Kuala Lumpur. Hashim U., Md Arshad M. K., and Chin S. F. 2007. Development of CISFET Based Biosensor for Biomedical Applications. <i>International Symposium on Olfaction and Electronic Noses (ISOEN)</i>, 3rd – 5th May 2007, St. Petersburg, Russia.
Awards/Certificates	<ol style="list-style-type: none"> Expo R&D UniMAP 2010: 1 Gold Medal Bio Malaysia 2010: 1 Bronze Medal Expo Penyelidikan Inovasi Islam 2010: 1 Silver Medal ENVEX 2010: 1 Silver Medal MTE 2010: 1 Silver Medal Ekspo Rekapipta & Pameran Penyelidikan UniMAP 2009: 1 Gold Medal Bio Malaysia 2009: 1 Silver Medal PECIPTA 2009: 1 Silver Medal MTE 2009: 1 Silver Medal Bio Malaysia 2008: 1 Bronze Medal

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Preparation and Characterisation of Zinc Oxide Nanoparticle as Photocatalyst
Project Number	03-01-04-SF0001
Project Leader and Team Members	Leader: Abdul Halim Abdullah Members: Tan Yen Ping and Zulkarnain Zainal
Field of Research	Material Sciences
Project Summary	The objectives of the project were to prepare nanosized zinc oxide by precipitation and solgel methods; to characterise the resulting zinc oxide and evaluate the efficiency of the prepared zinc oxide as photocatalyst. Nanosized zinc oxide was obtained after a slight modification to the synthesis method. Ultrafine zinc oxide powder was obtained from the proposed synthesis method and were fully characterised. The photocatalytic activity of the synthesized zinc oxide was evaluated by photodegradation of three types of dye: methyl orange, methylene blue and reactive orange 16.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fabrication of High Temperature Superconducting Multilayer Josephson Junctions for the Development of Superconducting Quantum Interference Devices (SQUIDS)
Project Number	03-01-04-SF0008
Project Leader and Team Members	Leader: Abd Halim Shaari Members: Imad (Moh'd Khair) Rashid, Mohd Mustafa Awang and Chen Soo Kien
Field of Research	Physical Sciences
Project Summary	The objectives of the project were to fabricate a superconducting thin film separated by an insulator or a normal metal in multilayer form; to identify the interfacial behaviour between the coupling of insulating and superconducting layers; and to develop a prototype SQUIDS device for low magnetic field sensing. The first objective was successfully achieved whilst the other objectives are currently in progress.
Publications/Products/ Outcomes	Journal: 1. I. Hamadneh, A. Agil, A. K. Yahya, Abd Halim Shaari. 2007. Superconducting properties of bulk Bi _{1.6} Pb _{0.4} Sr ₂ Ca _{2-x} Cd _x Cu ₃ O ₁₀ system prepared via conventional solid state and coprecipitation methods, <i>Physica C: Superconductivity</i> , 463-465 (1). pp. 207-210. ISSN 0921-4534
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 6648 ahalim@fsas.upm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Study of Novel Nanoscale Multiferroic Materials via Magnetic and Electrical Properties Manipulation
Project Number	03-01-04-SF0009
Project Leader and Team Members	Leader: Abd Halim Shaari Members: Elias Saion, W. Mohamad Daud W. Yu and Lim Kean Pah
Field of Research	Physical Sciences
Project Summary	The objectives of the project were to develop a novel nano-scaled hybrid material that combine the unique features of ferromagnetism and ferroelectricity. Multiferroic material such as lead zirconate titanate (PZT) film will be epitaxially deposited on an LSMO crystal. This system combines the unique features of ferromagnetism-ferroelectricity and other hybrid system can also be included to study the magneto-electric (ME) effect in a unique heterostructure thin films. The magneto-electric (ME) effect in a unique heterostructure thin films that combine the features of ferroelectricity such as piezoelectric effect and spontaneous magnetization found in magnetic materials will also be studied. The first objective was successfully achieved and the second objective is currently under progress.
Publications/Products/ Outcomes	Journal: 1. Abdul Halim Shaari, Wan Mohd. Daud Wan Yusoff, Mansor Hashim, Zainal Abidin Talib, Lim Kean Pah and Tay Boon Ping. 2007. Sample preparation and dielectric spectrum equivalent circuits modeling for Bi ₂ Mn ₂ O ₇ . <i>Solid State Science and Technology</i> 15(1):223-228.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Production of Antioxidant Nutraceuticals from By-products of Pink Guava Puree Industry
Project Number	03-01-04-SF0011
Project Leader and Team Members	Leader: Amin Ismail Members: Aida Hamimi Ibrahim, Azrina Azlan, Shuhaimi Mustafa and Tan Chin Ping
Field of Research	Agricultural Sciences
Project Summary	The objectives of the project were to prepare different pink guava by-product powders as sources for lycopene and polyphenol compounds (antioxidant nutraceuticals); to quantify and identify antioxidant nutraceuticals present in prepared by-products powder; to produce lycopene and polyphenol-rich fractions from the powder of pink guava by-products; and to evaluate the stability and antioxidant capacity of lycopene and polyphenol-rich fractions. All of the objectives were successfully achieved.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Kin Weng Kong, Amin Ismail, Chin Ping Tan and Nor Fadilah Rajab. 2010. Optimization of oven drying conditions on lycopene content and lipophilic antioxidant capacity in a by-product of pink guava puree industry using response surface methodology. <i>LWT-Food Science and Technology</i> 43:729-735. 2. Kin Weng Kong, Abdul Razak Ismail, Seok-Tyug Tan, Krishna Murthy Nagendra Prasad and Amin Ismail. 2010. Response surface optimisation of extraction for phenolics and flavonoids from pink guava puree industrial refinery by-products. <i>International Journal of Food Science and Technology</i> 45:1739-1745. 3. Wong, K. W. and Ismail, A. 2011. Lycopene content and lipophilic antioxidant capacity of by-products from Psidium guajava fruits produced during puree production industry. <i>Food and Bioproducts Processing</i>. 89:53-61. 4. Kin-Weng Kong, Nor Fadilah Rajab, K. Nagendra Prasad, Amin Ismail, Masturah Markom and Chin-Ping Tan. 2010. Lycopene-rich fractions derived from pink guava by-product and their potential activity towards hydrogen peroxide-induced cellular and DNA damage. <i>Food Chemistry</i> 123:1142-1148.



	<ol style="list-style-type: none"> Kong, K. W., Emmy, H. K. I., Azizah, O., Amin, I. and Tan, C. P. 2010. Effect of steam blanching on lycopene and total phenolics in pink guava puree industry by-products. <i>International Food Research Journal</i> 17:461-468.
Awards/Certificates	<ol style="list-style-type: none"> UPM Research Award 2009: 1 Gold Medal PECIPTA 2009: 1 Silver Medal
IP Status	<ol style="list-style-type: none"> Malaysia Patent filed (PI 20084485) and International Patent filed (PCT/MY2009/000179) (A guava pulp composition) Malaysia Patent filed (PI20097037) (Polyphenol Rich Fraction and Uses Thereof)
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Delivery of Therapeutic Peptides into Human Liver Cells Using Virus-like Nanoparticles
Project Number	03-01-04-SF0015
Project Leader and Team Members	Leader: Tan Wen Siang Members: Muhajir Hamid, Tey Beng Ti and Khatijah Mohd Yusof
Field of Research	Biotechnology
Project Summary	The objectives of the project were to clone and expose hepatitis B's large surface antigen (L-HBsAg) in yeast cells; to purify and characterise L-nanoparticles from the yeast cells; to incorporate therapeutic peptides into the L-nanoparticles; and to deliver the therapeutic peptides into human hepatocytes. All the objectives stated above have been successfully achieved.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Fazia, M. S., Ahmad, S., Tan, C. S. and Tan, W. S. 2008. Cloning and expression of hepatitis B large surface antigen in yeast. <i>The 30th Symposium of the Malaysian Society for Microbiology</i> , 16-19 Aug 2008, Kuantan. 2. Lee, K. W. and Tan, W. S. 2008. Dynamic light scattering analysis of the association and dissociation of hepatitis B virus core antigen. <i>The 30th Symposium of the Malaysian Society for Microbiology</i> , 16-19 Aug 2008, Kuantan.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 6715 H/p: 016-633 1962 wstan@biotech.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Proton Exchange Membranes of Sulfonated Inorganic Polymer/Metal Oxide Nanocomposites for Direct Methanol Fuel Cell (DMFC) Applications
Project Number	03-01-04-SF0016
Project Leader and Team Members	Leader: Elias Saion Members: Mohamad Zaki Ab. Rahim and Khairul Zaman
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to synthesize a proton exchange membranes (PEM) of sulfonated inorganic polymer/metal oxide nanocomposites; to determine their characteristics but not limited to ion exchange capacity, proton conductivity, temperature stability and fuel permeability; and to investigate the membrane's performance with respect to temperature, fuel concentration and flow rate.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The Effect of Nano-sized Starting Powders on the Physico-Chemical Properties of the Superconducting Ceramics Prepared via Coprecipitation Method
Project Number	03-01-04-SF0030
Project Leader and Team Members	Leader: Zulkarnain Zainal Members: Abd Halim Shaari and Mohd Zobir Hussein
Field of Research	Material Sciences
Project Summary	The objectives of the project were to synthesize DyBCO, GdBCO, HoBCO and SmBCO superconducting ceramic using the coprecipitation method; to determine the physicochemical properties of the resulting materials using a four point probe for electrical resistivity, ac magnetic susceptibility, X- ray powder diffraction (XRD) and Scanning Electron Microscopy (SEM); and to relate the change in the physicochemical properties of the resulting materials, particularly the crystal structure, lattice parameters and electrical properties to the preparation method.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Hamadneh, I., Rosli, A. M., Zainal, Z., Yahya, A. K. and Jusoh, M. M. 2007. Superconductivity of REBa₂Cu₃O₇₋₈ (RE= Y, Gd and Sm) ceramics synthesized via coprecipitation method. <i>20th International Symposium on Superconductivity (ISS2007)</i>, 4th – 7th Nov, Nagoya, Japan. 2. Hamadneh, I., Rosli, A. M., Abd-Shukir R., Suib, N. R. M. and Yahya, S. Y. 2007. Superconductivity of REBa₂Cu₃O₇₋₈ (RE= Y, Gd and Sm) ceramics synthesized via coprecipitation method. <i>7th European Conference on Applied Superconductivity (EUCAS07)</i>. 16th – 20th Oct 2007, Brussels, Belgium.
Awards/Certificates	<ol style="list-style-type: none"> 1. International Conference on Advancement of Materials and Nanotechnology (ICAMN) 2007: Best poster presentation 2. UPM Invention and Research Exhibition (PRPI) 2007: 1 Gold Medal 3. International Conference for Young Chemists (ICYC) 2008: Best poster presentation 4. UPM Invention and Research Exhibition (PRPI) 2009: 1 Bronze medal



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a New Microwave Extraction and Separation Systems for Production of Essential Oil, Virgin Oil and Oil Recovery
Project Number	03-01-04-SF0034
Project Leader and Team Members	Leader: Kaida Khalid Members: Mohd Aspollah Sukari, Jumiah Hassan and Yaacob Che Man
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were to develop an efficient microwave extraction system for producing essential oil from Malaysian plants; to develop an efficient and effective microwave separation system for the production of virgin coconut oil and virgin palm kernel oil; to demulsify the sludge or waste from palm oil milling factory for oil recovery and to minimise waste disposal. We have theoretically modelled the absorption of microwave energy, dielectric properties measurement, and laboratory experiment for the extraction of essential oil from flowers (Jasminum sambac leaves, <i>Mesua ferrea</i> L., curry leaves, Cymbopogon citratus), agarwood (gaharu) and durian skin and samples (coconut milk, palm kernel, jatropha seed and rubber seed) for the microwave separation process. Chemical analyses for the selected product of the essential oils and oils from separation process have been successfully completed, including the calculation of the percentage of the yields. The dielectric properties measurement and experimental microwave separation process for the sludge from palm oil milling factory had been investigated, but the work was only confined to the analysis of the yield of the oil recovered from this sludge. Generally, this new process is chemical free, faster, easier to operate and controlled. Furthermore, these processes are suitable for producing VCO, cooking oil and raw material for biodiesel from jatropha, palm kernel or similar fruits or seeds or oily based plant such as algae.</p>
IP Status	International Patent filed (PCT/MY2008/000089) (Processes For Producing Virgin Coconut Oil, Coconut Cooking Oil and Raw Material for Coconut Biodiesel)



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis and Characterisation of Metal Complexes and Schiff Bases Derived from Natural Dyes (eg. Curcumin and Lawsone).
Project Number	03-01-04-SF0037
Project Leader and Team Members	Leader: Kamaliah Sirat Member: Asmah Yahaya
Field of Research	Chemical Sciences
Project Summary	The objectives of the project were to synthesize and characterize some metal complexes of natural dyes (e.g. curcumin and lawsone); to synthesize and characterise some Schiff bases derived from the dyes; and to evaluate biological activities of the isolated compounds. The first and second objectives were successfully achieved and the third objective is currently under progress.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fabrication of Multilayers Manganite Thin Films Having LFMRr Effect Using Pulsed Laser Ablation technique
Project Number	03-01-04-SF0088
Project Leader and Team Members	Leader: Lim Kean Pah Members: Noorhana Yahya and Abd Halim Shaari
Field of Research	Physical Sciences
Project Summary	The objectives of the project were to optimise the fabrication process of manganite thin film in single and multilayer form using Pulsed Laser Ablation Technique; to identify the interfacial behaviour between the coupling of antiferromagnetic and ferromagnetic layer; and to develop a multilayer thin film having a high value of Low Field Magnetoresistance at room temperatures. The fabrication and characterisation of a bulk and single layer thin film was successfully completed and the polycrystalline manganites perovskite was synthesized and its grain size formation controlled. Its extrinsic magnetoresistance was improved which has potential to improve the current magnetic sensing element.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Wong J. K., Lim K. P., Halim S. A., Chen S. K. and Ng S. W. 2009. Effect of Co Substitution on Magnetic and Magnetoresistance Effect in $\text{La}_{0.67}(\text{Ba}_{1-x}\text{Co}_x)\text{O}_{0.33}\text{MnO}_3$ System, <i>Solid State Science and Technology</i> 17(2):75-81. 2. Ng S. W., Lim K. P., Halim S. A., Chen S. K. and Wong J. K. 2009. Magnetoresistance and Magnetic Properties of $\text{La}_{0.67}\text{A}_{0.33}\text{MnO}_3$ (A= Ba, Ca, and Sr) Prepared by Co-Precipitation Method. <i>Solid State Science and Technology</i> 17(2):82-88. 3. Lim K. P., Halim S. A., Chen S. K., Ng S. W., Wong J. K. and Tan K. B. 2009. Low-Field Magnetoresistive and Magnetic Properties in $(\text{La}_{1-x}\text{Er}_x)\text{O}_{0.67}\text{Sr}_{0.33}\text{MnO}_3$ Manganites Perovskite. <i>Solid State Science and Technology</i> 17(2):220-225. 4. Lim K. P., Ng S. W., Halim S. A., Chen S. K. and Wong J. K. 2009. Effect of Divalent Ions (A = Ca, Ba and Sr) Substitution in La-A-Mn-O Manganite on Structural, Magnetic and Electrical Transport Properties. <i>American Journal of Applied Sciences</i> 6(6):1153-1157.

	Conferences/Proceedings/Seminars: 1. Wong J. K., Lim K. P., Halim S. A., Chen S.K. and Ng. S. W. 2009. Structure and Magnetoresistance Study of (La,Pr)0.67Ba0.33MnO3. <i>Proceedings of Fundamental Science Congress</i> , 12th – 15th Feb 2009, India.
Awards/Certificates	PRPI 2007: 1 Silver Medal PRPI 2009: 1 Bronze Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Nano Delivery System for Agrochemicals
Project Number	03-01-04-SF0090
Project Leader and Team Members	Leader: Mahiran Basri Member: Dzolkhifli Omar
Field of Research	Chemical Sciences
Project Summary	The objectives of the project were to develop a palm-based nano-delivery systems for agrochemicals via nanoemulsions; to characterise the rheological and physicochemical properties of the nanoemulsions systems; to evaluate the stability of the formulations; and to study the delivery potential of agrochemicals from the nanoemulsions. All the project objectives were achieved.
Publications/Products/Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Lim Chaw Jiang, Mahiran Basri, Dzolkhifli Omar, Mohd. Basyaruddin Abdul Rahman, Abu Bakar Salleh and Raja Noor Zaliha Raja Abdul Rahman. 2011. Self-assembly behaviour of alkylpolyglucosides (APG) in mixed surfactant-stabilized emulsions system. <i>Journal of Molecular Liquids</i> 158:175-181. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mahiran Basri, Lim Chaw Jiang, Dzolkhifli Omar, Mohd. Basyaruddin Abdul Rahman, Abu Bakar Salleh and Raja Noor Zaliha Raja Abdul Rahman. 2008. "Effects of glyphosate and pesticidal adjuvants on emulsion concentrates – towards improved optimization." <i>Simposium Kimia Analisis Malaysia 21 (SKAM 21)</i>, 25-27 Nov 2008, Universiti Malaysia Sabah. 2. Mahiran Basri, Nur Faizlin Mohd. Jadi, Dzolkhifli Omar, Mohd. Basyaruddin Abdul Rahman, Abu Bakar Salleh and Raja Noor Zaliha Raja Abdul Rahman. 2010. Effect of palm-based azadirachtin formulations towards spodoptera litura. <i>Fundamental Science Congress (FSC)</i>, 18-19 May 2010, Universiti Putra Malaysia.
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent filed (PI20093048) (A Herbicide Formulation) 2. International Patent filed (PCT/MY/2010/000130) (A Herbicide Formulation) 3. Malaysia Patent filed (PI 201000648) (A Pesticide Composition)

Awards/Certificates	Exhibition of Invention, Research & Innovation (PRPI) 2010: 1 Silver Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Preparation of Rare-earth Exchanged Zeolite for Sorption Removal of Hazardous Anions
Project Number	03-01-04-SF0097
Project Leader and Team Members	Leader: Md Jelas Haron Members: Mohd Zobir Hussein and Abdul Halim Abdullah
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to prepare and characterise zeolite from silica and aluminum nitrate. It involved modifying the synthesized zeolite by exchanging it with rare-earth elements and other metal ions; to determine the sorption characteristic of the metal-exchanged zeolite for hazardous anions using the batch method; to determine the sorption characteristic of the metal-exchanged zeolite for hazardous anions using dynamic column method; and apply selected metal-exchanged zeolite for the removal of hazardous anions from synthetic and industrial wastewater samples. All of the objectives were successfully achieved.
Publications/Products/Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Md Jelas Haron , Farha Ab Rahim, Abdul Halim Abdullah, Mohd Zobir Hussein and Anuar Kassim. 2008. Sorption removal of arsenic by cerium-exchanged zeolite P. <i>Materials Science and Engineering B</i> 149:204–208. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Md Jelas Haron, Farha Ab Rahim, Abdul Halim Abdullah, Mohd Zobir Hussein and Anuar Kassim, 2008. Kinetic And Thermodynamic Of Arsenic Sorption By Cerium(Iv) Exchanged Zeolite P. <i>Proceeding IEX</i>, 6th – 11th July 2008, University Cambridge, UK.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis of Multifunctional Nanoparticles Using Biomaterials as Shape Directing Agents
Project Number	03-01-04-SF0120
Project Leader and Team Members	Leader: Mohd Zobir Hussein Members: Asmah Yahaya and Zulkarnain Zainal
Field of Research	Material Sciences
Project Summary	The objectives of the project were to synthesize metal oxide nanoparticles using various methods; to characterise the physicochemical properties of the metal oxide nanoparticles; to use biomaterials as a directing agent for the formation of the oxide nanoparticles; and to form nanocomposite films of the metal oxide nanoparticles with polymer. All of the project objectives were achieved.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> Hussein, M.Z., Azmin, W.H.W.N., Mustafa, M. and Yahaya, A.H. 2009. <i>Bacillus cereus</i> as a biotemplating agent for the synthesis of zinc oxide with raspberry- and plate-like structures. <i>Journal of Inorganic Biochemistry</i> 103(8):1145-1150. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> Mohd Zobir Hussein, Wan Haizum Wan Nor Azmin, Muskhazli Mustafa and Asmah Hj Yahaya. 2008. Hydrothermal-Biotemplating Synthesis of ZnO using <i>Bacillus cereus</i>. <i>XV International Symposium on Metastable, Amorphous and Nanostructured Materials (ISMANAM)</i>, 6-10 July 2008, Centro Cultural Borges, Buenos Aires, Argentina. Khairul Basyar Baharudin, Mohd Zobir Hussein and Abdul Halim Abdullah. 2008. The effect of polyol on physico-chemical properties of zinc oxide nanoparticles. <i>Regional Conference on Solid State Science and Technology (RCSSST)</i>, 30 Nov – 2 Dec 2008, Port Dickson, Negeri Sembilan. <p>Others</p> <ol style="list-style-type: none"> Wan Haizum Wan Nor Azmin. 2011. <i>Synthesis and physicochemical properties of template and composite zinc oxide</i>. M.Sc. Thesis UPM.



	2. Khairul Basyar Baharudin. 2011. <i>The effect of polyol on physico-chemical properties of zinc oxide nanoparticles</i> . M.Sc. Thesis UPM.
Awards/Certificates	UPM Exhibition of Invention, Research & Innovation 2010 (PRPI) 2010: 1 Gold Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Anisotropic Catalysts as the Driving Force for the Growth of Vertically Aligned Carbon Nanotubes
Project Number	03-01-04-SF0130
Project Leader and Team Members	Leader: Irmawati Ramli Member: Mansor Hashim
Field of Research	Material Sciences
Project Summary	<p>The objectives of the project were to prepare single-phase catalysts, namely Bi₂O₃, NiO, CoO and Fe₂O₃ using the co-precipitation method; to prepare graphite pellets incorporating the catalysts; to prepare and characterise the substrate with the catalysts via Pulsed Laser Ablation deposition (PLAD) technique; to prepare vertically aligned CNTs via Pulsed Laser Ablation Deposition (PLAD) technique; and to modify the as-grown vertically aligned CNTs using anisotropic catalyst. The first three objectives were successfully achieved. We had been successful in synthesizing single-phase catalysts of Bi₂O₃, NiO, CoO and Fe₂O₃ using the co-precipitation method and all of the samples were successfully characterised. All of these catalysts were used for the growth of vertical aligned CNTs.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Irmawati Ramli, Chen May Tze and Taufiq-Yap Yun Hin. 2007. Effect of Sodium Hydroxide Concentration on the Physicochemical Characteristic of Bi₂O₃. <i>Nanocrystals, Solid State Science and Technology</i> 15(1):30-42. 2. Noorhana Yahya, Samaila Bawa Waje and Irmawati Ramli. 2008. Carbon Nanopipe Catalysed by As-Prepared NiO Nanoparticles. <i>Sains Malaysiana</i> 37(3):289-293. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Liew Seng Choy, Irmawati Ramli, Noorhana Yahya and Abdul Halim Shaari. 2009. Heating Effect of Pulsed Laser Ablation in Substrate Towards Orientation of Carbon Microstructure, Abstract. <i>International Advanced of technology Congress (ATCi)</i>, 3-5 Nov 2009, Malaysia.



	<ol style="list-style-type: none">2. Beh Hoe Guan, Irmawati Ramli, Noorhana Yahya and Lim Kean Pah. 2009. Synthesis and Purification of Carbon Nanotubes Synthesised by catalytic Decomposition of Methane Using Bi-metal Catalysts Supported on MgO. <i>International Advanced of technology Congress (ATCi)</i>, 3-5 Nov 2009, Malaysia.3. Irmawati Ramli, Samaila Bawa Waje and Noorhana Yahya. 2009. The Effect of Iron Oxide Particle Size on the Diameter of Carbon Nanotubes Prepared Via Pulsed Laser Ablation Deposition System. <i>The First International Seminar on Science and Technology</i>, 24-25 Jan 2009, Jogjakarta, Indonesia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a PDA-based Microwave Sensor for Non-destructive Determination of Moisture Content in Grains and Seeds
Project Number	03-01-04-SF0131
Project Leader and Team Members	Leader: Zulkifly Abbas Members: Chandan Kumar Chakrabarty, Noor Akma Ibrahim and Mohd Puad Abdullah
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objectives of the project were to develop a PDA-based meter for the rapid measurement of the moisture content of seeds; to design, fabricate and test a new RF circuit to determine the dielectric properties of seed; to determine the equilibrium moisture contents of various Malaysian seeds to be stored in the genebank; and to determine the effect of seeds of various dimensions and different hydration levels on the parameters of an RF resonant cavity. A new stand-alone system, capable of determining the moisture content in fruits and seeds was successfully fabricated. The team managed to transform the PDA -PC based system to a fully standalone microcontroller version system.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Microarray Based on Novel Nanotransducers for Metal Ion Sensors, Exploiting Amino Acids and Peptides as Recognition Elements
Project Number	03-01-04-SF0134
Project Leader and Team Members	Leader: Nor Azah Yusof Members: Abdul Halim Abdullah and Md Jelas Haron
Field of Research	Environmental Sciences
Project Summary	The objectives of the project were to develop a nanotransducer for a novel metal ion sensors; to characterise the sensing ability of the developed nanotransducers; to develop the microarray system and apply the developed microarray on a real sample. All of the project's objectives were achieved. The final product is still under fabrication. The Commercialisation will begin once the device is completed. A portion of the results were patented, presented in seminars and published in international journals.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Azizul Isha, Nor Azah Yusof, Musa Ahmad, Dedy Suhendra and Wan Md Zin Wan Yunus and Zulkarnain Zainal. 2006. A Chemical Sensor for Trace V(V) Determination Based on Fatty Hydroxamic Acid Immobilized. <i>Polymethylmethacrylate. Sensors and Actuators B</i> 114:344-349. 2. Azizul Isha, Nor Azah Yusof, Musa Ahmad, Dedy Suhendra, Wan Md Zin Wan Yunus and Zulkarnain Zainal. 2007. Development of an Optical Fibre Chemical Sensor for Trace V(V) Based on Fatty Hydroxamic Acid Immobilized. <i>Polyvinyl Chloride. Spectrochimica Acta: Part A</i>. 67:1398-1402. 3. Azizul Isha, Nor Azah Yusof, Musa Ahmad, Dedy Suhendra, Wan Md Zin Wan Yunus and Zulkarnain Zainal. 2006. Extending the linear dynamic range of V(V) ion determination based on new reagent, fatty hydroxamic acid from palm kernel Oil by using artificial neural network. <i>Malaysian Journal of Chemistry</i> 8(1):027-036. 4. Nor Azah Yusof, Wan Asmawati, Dedy Suhendra and Wan Md Zin Wan Yunus. 2006. Spectrophotometric Determination of Fe(III) using palm based fatty hydroxamic acid (FHA). <i>Science Putra Research Bulletin</i> 14(1):31-34.

	<ol style="list-style-type: none"> 5. Azizul Isha, Nor Azah Yusof, Mazura Abdul Malik and Hazlina Hamdan. 2006. Application of Artificial Neural Network to simultaneous spectrophotometric Determination of lead(II) and Mercury(II) based on 2-(5-Bromo-2-Pyridylazo)-5-Diethylaminophenol. <i>Malaysian Journal of Chemistry</i> 8(1): 072-078. 6. Azizul Isha, Nor Azah Yusof, Mazura Abdul Malik and Hazlina Hamdan. 2007. Simultaneous spectrophotometric determination of Pb(II) and Cd(II) using artificial Neural Networks. <i>Journal of Physical Science</i> 18(1).
Awards/Certificates	PRPI (UPM) 2009: 2 Bronze Medals
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent filed (PI 20092843) (Modified electrode for electrochemical analysis) 2. Malaysia Patent filed (PI 20082144) (Heavy Metal Detection Kit)
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Biocomposites from Biodegradable Polymers and Modified Oil Palm Empty Fruit Bunch Fiber
Project Number	03-01-04-SF0135
Project Leader and Team Members	Leader: Nor Azowa Ibrahim Members: Khairul Zaman Moh and Wan Md Zin Wan Yunus
Field of Research	Material Sciences
Project Summary	The objectives of the project were to synthesis an empty fruit bunch fibre-biodegradable polymer composite; to characterise the synthesized composites; to determine the parameter for the formation of compatible composites; and to study the properties of the product produced. Several types of biodegradable polymer were blended with OPEFB to produce biocomposites and all of the composites produced have been characterised. The compatibility between the OPEFB and the biodegradable polymer has been improved by the addition of PVP and irradiated at 10 kGy and the mechanical, thermal, dynamic mechanical, biodegradation and water absorption properties of the composites have been determined.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. N. A. Ibrahim, W. M. Z. Wan Yunus and K. Z. Mohd Dahlan. 2008. Effect of Poly (Vinyl Pyrrolidone) and Electrone Beam Irradiation on Mechanical Properties of Polycaprolactone/ Oil Palm Empty Fruit Bunch Fiber Composites. <i>International Seminar on Chemistry</i> , 28 May 2008, Tiara Hotel Medan, Indonesia. 2. Y. Y Then, W. M. Z. Wan Yunus and N. A. Ibrahim. 2008. Preparation and Characterization of Thermoplastic Starch Polycaprolactone Blend Nanocomposites. <i>2nd USM Penang International Postgraduate Convention</i> , 18-20 June 2008, Penang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fabrication of Molecular Imprinted Polymer (MIP) for Waste Water Treatment
Project Number	03-01-04-SF0138
Project Leader and Team Members	Leader: Nor Azah Yusof Members: Abdul Halim Abdullah and Md Jelas Haron
Field of Research	Environmental Sciences
Project Summary	The objectives of the project were to fabricate a molecular imprinted polymer (MIP) for heavy metals in waste water; to characterise the physical and chemical properties of the fabricated MIP; to conduct feasibility studies of the fabricated MIP; and to test the ability of the fabricated MIP on real sample.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Dyana Zakaria, Nor Azah Yusof, Md. Jelas Haron and Abdul Halim Abdullah. 2009. Synthesis and evaluation of a molecularly imprinted polymer for 2,4-dinitrophenol. <i>Int. J. Mol. Sci</i> 10:354-365. 2. Nor Azah Yusof, Appri Beyan, Md. Jelas Haron and Nor Azowa Ibrahim. 2009. Synthesis and Evaluation of a Molecularly Imprinted Polymer For Pb(II) Ion Uptake. <i>Pertanika Journal of Science and Technology</i> 17(1):155-161. 3. Nor Azah Yusof, Appri Beyan, Md. Jelas Haron and Nor Azowa Ibrahim. 2010. Synthesis and characterization of a molecularly imprinted polymer for Pb²⁺ Ion Uptake. <i>Sains Malaysiana</i> 39(5):829-835. 4. Nor Dyana Zakaria, Nor Azah Yusof, Mad Jelas Haron and Abdul Halim Abdullah. 2011. Adsorption of 2,4-dinitrophenol onto molecular imprinted polymer with 4-vinylbenzoic acid monomer. <i>Asian Journal of Chemistry</i> 23(6):2456-2460.
Awards/Certificates	<ol style="list-style-type: none"> 1. ITEX 2009: 1 Bronze Medal 2. Water Inno Awards 2009: 1 Gold Medal
Additional Information	Industrial Linkages: Hg Solution Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis and Characterisation of Bismuth-based Oxide Ion Conductors as New Sensor Materials
Project Number	03-01-04-SF0151
Project Leader and Team Members	Leader: Tan Yen Ping Member: Zulkarnain Zainal
Field of Research	Material Sciences
Project Summary	<p>The objectives of the project were to synthesis a new bismuth-based oxide ion conducting materials; to determine the physical and chemical properties of the synthesised new bismuth-based oxide materials; and to determine the electrical properties of the synthesised new bismuth-based oxide materials. A new bismuth-based oxide ion conductors have been synthesised. The characterisation of the physical and chemical properties of the synthesised compounds using various techniques has also been done. The electrical properties of the synthesised compounds have been determined. The phase identification of the synthesised materials were performed using X-ray diffraction (XRD) analysis. The composition of the materials was further investigated by inductively coupled plasma-atomic emission spectrometry. The thermal stability and polymorphism of the materials were studied using the thermogravimetric and differential thermal analyses techniques. The study of electrical properties using AC impedance spectroscopy were restricted by the frequency range of the instrument, and its interpretations were not quite clear.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Economics and Strategic Management Evaluation of Global Agribusiness Competitiveness: The Case of Malaysian Halal Hub Aspirations
Project Number	03-01-04-SF0154
Project Leader and Team Members	Leader: Mohd Ghazali Mohayidin Members: Ismail Abd Latiff, Zainal Abidin Mohamed, Yaacob Che Man and Amin Mahir Abdullah
Field of Research	Economics, business and management
Project Summary	The objectives of the project were to evaluate Malaysia's capacities and competitiveness in the global halal food market by way of determining Malaysia's readiness in becoming global halal hub; to identify the requirements of a global halal hub; to identify the gaps between existing status and target/expectation; and to identify ways to enable Malaysia to become a global halal hub. Malaysia's readiness is perceived to be moderate by local food manufacturers. There is a positive relationship between food manufacturers' perception of Malaysia's readiness to become a global Halal Hub and their expected participation. Three factors affecting readiness are knowledge and resource centre, quality of service and product, and image and reputation. From the manufacturers' perspective, these criteria have to be improved if Malaysia wants to become a successful halal hub.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Preparation and Characterisation of Fatty Hydrazide Acids from Palm Oil
Project Number	03-01-04-SF0157
Project Leader and Team Members	Leader: Wan Md Zin Wan Yunus Members: Nor Azah Yusof and Md Jelas Haron
Field of Research	Chemical Sciences
Project Summary	The objectives of the project were to prepare fatty hydrazides from palm oil; to determine the optimum reaction conditions for fatty hydrazides synthesise from various palm oil fractions; to study chelating properties of the synthesised fatty hydrazides; and to study the effectiveness of the synthesized fatty hydrazides for metal ions' extraction and separation. All of the project's objectives were achieved. Currently, the team is in the process of studying of upscaling the preparation of fatty hydrazides.
Publications/Products/ Outcomes	Publications: 1. Sharifah Mohamad, Wan Md. Zin Wan Yunus, Md. Jelas Haron and Mohd. Zaki Abdul Rahman 2008. Extraction and Separation of Molybdenum(VI) from Acidic Media by Fatty Hydrazides. <i>J. Chem. Technol. Biotechnol.</i> 83(11):1565-1569. ISSN 0268–2575. 2. Sharifah Mohamad, Wan Md. Zin Wan Yunus, Md. Jelas Haron and Mohd Zaki Abd. Rahman 2008. Enzymatic synthesis of fatty hydrazides from palm oils. <i>J. Oleo Sc.</i> 57(5):263-267.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Novel Microstructures and Reactivity of Vanadium Phosphate Catalysts for Partial Oxidation of Light Hydrocarbons
Project Number	03-01-04-SF0178
Project Leader and Team Members	Leader: Taufiq Yap Yun Hin Member: Irmawati Ramli
Field of Research	Chemical Sciences
Project Summary	This project has successfully synthesised the modified VPO catalysts with the addition of selected dopants, ball milling and the introduction of microwave irradiation. The mechanochemical treatment significantly affected the morphology and microstructure of these catalysts, and the role of oxidants on the partial reaction of butane is well understood and the structural-relationships has been established.
Publications/Products/ Outcomes	Journal: 1. Taufiq-Yap Y. H., Rownaghi A. A., Hussein M.Z. and Irmawati R. 2007. Preparation of vanadium phosphate catalysts from $\text{VOPO}_4 \cdot 2\text{H}_2\text{O}$: Effect of microwave irradiation on morphology and catalytic property. <i>Catalysis Letters</i> 119: 64-71.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Enhancing the Properties of Selected Recycle Paper Products Through Blending With Kenaf (<i>Hibiscus cannabinus</i>) Fibre 03-01-04-SF0188
Project Number	03-01-04-SF0188
Project Leader and Team Members	Leader: Jalaluddin Harun Members: Paridah Md. Tahir and Rasmina Halis
Field of Research	Forestry Sciences
Project Summary	This project has successfully determined the optimum cooking conditions for kenaf fibre using chemithermomechanical pulping (CTMP). The CTMP process was used due to its low cost and less use of synthetic chemical. The morphology, physical and chemical properties of kenaf (V36) fibre was determined, along with the recycled fibre (old corrugated carton) from PASCORP Paper Industries, Pahang. The kenaf pulp was blended with the recycled fibre, in different proportions/compositions to enhance the quality of the recycle fibre. The results of the handsheet from the blended pulp was determined and compared with the Malaysian Standard and also with commercially manufactured packaging paper.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of An Alternative Bone Graft for Use in Bone Repair
Project Number	03-01-04-SF0202
Project Leader and Team Members	Leader: Md Zuki Abu Bakar @ Zakaria Members: Noordin Mohamed Musta, Norimah Yusof and Jalila Abu
Field of Research	Agricultural Sciences
Project Summary	Attempt was made to develop an alternative bone graft for use in bone repair. Characterisation of cockle shell powder and demineralised bone matrix (DBM) using rabbit long bones was carried out. A bone graft using a mixture of cockle shell powder and DBM was developed and the physical and chemical properties of bone graft pre and post-processing was characterised to define the morphological structures of the bone graft post-implantation. In addition, we have also successfully developed a porous bioceramic composition for bone repair. The scaffolds were seeded with osteoblast and evaluated both in vitro and in vivo.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Awang Hazmi A. J., Zuki A. B. Z., Noordin M. M., Jalila A. and Norimah Y. 2008. Mineral and physicochemical characterization of cockle (<i>Anadara granosa</i>) shells as an alternative biomaterial for bone tissue engineering. <i>Malaysian Medical Journal Supl A</i>: 93-41. 2. Awang Hazmi A.J., Zuki A.B.Z., Zamri-Saad M. and Saw Po Po. 2006. The Response of Gut Associated Lymphoid Tissue (GALT) Following Oral Administration of <i>P. multocida</i> Type B2 in Rats. <i>The International Journal of Veterinary Medicine</i> 5 (11): 1029-1034. 3. Awang Hazmi A.J., Zuki A.B.Z., Noordin M.M., Jalila A. and Norimah Y. 2007. Mineral Composition of the Cockle (<i>Anadara granosa</i>) Shells of West Coast of Peninsular Malaysia and It's Potential as Biomaterial for Use in Bone Repair. <i>Journal of Animal and Veterinary Advances</i> 6 (5):591-594. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Bahaa F.H., Zuki A.B.Z., Norimah Yusof, Elias Saion and Noordin M.M. 2009. Physical Evaluation of Bioceramic Scaffolds for Bone Substitute. <i>Proceeding of the 21th VAM Congress</i>, 7-9 Aug. 2009, Port Dickson, Negeri Sembilan.



	2. Awang-Hazmi A.J., Zuki A.B.Z., Noordin M.M., Jalila A. and Norimah Y. 2007. The Potential of Cockle (<i>Anadara granosa</i>) Shells as an Alternative Graft for Bone Repair. <i>Proceeding of 28th MSAP Annual Conference- Good Animal Husbandary Practice-The Way Forward</i> , 29-31 May 2007, Kuching, Sarawak.
Awards/Certificates	<ol style="list-style-type: none"> 1. Pameran Reka Cipta Penyelidikan dan Inovasi (PRPI) UPM 2009: 1 Gold Medal 2. Pameran Reka Cipta Penyelidikan dan Inovasi (PRPI) UPM 2009: 1 Silver Medal
IP Status	Malaysia Patent filed (PI20090002) (Porous bioceramic composition for bone repair)
Additional Information	Industrial Linkages: Granulab (M) Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Environmental Evaluation of Biofuels: A Comparative Study of Conventional Fossil Fuel Diesel and Palm Oil Based Biodiesel Using Life Cycle Assessment Approach
Project Number	03-01-04-SF0242
Project Leader and Team Members	Leader: Mad Nasir Shamsudin Member: Ahmad Makmom Abdullah
Field of Research	Biotechnology
Project Summary	The objective of the project was to develop a computer-based decision-making tool that integrates the LCA for the assessment of diesel and biodiesel usage in Malaysia. Specifically, it aimed to develop a life cycle inventory (LCI) model of diesel and biodiesel in Malaysia; evaluate the overall environmental impacts arising from the process and the usage of diesel and biodiesel using LCA model; and to evaluate the total energy efficiency ratio for diesel fuel and biodiesel. The objectives achieved ranged from the determination of study boundaries, the planning and the selection of the area until conducting reports on the comparison study.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis of Layered Organic-inorganic Nanohybrid Materials: Organic Dye, Aluminon Intercalated into Layered Double Hydroxide
Project Number	03-01-04-SF0245
Project Leader and Team Members	Leader: Sarinawani Abdul Ghani Member: Mohd Zobir Hussein
Field of Research	Material Sciences
Project Summary	<p>The objectives of the project were to prepare the layered double hydroxide and study their physicochemistry property; to prepare the zinc/aluminium-aluminon nanocomposite by direct assembly; to study the physicochemical property of zinc/aluminium-aluminon nanocomposite; and to study the controlled release property of aluminon from the inorganic host into the aqueous solution medium. The objectives were successfully achieved by obtaining the layered double hydroxide via the proposed synthesis method. The zinc/aluminium-aluminon nanocomposite was successfully synthesised using the proposed method (SELF-ASSEMBLY METHOD). The nanocomposite was also successfully synthesised by using the anion exchange method. Both methods were found to be suitable and adaptable for the synthesis of the material, which has relatively good crystallinity, shown by the characterisation results. The physicochemical property of zinc/aluminium-aluminon nanocomposite were analysed by several methods including XRD, FTIR, thermal analysis and elemental analysis. The controlled release property of aluminon from the inorganic host were studied using various aqueous solution (NaCl, Na₂CO₃ and Na₃PO₄) by using UV Spectrophotometer. The data obtained were fitted into various kinetic models to find the best equation that can describe the release properties.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Bio-ethanol from Wood Waste and Oil Palm Lignocellulosic Materials Use as Engine's Fuel
Project Number	03-01-04-SF0361
Project Leader and Team Members	Leader: H'ng Paik San Members: Tey Beng Ti and Paridah Md. Tahir
Field of Research	Forestry Sciences
Project Summary	<p>The objectives of the project were to determine the bio-ethanol yield from the fermentation process of wood and oil palm lignocellulosic materials; to compare the fermentation efficiency between wood and oil palm lignocellulosic materials; and to determine the effect of the liquid to solid ratios and acid concentration on the glucose's yield. All of the objectives were successfully achieved by producing the bio-ethanol yield from fermentation process of sugar that was hydrolysed from rubberwood, mixed hardwood and oil palm trunk. Mixed hardwood produced the highest bioethanol yield and better fermentation efficiency compared to rubberwood and oil palm trunk. The highest bio-ethanol yield was recorded using a sugar, hydrolysed from mixed hardwood and fermented at 300°C and set to the hydrolysate at pH 4. A different liquid to solid ratio were tested in this study i.e. 12:1 and 15:1. From preliminary results, both ratios failed to provide any glucose contents reading after the hydrolysis using the glucose meter. This may be due to the very low glucose content present after the hydrolysis. Therefore, a ratio of 5:1 was used in this study to enhance the glucose content.</p>
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. H'ng Paik San and Chin Kit Ling. 2008. Effect of Sulfuric Acid Concentration and Hydrolysis Time On the Glucose Yield during Hydrolysis of Lignocellulosic Materials in Malaysia. <i>Proceeding of ECOWOOD</i> , 10th – 12th Sept. 2008, Porto, Portugal.
Contact Institution/Entity Address Phone Number	Universiti Putra Malaysia (UPM) 43400 UPM Serdang, Selangor. Office: 03-8946 7189 H/p: 016-290 3919 ngpaiksan@putra.upm.edu.my
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis, Characterisation and Applications of Palm Based Ether (Fatty Alcohol Ethoxylates) Surfactants in Personal Care
Project Number	03-01-04-SF0407
Project Leader and Team Members	Leader: Anuar Kassim Members: Atan Mohd Sharif and Dzulkefly Kuang Abdullah
Field of Research	Chemical Sciences
Project Summary	<p>In the present study, a series of as-synthesised palm-based nonionic surfactants with various hydrophile-lipophile balance values were successfully synthesised. The critical micelle concentration and the Gibbs energy of the surfactants were determined and discussed. For the first time, the surfactants were used to stabilise a three-component olein oil-in-water high internal phase emulsions, with an oil volume fraction of 0.85, which were easily prepared by one-pot homogenisation. The proof of its high stability was confirmed by the satisfactory rheological profiles and is further enhanced by a three-month storage exercise at an elevated temperature, which showed no significant physical and rheological changes. These results suggested that low concentration of the surfactants efficiently stabilised the emulsions with a high content of oil. Based on the optical micrograph observation, an average droplet size of less than 10 µm increased with increasing ethylene oxide chain length and temperature, and the varying degree of viscosity resulting from the various ethylene oxide chain lengths of the surfactants. The hydration efficacy of the emulsions was examined in vivo using a corneometer and the impressive hydration efficacy of olein oil suggested that it could well be a potential moisturising lipid which might interest dermatologists.</p>
Publications/Products/Outcomes	Journals: 1. Lim Hong Ngee, Anuar Kassim, Huang Nay Ming, Dzulkefly Kuang Abdullah, Abdul Halim Abdullah, Mohd Ambar Yarmo and Yeong Shoot Kian. 2008. Phase Behavioural Study of Palm Based Lauryl Alcohol Ethoxylates, <i>Pertanika Journal of Science and Technology</i> 16 (2) 141- 156.
Awards/Certificates	Pameran, Rekapipta dan Penyelidikan (PRPI) UPM 2009: 1 Gold medal

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Characterisation of Thermal Properties for Biodiesels and Biodiesel-petrodiesel Blends Using New Photothermal Technique
Project Number	03-01-04-SF0419
Project Leader and Team Members	Leader: Ionel Valeriu Grozescu Members: Mohd Maarof H.A. Moks, Kaida Khalid and W. Mahmood Mat Yunus
Field of Research	Physical Sciences
Project Summary	The objectives of the project were to design, construct and evaluate a new instrument for characterisation of thermal properties of opaque and flammable liquid using a non-destructive photothermal technique; to study and simulate the laser heat generation and propagation in a three and four multilayered system such as: liquid-metallic film-glass-air system or liquid-metallic-air system, using combined finite difference method; to determine thermal diffusivity and thermal conductivity of biodiesel fuels obtained from vegetable oils such as palm oil and coconut oil; and to investigate the impact on the thermal properties of biodiesel by blending it with a controlled percentage of conventional diesel fuel. All of the objectives were successfully achieved except for the latter. For technology transfer, the focused was on results of the thermal properties of the biofuel and biofuel blends.
Awards/Certificates	Pameran Reka Cipta, Penyelidikan dan Inovasi (PRPI) UPM 2007: 1 Silver Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Electrochemical Studies of Cuprate and Magnesium Diboride Superconducting Materials
Project Number	03-01-04-SF0463
Project Leader and Team Members	Leader: Tan Wee Tee Members: Zulkarnain Zainal and Imad (Moh'd Khair) Rashid
Field of Research	Material Sciences
Project Summary	The objectives of the project were to synthesise the cuprate superconducting materials prepared via solid state reaction and co-precipitation; to characterise and compare the electrochemical properties of the cuprate superconducting materials prepared by the methods above in various electrolytes using the solid phase voltammetry of microparticles; to obtain and assess the redox properties, electrochemical reactivity and electrode mechanism which take place at the electrode-solid-electrolyte interface; to electrochemically characterise the magnesium diboride superconducting materials in various electrolytes using the solid phase voltammetry of microparticles in which the redox properties were obtained through electrochemical reactivity and electrode mechanism that took place at the electrode-solid electrolyte interface.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Tan W.T., Imad R.H. and Erina F. 2007. Electrochemical studies of superconductor, DyBa ₂ Cu ₃ O _{7-d} . <i>Seminar Kimia Industri XII</i> , 28 April 2007, Putrajaya.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Oil Palm Carbon-based Supercapacitors for Energy Storage
Project Number	03-01-04-SF0468
Project Leader and Team Members	Leader: Zulkarnain Zainal Members: S.R.S. Prabakaran, Mohd Zobir Hussein and Anuar Kassim
Field of Research	Material Sciences
Project Summary	<p>The objectives of the project were to identify and characterise the best candidate for high surface area commercial and inhouse synthesised oil palm based activated carbon in terms of their physical properties as supercapacitor or EDLC electrodes; to fabricate and study their electrochemical characteristics; and to fabricate and test the prototypes. The objectives achieved were preparation of oil palm shell carbons and preparation of metal oxides which were successfully completed. The metal oxide-carbon electrodes (NiCo oxides and Mn doped NiCo oxides) had been fabricated and their electrochemical characteristics were studied. NiCo-carbon and NiMnCo-carbon EDLCs were fabricated and their efficiency tested. Further studies on the combination of metal oxides with oil palm carbon are currently under way. As for technology transfer, further studies and analysis need to be carried out, especially on using the oil palm carbon and finding better alternatives of metal oxides before up scaling and Commercialisation.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Preparation of High Efficient OLED from Metal Chalcogenides and Polythiophene Derivatives for Display Applications
Project Number	03-01-04-SF0469
Project Leader and Team Members	Leader: Zulkarnain Zainal Members: Swaminatha Viswanathan, Mohd Zobir Hussein and Anuar Kassim
Field of Research	Material sciences
Project Summary	The objectives of the project were to prepare a metal chalcogenides thin films using an ultrasonically coupled electrochemical approach; to identify a high efficient organic transport conductor from polythiophene derivatives; to fabricate and study the characteristics of hybrid thin films of metal chalcogenides and organic conductor as OLED; and to study the performance of the OLED hybrid films. The objectives were all successfully achieved where metal chalcogenide thin films (CdS, CdSe) have been successfully synthesised by electrochemical techniques such as potentiostatic electrodeposition, cyclic voltammetric deposition and pulse electrodeposition. The films were characterised, and work on Zn chalcogenides are currently ongoing. Poly (3-hexylthiophene) was synthesised via electrochemical deposition and characterised. Hybrid films of metal chalcogenides–polythiophene (CdS-polythiophene) were prepared.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Development of a Multiple-Input Single-Output Space-Time-Frequency Coded-Ofdm Modem For Broadband Communications
Project Number	03-01-04-SF0487
Project Leader and Team Members	Leader: Nor Kamariah Noordin Members: Sabira Khatun and Borhanuddin Mohd Ali
Field of Research	Engineering Sciences
Project Summary	This project has successfully designed and developed a new space-time-frequency (STF)-COFDM coding technique and prototype of a four transmit-one receive (4x1) STF-OFDM modem.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Chong J. H., Khatun S., Ali B. M., Noordin N. K. and Syed M. J. 2008. A Performance Analysis of Optimal Detection Ordering Zero-Forcing V-BLAST with Maximum a Posteriori Probability Orthogonal Frequency Division Multiplexing. <i>IASTED (AsiaCSN)</i> , 2-4 Apr. 2008, Langkawi, Kedah.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Simulation of Fatigue Crack Propagation of 2024-T351 Aluminium Aircraft Friction Stir Welded Joints
Project Number	03-01-04-SF0499
Project Leader and Team Members	Leader: Aidy Ali Members: Barkawi Sahari and Ahmad Kamal Ariffin Mohd
Field of Research	Material Sciences
Project Summary	The objectives of the project were to predict the fatigue crack growth in FSW joints by using the finite element method (FEM); and to develop a fatigue crack propagation model for fatigue life prediction. Both objectives were successfully achieved. Technology transfer a copyrighted of crack Simulation Software was developed.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. A. F. Golestaneh, Aidy Ali, S. V. Wong, F. Mustapha. M. Zadeh. 2009. Computational investigations of crack behavior in FSW. Simulation: <i>Transactions of the Society for Modeling and Simulation International</i> 85 (1): 45-59 (Thomsom ISI). 2. A. F. Golestaneh, Aidy Ali, W. S. V. Wong, F. Mustapha, M. Z. Mohammadi. 2008. Simulation of fatigue crack growth in friction stir welded joints in 2024-T351 al alloy. <i>Suranaree Journal of Science and Technology</i> 15 (4) :271-286. 3. A. F. Golestaneh ,Aidy Ali, M. Z. Mohammadi. 2009. Modeling the fatigue crack growth in friction stir welded joint of 2024-T351 al alloy Materials and Design 30: 2928-2937. <i>Impact Factor:</i> 1.107 (Thomson ISI). 4. A. F. Golestaneh ,Aidy Ali. 2009. Application of numerical method to investigation of fatigue crack behavior through the friction stir welding. <i>Journal of Failure Analysis and Prevention, ASM International</i> 9 (2): 147-158. Springer (Scopus) 5. M. Zadeh, Aidy Ali, A. F. Golestaneh and B. B. Sahari. 2009. Three dimensional simulation of fatigue crack growth in friction stir welded joints of 2024-T351 al alloy. <i>Journal of scientific and industrial research</i> 68 (9): 775-782. <i>Impact Factor:</i> 0.47 (Thomson ISI)



	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Aidy Ali, Yunin Hassan Mhd. and Nuraini Abdul Aziz. 2007. Designing a fatigue of 2324-T351 aluminum alloy of friction stir welding test specimen geometry using FEM. <i>Conference on applications and design in mechanical engineering (CADME)</i>, 25-26 Oct. 2007, Universiti Malaysia Perlis, Kangar, Perlis.
Awards/Certificates	<ol style="list-style-type: none"> 1. PRPI Research and Innovation Exhibition, UPM 2008: 1 Gold Medal 2. PRPI Research and Innovation Exhibition, UPM 2008: 1 Silver Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Low Loss Micromachined Microwave Transmission Line and Filters for RF Mems Application
Project Number	03-01-04-SF0501
Project Leader and Team Members	Leader: Alyani Ismail Members: Borhanuddin Mohd Ali, Mohd Adzir Mahdi and Raja Syamsul Azmir Raja Abdullah
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were the study of materials and new device structures in order to produce very low loss microwave devices, specifically transmission line and filters, utilizing a process called micromachining. The applications of the devices will be extended to consider the possibilities for RF MEMS turnable filters, where mechanical movements are concerned. The aspect of miniaturisation of the components will also be taken into consideration in the design. The project aims to produce solid low loss micromachined transmission line and filter prototypes based on the study of suitable microwave materials and device structures. Therefore, the aims and objectives of the project can be summarised as to design new types of low loss microwave transmission line and filter structures that suit the microsystems technology available using micromachining; and to develop a laboratory prototype of the new transmission lines and filters.</p>
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Ismail A., Raja Abdullah R.S.A and Wan Darman W.N.I. 2007 .“Design Of a 93 GHz Integrated Rectangular Waveguide Chebychev Filter Su-8 Micromachining”, <i>World Engineering Congress-ICT Conference</i>, 5-9 August 2007, Penang. 2. Mohammad Shahrazel Razalli, Alyani Ismail, Mohd Adzir Mahdi, Wan Darman W.N.I and Mohd Nizar Hamidon. 2007. “Compact Configuration Ultra-Wideband Microwave Filter Using Quarter-Wave Length Short Circuited Stub”, <i>Asia Pacific Microwave Conference</i> 2007, 11-14 Dec. 2007, Bangkok, Thailand. 3. Razalli M. S., Ismail A., Mahdi M. A., and Hamidon M. N. 2008. Novel Compact Microstrip Ultra-Wideband Filter Utilizing Short-Circuited Stubs with Less Vias, <i>Progress In Electromagnetics Research (PIER)</i> 88: 91-104.

	<ol style="list-style-type: none"> Adam H., Ismail A., Mahdi M.A., Razalli M.S., Alhawari. A., and Esfeh B.K. 2009. "X-Band Miniaturized Wideband Bandpass Filter Utilizing Multilayered Microstrip Hairpin resonator", <i>Progress In Electromagnetics Research 88 (PIER)</i> 93: 177-188. AlHawari A. R. H., Ismail A., Rasid M.F.A., Abdullah R.S.A.R., Esfeh B.K. and Adam H. 2009. "Compact microstrip bandpass filter with sharp passband skirts using square spiral resonators and embedded resonators", <i>Journal of Electromagnetic Waves and Application (JEMWA)</i>, 23: 675-683.
Awards/Certificates	<ol style="list-style-type: none"> International Exhibition of Ideas-Inventions-New Products (IENA) 2008, Nuremburg, Germany for "Compact Butterfly-shaped UWB Microwave Filter": 1 Bronze Medal. Malaysia Technology Expo (MTE) 2008, Kuala Lumpur for "Compact 'Butterfly' Ultra-Wideband Microwave Filter": 1 Bronze Medal. Science, Technology and Engineering: Product and Innovation Cluster at the Invention, Research and Innovation Exhibition (PRPI), for Compact 'Butterfly' Microwave Ultra-Wideband Filter". 1 Silver Medal.
IP Status	Malaysian Patent filed (PI 20084945) (Ultra-Wide Bandpass Filter)
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Moldable and Non-extruding Polyurethane Roofing Materials Using Palm Oil Based Eutectic Phase Change Materials as Thermal Energy Storage
Project Number	03-01-04-SF0504
Project Leader and Team Members	Leader: Chuah Teong Guan@Luqman Chuah Abdullah Members: Fakhru'l-Razi Ahmadun, Thomas Choong Shean Yaw and Robiah Yunus
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop and design a moldable and non-extruding polyurethane (PU) roof panels with impregnated palm based fatty acids which will function as a phase change materials (PCMs); to identify the optimum ratio and thermal characteristics of eutactic mixture of fatty acids to be used as PCMs in order to provide optimum energy storage; to construct a pilot test rig for the PU panels and to examine the heat storage and heat transfer between mediums; and to model and to simulate the heat transfer mechanisms of the thermal energy storage (PU panel and PCMs) in order to provide knowledge for PU panel design in building material applications. It is expected at the end of this project that a moldable PCM impregnated PU roof (building material), which functions as an energy storage medium (help in reducing energy consumption in building) will be tested and developed.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Low Pressure Compression Moulding Method for Multi-layered Heat Insulator Laminated Hybrid Biocomposite
Project Number	03-01-04-SF0506
Project Leader and Team Members	Leader: Khalina Abdan Members: Mohd Faizal Abdul Rahman, Jalaluddin Harun and Jamaliah Sharif
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design and develop a mechanical low pressure compression moulding method for a multilayered laminated hybrid biocomposite; to study the effect of layered fibres on the mechanical strength, physical stability, morphology and heat resistance of the laminated hybrid biocomposite; to investigate the nanoclay loading on the polymer/nanoclay as a biocomposite matrix and the flow behaviour effect on the laminated hybrid biocomposite arrangement; to study the orientation of kenaf fibres on the multi-layered laminated hybrid biocomposite and investigate its effect on heat resistance performance; and to determine the machine performance and machine efficiency of low pressure compression moulding method.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Bernard M., Khalina A., Aidy Ali, Janius R., Faizal M., Hasnah K. S. and Sanuddin A.B. 2011. The effect of processing parameters on the mechanical properties of kenaf fiber plastic composite. <i>Materials and Design</i> 32(2):1039-1043. 2. Hasnah K. S., Khalina A., Aidy Ali and Jamaliah S. 2011. The Effect of Eva on Composite that Made of PP Nanoclay Key. <i>Engineering Material</i> 925: 462-463. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Bernard Maringgal, Khalina Abdan, Mohd Faizal Abdul Rahman and Siti Hasnah Kamaruddin. 2009. Effect of Processing Parameters on Mechanical Properties of Kenaf Fiber Plastic Composites. <i>International Advanced of Technology Congress (ATCi)</i>, 3-5 Nov. 2009, PWTC, Kuala Lumpur. 2. Siti Hasnah Kamarudin, Khalina Abdan, Bernard Maringgal, Jamaliah Sharif and Wan Md. Zin Wan Yunus. 2009. Biocomposites from Polypropylene/clay/EVA polymers and Kenaf Natural Fiber. <i>International Advanced of Technology Congress (ATCi)</i>, 3-5 Nov. 2009, PWTC, Kuala Lumpur.

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

	<ol style="list-style-type: none"> Bernard M. Khalina A., Rimfiel J. and Jamarie O. 2008. Application of Low Pressure Compression Moulding Machine: Effect of Laminating Methods on Strength Properties. <i>2nd Penang International Conference for Young Chemist</i>, 18th – 20th June 2008, USM, Penang. Siti Hasnah K., Khalina A., Jamaliah M.S. and Wan Zin W.Y. 2008. Study on Mechanical and Morphology Properties of Heat Insulator Laminated Hybrid Biocomposite. <i>2nd Penang International Conference for Young Chemist</i>, 18th – 20th June 2008, USM, Penang. Siti Hasnah K., Khalina .A and Jamaliah S. 2007. Effect of Ethylene vinyl acetate on PP/clay composite. <i>12th Asian Chemical Congress (12ACC)</i>, 23rd – 25th Aug 2007, Kuala Lumpur. <p>Others:</p> <ol style="list-style-type: none"> Bernard Maringgal, 2010. Ms in Biomechanical. Design and Development of Low Pressure Compression Moulding for Multi-Layered Heat, Faculty of Engineering UPM. Siti Hasnah Kamarudin, 2011. Ms in Biocomposite Technology. Development of Polymer/ Nanoclay Laminate Hybrid Bicomposite, Institute of Forestry and Forest Products.
Awards/Certificates	UPM Research Exhibition: 2 Bronze Medals
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of an Integrated CAD and Failure Mode and Effects Analysis System for Mechanical Components
Project Number	03-01-04-SF0515
Project Leader and Team Members	Leader: Napsiah Ismail Members: Mohd Sapuan Salit and Wong Shaw Voon
Field of Research	Engineering Sciences
Project Summary	The objective of the project was to develop an integrated CAD and FMEA system for mechanical components. The objective was successfully achieved by completion of integrated CAD data and implementation of FMEA system, enabling identification of potential errors and preventing the failure of mechanical components.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Cher Dong Theng, Ismail N., Wong Shaw Voon and Wan Abdul Rahman. 2007. Knowledge-Based System for Mechanical CAD Design. <i>2nd National Intelligent Systems and Information Technology Symposium</i> , 30-31 Oct. 2007, ITMA, UPM, Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Detoxification of Water and Removal of Pollutants in Hazardous Effluent by Oscillatory Flow Mixing
Project Number	03-01-04-SF0529
Project Leader and Team Members	Leader: Tinia Idaty Mohd. Ghazi Members: Azni Idris and Aidy Ali
Field of Research	Engineering sciences
Project Summary	The objectives of the project were to investigate the performance between the Oscillatory Flow Photochemical Reactor (OFPR) and a conventional photoreactor (stirred/plug flow photoreactor); to evaluate the effectiveness of a photochemical treatment in treating hazardous effluent using a novel oscillatory flow mixing (OFM) technology and immobilized photocatalysts; and to identify and validate the use of Oscillatory Flow Photochemical Reactor (OFPR) for heterogeneous photocatalytic system in wastewater treatment. A series of data collection were obtained for comparison study between the OFPR and lab-scale photoreactor. The photochemical treatment using OFM technology and immobilised photocatalysts has effectively treated hazardous effluent, with treatment rates of up to 80%. The experimentation with the OFPR is currently being carried out for further investigation. OFPR is found to be feasible and viable for wastewater treatment, particularly when heterogeneous photocatalytic system is concerned.
Publications/Products/Outcomes	Publication: 1. Tinia Idaty Mohd. Ghazi, E. Soon How, Aidy Ali and S. M. Sapuan. 2008. Wastewater Treatment Using Photochemical Oxidation. <i>International Journal of Chemical Sciences</i> 6 (3):1241-1265, (Chemical Abstract).
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Gasification of Agro-Waste to Produce Bio-Fuel
Project Number	03-01-04-SF0530
Project Leader and Team Members	Leader: Wan Azlina Wan Ab. Karim Ghani Members: Rozita Omar, Salmiaton Ali and Azni Idris
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to study the characteristics (properties) of gasification products for end-user applications; to design an innovative gasifier for agro-waste to produce bio-fuel; to perform the gasification testing of agro-waste samples; and to evaluate the suitability of bio-fuel. The objectives were successfully achieved through raw material characterization where 7 agrowaste samples (palm kernel shell, coconut shell, rice husk, bagasse, durian waste) were characterized physically and chemically. These samples show their unique properties prior to the gasification test. However, only 4 samples (palm kernel shell, coconut shell, rice husk and bagasse) were tested. The designed gasifier successfully gasified the agrowaste samples. However, some minor modifications were needed to further investigate the feeding and heating system. As for gasification testing - four agrowaste samples were tested and the effect of operating parameters such as temperature, equivalence ratio, fuel type and fluidising velocity on the gasification performance have been investigated. The studies showed that this process is temperature dependence. Product characterization - gasification products (hydrogen, biochar and bio-oil) have been collected and analysed. The gasification performance is quite successful (about 70-80%) with significant yield in gas, biochar and bio-oil. Biochar and bio-oil produce were determined to be suitable for soil application and low-grade liquid fuel application. Furthermore, this process also produces heat which can be converted into power or electricity for insitu application.</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohd Syafik Firdaus, Wan Azlina, Kamirul Amin Matori. 2008. Characterization of incinerated biomass ashes as potential recycling application, <i>22nd Regional Symposium of Chemical Engineerings – Symposium of Malaysian Chemical Engineers, RSCE-SOMCHE</i> 2008, 2nd–3rd March 2008, Impiana Hotel, Kuala Lumpur.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Evaluation of Organizational Capabilities for New Technology Implementation in Small and Medium Scale Manufacturing Enterprises
Project Number	03-01-04-SF0534
Project Leader and Team Members	Leader: Rosnah Mohd Yusuff Members: Norzima Zulkifli and Megat Mohamad Hamdan
Field of Research	Engineering Sciences
Project Summary	The objective of the project was to develop an assessment tool to help the SMEs evaluate their AMT implementation. The specific objectives were to identify the technologies required by SMEs to be implemented in their companies; to identify the gaps between technological requirements and organisational capabilities of the SMEs; and to establish the relationship between technology, organisation and the performance of the SMEs. The objectives achieved were development of a web-based assessment tool that fulfill the requirements. However, the server to locate the system has not been identified. In terms of technology transfer, a copyright application of the system tool is in progress. The system tool, once copyrighted, has the potential for Commercialisation .
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Renewable Energy Production from Agro-Industry Biomass Using Microwave Technology
Project Number	03-01-04-SF0538
Project Leader and Team Members	Leader: Rozita Omar Members: Azni Idris, Wan Azlina Wan Ab. Karim and Kaida Khalid
Field of Research	Engineering Sciences
Project Summary	The project was carried out to study the renewable energy production using application of industrial microwave oven as a pyrolyzer for EFB drying and pyrolysis. The characteristics of EFB and its suitability as fuel was determined. Apart from that, the characteristics of pyrolysis products and their suitability as fuel substitutes and chemical products was evaluated.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Omar R., Idris I., Khalid K. and Yunus R. 2007. Characterization Of Empty Fruit Bunch (EFB) As Biofuel. <i>World Engineering Congress</i> , 5-8 Aug. 2007, Pulau Pinang.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) 43400 UPM Serdang, Selangor. Office: 03-8946 6290 H/p: 012-520 9077 rozita@eng.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Susceptor Packaging Material for Differential Heating in Microwave with Special Application for Microwave Reheating of Frozen Foods
Project Number	03-01-04-SF0540
Project Leader and Team Members	Leader: Russly Abd Rahman Members: Yus Aniza Yusof, Nor Amaiza Mohd Amin, Chin Nyuk Ling and Coskan Ilicali
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to investigate the suitability of combining several materials for susceptor packaging; to design a container for susceptor packaging material for frozen food applications; and to evaluate the performance of the container for microwave heating/thawing of frozen foods. The first two objectives were fully achieved. However, objective 3 was only partially achieved. The proposed technology transfer may be in two forms/stages; During construction of the susceptor material; and during design and construction of food packaging containers with different compartments housing different food with different heating requirements.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Nor Mazlana M., Russly A.R. and Coscan I. 2007. Susceptor Packaging Material for Baking Flaky Pastry Dough (Puff Pastry) in Microwave Oven. <i>3rd World Engineering Congress-Food and Chemical Engineering Conference</i> , 5- 9 August 2007, Penang. 2. Nor Mazlana M., Russly A. R. and Coscan I. 2007. Development of Susceptor Packaging for Browning and Crisping Puff in Microwave Baking Application. <i>10th ASEAN Food Conference</i> , 21-23 August 2007, Kuala Lumpur.
Awards/Certificates	Pameran Reka Cipta Penyelidikan dan Inovasi (PRPI) 2007: 1 Gold Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Novel Pyrolysis Technology in Recovering Renewable Fuel and Precious Metal from E-Waste
Project Number	03-01-04-SF0544
Project Leader and Team Members	Leader: Salmiaton Ali Members: Faizah Md Yasin, Mohamad Amran Mohd, Wan Azlina Wan Ab. Karim and Aznibin Idris
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The general objective of the project was to overcome the serious problem of e-waste disposal and to develop a new technology that can be applied in e-waste management problems in Malaysia. The specific objectives of the project were to characterise the e-waste properties before experimental studies can be done and proposed; to investigate the optimal operating parameters in e-waste pyrolysis such as operating temperature, particle sizes, volume of the e-waste, and the catalyst required to aid the pyrolysis; and to characterise and analyse the quality and the quantity of the renewable fuel recovered as well as metal recovery from the e-waste pyrolysis technology. The objectives were successfully achieved whereby the characterisation of e-waste was performed. In this research, e-waste can be any kind of obsolete electronic equipment, printed circuit boards (PCB) from television and personal computers. Both PCBs were characterised to determine their properties in terms of proximate analysis (moisture content, volatile matter, fixed carbon and ash) and inorganic analysis (metal content). On the other hand, metal recovery from both PCB (TV and PC) was also performed. The digestion process using aquaregia was conducted prior to the recovery process. Then, the electrolysis process using various types of electrodes was conducted to recover various types of metal from the digestion solution. The nucleation growth of metal on the electrodes was also investigated.</p>
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. A. Salmiaton, M. Khalid, M. S. Abdul Rashid. 2008. Characterization of Integrated Circuit (IC) board. <i>Proceedings in Symposium of Chemical Engineers Malaysia</i> 2nd – 3rd Dec. 2008, UKM, Selangor.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Development of Experimental and Numerical Simulation Models of Motorcycle Crashes
Project Number	03-01-04-SF0549
Project Leader and Team Members	Leader: Wong Shaw Voon Members: Abdel Magid Salem Hamouda, Megat Mohamad Hamdan and Radin Umar Radin Soha
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to develop a standard model for computer simulation (Finite Element Simulation) on crashes of Modenas Kriss Motorcycle; to design and conduct experimental simulation on crash of Modenas Kriss Motorcycle; and to develop a standard methodology in obtaining numerical and experimental models to simulate real crashes on motorcycle. The objectives were successfully achieved through establishment of motorcycle modelling, where geometrical data could be digitised in a systematic approach. A newly proposed method in determining the CG of a motorcycle and major components has been designed and developed. The modelling requirements have been identified, including geometrical requirement, material properties and connecting means, and Contact requirements in FE simulation. Dynamic responses of critical components have been validated with experimental results and the experimental simulations have been developed and conducted. Validations have been conducted with reference to full scale crash test conducted by UPM earlier as well as the recent crash test by MIROS.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none">1. Tan C.L., Lim Y.T., Tan K.S. and Wong S.V. 2008. Experimental Analysis on Static and Impact Response of Motorcycle Front Fork. <i>International Crashworthiness Conference (ICRASH)</i>, 22–25 July 2008, Kyoto Institute of Technology, Japan.2. Tan K.S., Wing K.D. and Wong S.V. 2008. SEM Fractographic Analysis Of Fractured Motorcycle Wheel Hub. <i>International Crashworthiness Conference (ICRASH)</i>, 22–25 July 2008, Kyoto Institute of Technology, Japan.



	<p>3. Tan C.L., Lim Y.T. and Wong S.V. 2008. Experimental Analysis on Lower Clamp Bolt of Motorcycle Front Fork During Frontal Impact. The XXII International Congress of Theoretical and Applied Mechanics (ICTAM), 24–29 Aug. 2008, Adelaide Convention Centre, Australia.</p>
<p>Contact Institution/Entity Address Phone Number e-Mail</p>	<p>Universiti Putra Malaysia (UPM) 43400 UPM Serdang, Selangor. Office: 03-8946 6339 H/p: 012-261 4780 wongsv@eng.upm.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Ion Dynamics and Transport in Chalcogenide Ge-Se-Ag Glass System
Project Number	03-01-04-SF0551
Project Leader and Team Members	Leader: Sidek Abd Aziz Member: Halimah Mohamed Kamari
Field of Research	Physical Sciences
Project Summary	The objectives of the project were to synthesize Ge-Se-Ag glasses via vacuum sealed melt quenching method; to evaluate the correlation between Intermediate range order characterisation and physical properties of Ge-Se-Ag glassy materials; and to study the Ge-Se-Ag glasses model by using the ab-initio simulation and glass forming regions of fundamental ion motion in glasses under broad ranges of frequency and temperature.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Improved Sago Flour Processing Efficiency through Grinding Processes
Project Number	03-01-04-SF0554
Project Leader and Team Members	Leader: Siti Mazlina Mustapa Kamal Members: Salmiaton Ali, Faizah Md Yasin and Fakhru'l-Razi Ahmadun
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to study the characteristics of the particle size distribution of different species of sago using different types of grinders; to characterise the particle size distribution data and ash content of sago flour with conventional method; and to design and evaluate a new grinding process for production of high quality sago flour. All of the objectives were achieved except for the first objective in which only one species of sago was characterised. As for technology transfer, a new process strategy was obtained and can be applied to the sago processing plant. A new machine of producing sago starch was designed and fabricated and it can be used for a sago processing plant. This machine combines the grinding and extraction process; reducing the processing step, which means reduction in time and unit operation. This machine also has the potential for Commercialisation.
Publications/Products/Outcomes	Publications: 1. Siti Mazlina Mustapa Kamal, Siti Nor Fadhilah Mahmud, Siti Aslina Hussain and Fakhru'l Razi Ahmadun. 2007. Improvement on Sago Flour Processing. <i>International of Engineering and Technology</i> 4(1):8-14.
Awards/Certificates	Malaysia Technology Expo (MTE) 2010: 1 Silver medal
IP Status	Malaysia Patent filed (PI PI20091054) (A Plant Starch/Oil Extracting Machine)
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Development of a Prototype Variable Frequency Ohmic Heating Unit for Beverages
Project Number	03-01-04-SF0566
Project Leader and Team Members	Leader: Norman Mariun Members: Hishamuddin Jamaludin and Hashim Hizam
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design and develop a new test cell for ohmic heating; to design and test a prototype ohmic heating unit; to study the performance of a test cell on different kinds of liquid food; to design and develop a new control unit for monitoring temperature, voltage and current with respect to time in a power electronics power converter; and to interface the pump with other necessary accessories for the whole system. All of the objectives have been successfully achieved but further refinement is needed for Commercialisation purpose. In terms of technology transfer, this product participated at university, national and international level exhibitions. Patent has also been filed - PI 2008 4842 An Ohmic Heating System for Pasteurising Fluid Medium.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Jamaludin N.F., Jamaludin H., Mariun N. and Hizam H. 2010. Energy Conservation in the Food Industry. <i>3rd International Engineering Convention</i>, 11-14 May 2009, Damascus, Syria. 2. Toudeshki A., Mariun N., Bashi S.M., Hizam H., and Jamaludin H. 2010. Reducing Electromagnetic Interference in Non Isolated DC to DC Step-down Converter. <i>APSAEM</i>, 28-31 July 2010, Kuala Lumpur.
Awards/Certificates	<ol style="list-style-type: none"> 1. Pameran Reka Cipta Penyelidikan & Inovasi PRPI 2007 UPM: 1 Silver Medal 2. Ideas, Inventions and Innovations Trade Fair (IENA) Nuremberg, Germany 2008: 1 Gold Medal
IP Status	Malaysia Patent filed (PI20084842) (An Ohmic Heating System for Pasteurising Fluid Medium)
Additional Information	Commercialisation: Under MOHE-MTDC-UPM Symbiosis
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Production of Biodiesel and Biolubricant Oil by Oscillatory Flow Mixing
Project Number	03-01-04-SF0570
Project Leader and Team Members	Leader: Tinia Idaty Mohd. Ghazi Members: Azni Idris and Robiah Yunus
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to analyse the potential of plant oil as an alternative base stock in environmentally acceptable liquid diesel and lubricant formulation; to analyse the properties of plant oil-based lubricants and to compare its characteristics with the mineral and synthetic based lubricants as well as other biodegradable lubricants; to carry out upscaling studies of laboratory level processing methods that are critical for the industrial level production of plant oil based biodiesel and biolubricants; and to evaluate and optimise the performance of Oscillatory Flow Biodiesel Reactor (OFBR) compared with a stirred tank biodiesel reactor. The objectives were successfully achieved. Jatropha was identified as the potential plant oil that can be used as an alternative basestock for biodiesel and lubricant formulation. A series of analyses were successfully conducted and data were obtained. The data for the property analyses and comparison were made between the mineral and synthetic based lubricants which showed promising values for possible machinery application and Commercialisation. Furthermore, data optimisation was also achieved for lab-scale production and this would be beneficial for upscaling studies. Jatropha biolubricant was successfully produced in the lab-scale and the quality of product was consistently obtained. An innovative large-scale OFBR has been commissioned for further upscaling studies in addition to enabling production of larger quantities of plant based lubricant. The novelty of this OFBR is that it is operable for biodiesel production as well, making it a dual-purpose reactor.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. May Ying Koh and Tinia Idaty Mohd Ghazi. 2011. A review of biodiesel production from Jatropha curcas L. oil. <i>Renewable and Sustainable Energy Reviews</i> 15: 2240-2251. 2. Muhammad Faiz M Gunam Resul, Tinia Idaty Mohd Ghazi and Azni Idris. 2011. Temperature dependence on

	<p>the synthesis of jatropha biolubricant, <i>Conf. Ser.: Mater. Sci. Eng.</i> 17 (1): 012032.</p> <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Tinia Idaty Mohd. Ghazi, Mohamad Faiz Mukhtar Gunam Resul and Azni Idris. 2010. Production of an Improved Biobased Lubricant from Jatropha curcas as Renewable Source. <i>Proceedings of Third International Symposium on Energy from Biomass and Waste</i>, 8-11 Nov. 2010, Venice, Italy. 2. Azhari Muhammad Syam, Robiah Yunus, Tinia Idaty Mohd. Ghazi and Thomas Choong Shean Yaw. 2010. Alcoholysis of Jatropha curcas Triglycerides using Sodium Methoxide as Catalyst. <i>Proceedings of Conference on Natural Resources and Green Technology, World Engineering Congress</i>, 2-5 Aug. 2010, Kuching, Sarawak. 3. Ferra Naidir, Robiah Yunus, Tinia Idaty Mohd Ghazi and Irmawati Ramli. 2010. Synthesis of Epoxidised Palm Oil-Based Trimethylolpropane Ester by In Situ Epoxidation Method. <i>Proceedings of Conference on Natural Resources and Green Technology, World Engineering Congress</i>, 2-5 Aug. 2010, Kuching, Sarawak.
Awards/Certificates	<ol style="list-style-type: none"> 1. Pameran Rekacipta, Penyelidikan dan Inovasi (PRPI) 2008: 1 Gold Medal 2. Pameran Rekacipta, Penyelidikan dan Inovasi (PRPI) 2008: Special Award:IENA Award.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Bio Mastic Fatigue Resistant Asphalt for Road Mixtures
Project Number	03-01-04-SF0580
Project Leader and Team Members	Leader: Ratnasamy Muniandy Members: Robiah Yunus, Salihudin Hassim and Fauzan Mohd. Jakarni
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to characterise the fibres; to design various mixes; and to analyse bimatsic asphalt inters of DSR and mixed performance.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Development of Free Space Reflector for Optical Communications
Project Number	03-01-04-SF0589
Project Leader and Team Members	Leader: Salasiah Hitam Members: Mohd Adzir Mahdi, Mohamad Khazani Abdul, Marsyita, Wan Azizun Wan Adnan and Makhfudzah Mokhtar
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary	The objective of the project was to develop and implement a laboratory prototype of a reflector. The objective achieved was a mathematical model, detailing the best position to locate the reflector which had been completed. Due to software limitations, the full design of the reflector is not achievable. The software can be used for independent optics component, however, when it comes to the performance analysis from the transmitter to the receiver, another software, namely Optisys, should be used. Using a polariser rotator and bidirectional reflector modifies the IM/DD system and this produces good results on the BER. In terms of technology transfer, the results of this project will be published in journals and conferences, and will also be used as the basis for future research and collaboration in UPM.
Publications/Products/Outcomes	Journals: 1. Salasiah Hitam, Mohd Khazani Abdullah, Wan Azizun Wan Adnan and Ratna Kalos Zakiah Sahbudin, 2009, Stabilization of Decision Threshold for BER Improvement Using Double Carrier Modulation/ Differential Detection for Outdoor Optical Wireless Communications, <i>International Review on Computers and Software (IRECOS)</i> 4(3):301-307. 2. Sahbudin R.K.Z., Abdullah M.K., Hitam S. and Mahdi M.A. 2008. Cost Comparison of the Detection Techniques for Optical Spectrum CDMA System. <i>IJCSNS Journal</i> 8(8):87-90
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Electron Beam Irradiated Thermal Resistance Polyurethane-Clay Nanocomposited Polyol
Project Number	03-01-04-SF0597
Project Leader and Team Members	Leader: Saari Mustapha Members: Khairul Zaman Mohd, Mohd Sapuan Salit and Mohd Zobir Hussein
Field of Research	Material Sciences
Project Summary	The product has been registration filing Palm Oil-Based Polyurethane/clay nanocomposite PT/2848/UPM/09. Also won awards at university, national and international levels.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Post-buckling Analysis of Hybrid Composite Laminated Fuselage Structures
Project Number	03-01-04-SF0637
Project Leader and Team Members	Leader: Rizal Zahari Member: Faizal Mustapha
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to determine numerically the ultimate load, the post-buckling behaviour and to examine the failure modes of fuselage panels subjected to compressive loading and shear loading using a progressive damage methodology; to validate experimentally the damage and the post-buckling behaviour of the fuselage panels; and to develop a design guideline for fuselage stiffened panels made of hybrid composite materials. All the objectives were successfully achieved. Also, it was successful to validate experimentally the damage and the post-buckling behaviour of the flat panels with and without cut-outs.
Publications/Products/ Outcomes	Journal: 1. Zahari R., Azmee A.H., Mustapha F., Salit M.S., Varatharajoo R. and Shakrine A,. 2008. Prediction of Progressive Failure in Woven Glass/Epoxy Composite Laminated Panels. <i>Jurnal Mekanikal</i> 25: 80-91.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Studies on Mo-V-O Based Mixed Oxide Catalysts Synthesised by Reflux Method
Project Number	03-01-04-SF0642
Project Leader and Team Members	Leader: Irmawati Ramli Member: Taufiq Yap Yun Hin
Field of Research	Chemical sciences
Project Summary	The objectives of the project were to synthesise Mo-V-M (M=Te, Nb) oxide catalytic system by reflux method; to characterise the prepared catalysts; and to undertake investigation on the catalytic behaviour of the catalysts for the partial oxidation of propane. The objectives were successfully achieved. As for technology transfer, the data gained were crucial for the development of high selective and active catalyst for propane oxidation to acrylic acid. Catalyst formulation for the propane transformation reaction had been identified. Further study on the optimisation of catalytic process is required.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Tan Yee Wean, Irmawati Ramli and Taufiq-Yap Yun Hin. 2007. Effect of calcination temperature on the physicochemical properties of MoV oxides prepared by reflux method. <i>Malaysian Journal of Analytical Sciences</i> 11(1):139-144. 2. Woi P.M., Irmawati R. and Taufiq-Yap Y.H. 2007. Influence of organic species on the characteristics of MoV oxides. <i>Malaysian Journal of Analytical Sciences</i> 11(1):160-165. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Irmawati R., Meng W.P. and Taufiq-Yap Y.H.. 2007. Characterisation and catalytic studies of MoV oxide catalysts prepared by homogeneous precipitation method. <i>International Symposium on Relations Between Homogeneous and Heterogeneous Catalysis (ISHHC XIII)</i>, 16-20 July 2007, University of California.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Isolation and Characterisation of Tannin from <i>Acacia mangium</i> Tree Bark for Wood Adhesive
Project Number	03-01-04-SF0653
Project Leader and Team Members	Leader: Paridah Md. Tahir Members: Jalaluddin Harun and Edi Suhaimi Bakar
Field of Research	Forestry Sciences
Project Summary	This project has successfully established the optimised method for tannin extraction from <i>Acacia mangium</i> tree bark. The physical properties, chemical properties and polyphenolic content has been determined. The reactivity of <i>Acacia mangium</i> tannin towards formaldehyde for adhesive application was studied. Besides that, strength and bond integrity evaluation of plywood bonded with mangium tannin-based adhesive was also carried out.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Hoong, Y.B., Paridah, M.T., Luqman, C.A. and Koh, M.P. 2008. Sulfite Tannin from the Bark of <i>Acacia mangium</i> for Bio-Based Adhesive. <i>National Conference on Forest Products</i>, 29-31 Oct. 2008, Kuala Lumpur. 2. Hoong, Y.B., Paridah, M.T., Luqman, C.A., Koh, M.P. and Hamami, M.S. 2007. Method of Extracting Tannin from Bark <i>Acacia mangium</i> trees for Bio-based Adhesive. <i>IUFRO All Division 5 Conference 2007 on Forest Product and Environment: A Productive Symbiosis</i>, 29 Oct. - 2 Nov. 2007, Taipei, Taiwan.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Floating Catalyst Carbon Nanotube Synthesis in Fluidised Bed and Characterisations
Project Number	03-01-04-SF0720
Project Leader and Team Members	Leader: Mohamad Amran Mohd Salleh Members: Fakhru'l-Razi Ahmadun and Helmi Zulhaidi
Field of Research	Engineering Sciences
Project Summary	This project has successfully produced a fluidised bed for carbon nanotube synthesis with optimised parameter.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Fakhru'l-Razi, Firoozeh Danafar, Dayang Radiah Awang Biak and Mohd Amran Mohd Salleh. 2009. Fluidized Bed Catalytic Vapor Deposition Synthesis of Carbon Nanotube, <i>Chemical Engineering Journal</i> 155(1-2): 37-48. 2. Fakhru'l-Razi, Firoozeh Danafar, Dayang Radiah Awang Biak and Mohd Amran Mohd Salleh. 2009. An innovative procedures for CNT large scale synthesis by FBCVD Technique, <i>Fullerene, carbon nanostructure and nanotube</i>. 17(6): 652-663. 3. Mohamad Amran Mohd Salleh, Jeefferie Abdul Razak, Fakhru'l-Razi Ahmadun, Suraya Abdul Rashid and Azowa Ibrahim. 2008. The influences of melt-compounding parameters on the tensile properties of low filler loading of untreated-MWCNT-polypropylene (pp) nanocomposites, <i>Journal of Engineering Science and Technology</i> 3 (1): 97-108. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohd Salleh M.A., Jeefferie Abd Razak, Ibrahim N.A., A. Fakhru'l Razi and Suraya A.R. 2008. The Influences of Melt-Compounding Parameters to the Tensile Properties of Low Filler Loading of Untreated-MWCNT-Polypropylene (PP) Nanocomposites. <i>Proceedings of 21st Symposium of Malaysian Chemical Engineers</i>, 11th–13th Dec. 2007, Universiti Putra Malaysia, Serdang, Selangor. 2. Mohd Salleh M.A., Jeefferie Abd Razak, Ibrahim N.A., Fakhru'l Razi A. and Suraya A.R. 2007. Effects of Stearic Acid Addition to the Tensile Properties of Low Filler Loading untreated- MWCNT-polypropylene (PP) Nanocomposites. <i>Proceedings of VIIth National Symposium on Polymeric Materials</i>, 27th – 28th Nov 2007, UniKL, Kuala Lumpur.

	3. Mohamad Amran Mohd Salleh, Jeefferie Abdul Razak, Fakhrul Razi Ahmadun, Suraya Abdul Rashid and Azowa Ibrahim. 2007. Low addition of CNT in PP composite and its properties. <i>World Engineering Congress</i> , 5-9 Aug. 2007, Penang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	A Problem Solution for the Night Cooling in Solar Water Heaters by Using Thermal Stratification
Project Number	03-01-04-SF0730
Project Leader and Team Members	Leader: Megat Mohamad Hamdan Megat Ahmad Members: Aidy Ali and Kamaruzzaman Sopian
Field of Research	Applied Sciences and Technologies
Project Summary	This project was carried out to develop a home-use solar water heating systems with good performance. The solar collector and storage tank was designed as one unit to reduce cost and thermal losses. A stratification upper tank was attached as an integrated upper part of the system to reduce the night losses from the collector. This system will be made locally with simple components and requiring simple technical labour with much cheaper initial and running costs.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of an Efficient Process to Purify the Heat Stable Recombinant Virus Core Particle
Project Number	03-01-04-SF0755
Project Leader and Team Members	Leader: Tey Beng Ti Members: Ling Tau Chuan and Suryani Kamarudin
Field of Research	Biotechnology
Project Summary	<p>Hepatitis B (HB) core particle can be used to develop diagnostic kit for the detection of HB virus infection. Hepatitis B infection is the major health problem in Malaysia and worldwide. Hence, there is a high demand for this antigen. We have successfully produced the HB core particle in stirred tank bioreactor and purified it using ion exchanger chromatography. However, the limitation of ion exchange is the adsorption of HB core particle onto the adsorbent is not specific; hence affecting the quality of the recovered product. Our previous results showed that HB core particle was relatively stable at temperature as high as 60°C compared to the Escherichia coli host protein. Hence, the objectives of the project were to improve the performance of conventional purification methods by incorporating a heat treatment step; to improve the performance of expanded bed chromatography by incorporating a heat treatment step; and to develop an integrated system of purification of heat stable HB virus core particle. All of the objectives were successfully achieved. A heat treatment step has been incorporated into the conventional purification methods, an improvement of 1.4 times in purity and 18% in yield of target protein were achieved. A heat treatment step had been incorporated into the expanded bed chromatography purification methods, an improvement of 42% in purity and 72% in yield of target protein were achieved. An integrated system of purification of heat stable HB virus core particle had been successfully developed, a yield of 45.1% and purity of 88.2% of target protein were achieved.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ho, C.W., Tan, W.S., Ling, T.C. and Tey, B.T. 2008. Comparative Evaluation of Different Disruption Methods for the Release of Recombinant Hepatitis B Core Antigen from E. coli and its Purification. <i>Biotechnology and Bioprocess Engineering</i> 13:577-583.



	<ol style="list-style-type: none"> Ng, M.Y.T., Tan, W.S., Abdullah, N., Ling, T.C. and Tey, B.T. 2008. Effect of Operating and Biomass Concentrations on the Recovery of Recombinant Hepatitis B Core Antigen Thermal-Treated Unclassified <i>Escherichia coli</i> Feedstock. <i>Journal of Biotechnology</i> 138:74-79. Ho, C.W., Tan W.S., Ling T.C. and Tey, B.T. 2009. A fast preparative purification process for recombinant hepatitis B core antigen from <i>Escherichia coli</i> disruptate using expanded bed adsorption and size exclusion chromatography. <i>Journal of Microbiology and Biotechnology</i> 19(4): 416-423. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> Ng, M.Y.T., Tan, W.S. and Tey, B.T. 2008. Heat-Treatment of Unclassified <i>Escherichia coli</i> Homogenate Improves the Performance of Expanded Bed Adsorption. <i>14th Symposium of Young Asian Biochemical Engineers' Community (YABEC)</i>, 29 Nov.–1 Dec. 2008, Tokyo, Japan. Ho, C.W., Tan, W.S., Kamarudin, S., Ling, T.C. and Tey, B.T. 2007. The disruption multiple pass continuous bead milling for the recovery of recombinant hepatitis B core. <i>21st Symposium of Malaysian Chemical Engineers (SOMCHE)</i>, 12th–14th December 2007, Universiti Putra Malaysia, Serdang, Selangor.
IP Status	Malaysia patent filed PI20080736
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Non-laser-based Additive Prototyping System for Powdered Materials
Project Number	03-01-04-SF0765
Project Leader and Team Members	Leader: Tang Sai Hong Members: Mohd Khairol Anuar Mohd, Megat Mohamad Hamdan, Razali Samin and Wong Shaw Voon
Field of Research	Engineering Sciences
Project Summary	The general project objective was to design, develop, validate and optimise a non-laser-based additive prototyping system for powdered materials. Specific objectives were to design and develop the feeding module, positioning module and sintering module for the powdered materials, and integrate the three modules into a complete system and to validate and optimise the complete system. The general objectives were partially achieved since the conceptual design feasibility studies had been conducted.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Efficient Combined Microwave and Ultrasonic Processing System for the Production of Biofuels from Palm Oil, Coconut Oil and Waste Vegetable Oil
Project Number	03-01-04-SF0769
Project Leader and Team Members	Leader: Kaída Khalid Members: Ionel Valeriu Grozescu and Irmawati Ramli
Field of Research	Applied Sciences and Technologies
Project Summary	The present project relates to improved process for preparation of virgin coconut oil (VCO), raw material for high quality coconut biodiesel and coconut cooking oil from coconut milk. This process is based on optimum set-up of time, temperature and power in the microwave irradiation separation system and initial preparation of coconut milk before microwave radiation. It is a chemical free, faster method, easier to operate and high yield of about 200-300ml VCO/kg (coconut milk) and 10-15 coconuts per litre of biodiesel oil. The original project objectives were to speed up the oil and methanol reaction in the production of biodiesel (methyl ester) from palm oil, microwave prepared coconut oil and waste vegetable oil by using combined microwave and ultrasonic process; to speed up the separation of methyl ester and glycerin of these oils by combined microwave and ultrasonic separation process; and to detect separation interface between glycerine and methyl ester for easier separation operation and control.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Khalid Kaída, Nurdin Rudy, Basri Izzatul Hidayah, Che Man Yaakob and Ramli Irmawati. 2008. Processes for producing Virgin Coconut Oil, Coconut Cooking Oil and Raw Material for Coconut Biodiesel, <i>Proceeding in 8th International Conf. on EM wave Interaction with Water and Moist Substances, ISEMA-09</i> , 1st – 5th June 2009, Finland.
Awards/Certificates	PERCIPTA 2009: 1 Silver Medal
IP Status	International Patent filed (PCT/MY2008/000089), PI2010005434
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Manufacturing of Metal Matrix Composite by Squeeze Casting Technology for Automotive Applications
Project Number	03-01-04-SF0774
Project Leader and Team Members	Leader: Shamsuddin Sulaiman Members: Razali Samin and Abdel Magid Salem Hamouda
Field of Research	Applied Sciences and Technologies
Project Summary	Attempt was made to use squeeze casting technology for manufacturing metal matrix composite for automotive applications. This project has successfully designed and fabricated squeeze casting prototype machine. The quality of composites of non-ferrous materials, the process parameters and techniques have been determined and studied.
Publications/Products/ Outcomes	Journal: 1. Sulaiman S., Sayuti M., and Samin R., 2008. Mechanical properties of as-cast quartz particulate reinforce LM6 Alloy matrix composite. <i>Journal of Materials Processing Technology</i> 201 (1-3): 731-73526.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The Development of a Simplified and Cost-effective Technique for Direct Recovery of Lipase from Crude Rice Bran Waste
Project Number	03-01-04-SF0785
Project Leader and Team Members	Leader: Ling Tau Chuan Members: Zanariah Mohd Dom and Tey Beng Ti
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to evaluate the developed adsorbents for the adsorption of lipase; to develop and optimise a cost-effective expanded bed adsorption process for the direct recovery of lipase from the unclarified rice bran; and to compare and evaluate the performance of expanded bed chromatography and the existing conventional method. The objectives were successfully achieved through development of a robust adsorbent for the adsorption of lipase from unclarified microbial feedstock; a simplified and cost-effective recovery technique to purify the lipase from the microbial feedstock; and the procedure developed here also can be used to purify lipase and other valuable enzymes from various source of feedstock.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ooi, C.W., Tey, B.T., Hii, S.L., Ariff, A., Hu, S.W., Lan, C.W.J., Juang, R.S., Mustapa Kamal, S.M. and Ling, T.C. 2009. Direct purification of lipase from Burkholderia Pseudomallei using aqueous two-phase systems. <i>Biotechnology and Bioprocess Engineering</i> 14: 811–818. 2. Ooi, C.W., Tey, B.T., Hii, S.L., Ariff, A., H, S.W., Lan, C.W.J., Mustapa Kamal, S.M. and Ling, T.C. 2009. Purification of lipase from Burkholderia Pseudomallei with organic solvent/salt based aqueous two-phase systems. <i>Process Biochemistry</i>. 44:1083–1087. 3. Yong, H. S., Tey, B.T., Hii, S. L., Mustapa Kamal, S.M., Ariff, A. and Ling, T.C. 2010. Application of a high density adsorbent in expanded bed adsorption of lipase from Burkholderia pseudomallei. <i>African Journal of Biotechnology</i> 9: 203 – 216. 4. Ooi, C. W., Hii ,S. L., Mustapa Kamal, S. M., Ariff ,A. and Ling, T.C. 2011. Extractive fermentation using aqueous two-phase systems for integrated production and purification of extracellular lipase derived from <i>Burkholderia pseudomallei</i>. <i>Process Biochemistry</i> 46:68–73.

IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent filed (PI 20095683) (Lipase Production and purification) 2. Malaysia Patent filed (PI 2010005132) (<i>Purification of Burkholderia Pseudomallei's</i> lipase with aqueous micellar two-phase system)
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Miniaturization of Driver Module of Electronic Control Unit (ECU) for Compressed Natural Gas Direct Injection (CNGDI) vehicle
Project Number	03-01-04-SF0793
Project Leader and Team Members	Leader: Izhal Abdul Halin Members: Roslina Mohd Sidek and Ishak Aris
Field of Research	Applied Sciences and Technologies
Project Summary	The objective of the project was to design via computer simulation the input and output Driver Module for the Electronic Control Unit (ECU) for the Compressed Natural Gas Direct Injection (CNGDI) vehicle. The objective was successfully achieved where the Analog to Digital Converter (ADC) which had low flicker noise used as the primary circuitry in the Input DM was designed via computer simulation. The Digital to Analog Converter (DAC) which had low power consumption using transistor threshold switching used as the primary circuitry in the Output DM was also designed via computer simulation.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Production of Biodegradable Nanoparticles by Rapid Expansion Supercritical CO ₂ Solution (RESS) and Its Control Released Delivery
Project Number	03-01-04-SF0794
Project Leader and Team Members	Leader: Norhafizah Abdullah Members: Rozita Rosli and Robiah Yunus
Field of Research	Biotechnology
Project Summary	The objectives of the project were the optimisation of RESS processes for the production of nanoparticles; to investigate the invitro release profile of linamarin from biodegradable PLGA polymer carrier; and to analyse the biodegradability mechanism of PLGA polymer. The first and third objectives were fully achieved. The second objective was achieved with a small modification in the selection of drug, in which linamarin was not chosen due to inavailability of the drug for the SAS rig to be conducted. Linamarin was replaced with similar hydrophilic drug (acetaminophen).
Publications/Products/ Outcomes	Journal: 1. Chong, Yunus, Abdullah, Choong and Spotar. 2009. Coating and Encapsulation of Nanoparticles using supercritical antisolvent. <i>American Journal of Applied Science</i> 6(7):1352- 1358.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Whiskerisation Treatment of Carbon Fibres with Carbon Nanotube Whiskers for Improving the Strength of Carbon Fibre Reinforced Composites
Project Number	03-01-04-SF0795
Project Leader and Team Members	Leader: Suraya Abdul Rashid Members: Mohamad Amran Mohd and Fakhru'l-Razi Ahmadun
Field of Research	Material Sciences
Project Summary	<p>The objectives of the project were to design a whiskerisation reactor suitable for growing CNT whiskers onto carbon fibre strands; to characterise the structure of CNT whiskers obtained from various treatment operating conditions (reaction temperature, type of reactant gas and flow rates); and to study the mechanical properties of whiskerised CFRC. The objectives were successfully achieved. A whiskerisation reactor suitable for growing CNT whiskers onto carbon fibre strands was successfully designed. The structure of CNT whiskers obtained from various treatment operating conditions (reaction temperature, type of reactant gas and flow rates) were characterised. The mechanical properties of whiskerised CFRC was studied. In terms of technology transfer, this project has potential for future Commercialisation once the process can be made continuous. As it is a batch process research is currently being carried out to develop optimised continuous process as well as studying the coating of carbon nanotubes on other types of fibres.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis of Biodegradable Epichlorohydrin from Glycerol (Biodiesel Byproduct)
Project Number	03-01-04-SF0805
Project Leader and Team Members	Leader: Robiah Yunus Members: Zurina Zainal Abidin, Intan salwani Ahamad, Dzulkefly and Kuang Abdullah
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to investigate the effect of initial molar ratio, temperature, reaction time and amount of catalyst in the synthesis of epichlorohydrin with hydrochloric acid; to optimize the operating conditions; to determine the kinetic parameters such as reaction rate constant (k) and order of reaction; and to develop and verify kinetic model from those kinetic parameters. At the end of this project, a new biodegradable product, epichlorohydrin will be produced which will reduce the problem of excess glycerol by-product in the production of biodiesel. The project had successfully completed investigating the effects of initial molar ratio, temperature, reaction time and amount of catalyst in the synthesis of epichlorohydrin with hydrochloric acid; optimising the operating conditions; and determining the kinetic parameters such as reaction rate constant (k) and order of reaction.
Publications/Products/ Outcomes	Journal: 1. Herliati, Robiah Yunus, Intan A.S., Abidin Z.Z. and Dzulkefly Kuang. 2011. Preliminary Design of Semi-Batch Reactor for Synthesis, 1,3-Dichloro-2-Propanol Using Aspen Plus. <i>International Journal of Chemistry</i> 39(1):196-201. Proceedings/Conferences/Seminars: 1. Herliati, Robiah Yunus, Intan A.S., Abidin Z.Z. and Dzulkefly Kuang. 2011. Simulation of Epichlorohydrin Synthesis from Dichloropropanols in Reactive Distillation Column Using Aspen Plus. <i>12th International Conference on QIR</i> , 4-7 July 2011, Bali, Indonesia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	A Robust Structural Health Monitoring (SHM) System for Aircraft Parts and Structures Using Smart Material
Project Number	03-01-04-SF0807
Project Leader and Team Members	Leader: Faizal Mustapha
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The present invention relates to testing the buckling of sublaminated delaminated composite material under compression load. A primary aspect of the designed is to highlight the usability of the fixture placed under any universal testing machine (UTM) accommodating the compression fixture. The second product is the novel fabrication technique for producing cylindrical profile for composite based (Miniature Fuselage structure). The project objectives were to develop a robust Structural Health Monitoring (SHM) system for real aircraft parts with acceptable reliability; to investigate the feasibility of applying encapsulated PZT actuators and sensors on the selected specimens and aircraft parts; and to implement the technique of multivariate statistics and artificial neural network in interpreting the data based framework acquired from the developed SHM.</p>
Publications/Products/Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Mohd Aris K.D., Mustapha F., Sapuan S.M. and Abdul Majid D.L.A. 2011. A Structural Health Monitoring of a Pitch Catch Active Sensing of PZT Sensor on Normal, Damage and Repair Aircraft Spoiler. Key Engineering Materials, <i>Journal of Composite Science and Technology</i> 471-472: 1124-11129. Published, ISI. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Zuhir A. Jassim, Nawal Aswan Abdul Jalil and Mustapha F. 2010. Crack detection of a Cantilever Solid Rod Using Numerical Evaluation. <i>3rd Regional Conference in Noise, Vibration and Comfort</i>, 28th–30th June 2010, Putrajaya, Kuala Lumpur. 2. Mohd Aris, K. D and Mustapha F. 2009. An Experimental Analysis of Various Sizes of Delaminated GRP. <i>International Conference on Engineering Technology</i>, 8th – 10th Dec. 2009, Kuala Lumpur.

	Book Chapters: <ol style="list-style-type: none"> 1. Mustapha F., Sapuan S.M., Worden K. and Manson G. Damage Identification and Localization of Carbon Fiber-Reinforced Plastic Composite Plate Using Outlier Analysis and Multilayer Perceptron Neural Network. (pp79-113). Composite Material Technology:Taylor and Francis. 2. Mustapha F., Sapuan S.M., Worden K. and Manson G. Damage Localization of Carbon Fiber-Reinforced Plastic Composite and Perspex Plates Using Novelty Indices and the Cross-Validation Set of Multilayer Perceptron Neural Network. (pp115- 133). Composite Material Technology: Taylor and Francis.
Awards/Certificates	PRPI UPM 2010: 1 Silver Medal
IP Status	International patent filed 15-99 (10-01376-0101) (Industrial Design Protection; Compression Testing Rig for Composite Buckling Under Delamination at Sub-Laminate Layer).
Additional Information	<p>International Linkages: Negotiate for research collaborative efforts with University of Qatar, University of Sheffield and University of Toibah. Attracted a few international students to embark in the PhD and MSc programs.</p> <p>Industrial Linkages: Establish link with UNiKL MIAT, one of the MIAT staff undergoing PhD program to continue with this project. Negotiating with Advanced Composite Resources (M) Sdn Bhd to adopt the developed technology in their industrial applications.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Analysis, Design, Performance and Detailing of Residential Buildings for Moderate Earthquake Excitation
Project Number	03-01-04-SF0809
Project Leader and Team Members	Leader: Jamaloddin Noorzaei Members: Waleed A. Thanoon, Mohammad Razali Abdul, Izian Abd Karim and Mohd Saleh Jaafar
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to develop a Hazard map of the Malaysian Peninsular based on the existing data; to develop a computer code to carry out the seismic response of multi-storey buildings; to propose suitable design and detailing procedures for the practicing Engineers; to develop a computer code to design the residential multi-storey buildings based on the output of objectives; and to assess the performance of the residential building under seismic and static loads. The objectives were successfully achieved through the development of 3 dimensional non-linear viscous damper element; development of a finite element technique to inelastically analyse 3 Dimensional reinforced concrete buildings equipped with passive earthquake energy dissipation systems; development of finite element program code for non-linear analysis of RC buildings with supplemental damper devices; applicable for designing of new earthquake resistance buildings and retrofitting and rehabilitation of existing buildings; and optimising damper properties in order to minimize structure response in earthquake excitation. In terms of technology transfer, this system is applicable for high rise structures or residential buildings in seismic prone zone area to mitigate effects of earth shaking on buildings. All countries that are on seismic hazard risk, need to apply the modern control techniques and earthquake energy dissipation systems to mitigate the harmful effects of seismic shaking on building structures. The system developed in this research can be applied for future building and also to the existing structures. The system is useful for government organisation (Housing Industry) and Consultant Companies. The technology transfer can be done through workshop and conferences.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Ijuk (<i>Arenga pinnata</i>) Fibre Biocomposite for Small Boat Application
Project Number	03-01-04-SF0810
Project Leader and Team Members	Leader: Zulkiflle Leman Members: Megat Mohamad Hamdan, Mohd Yunin Hassan and Mohd Sapuan Salit
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to determine the mechanical properties of ijuk fibre and polymer matrix; to determine the mechanical properties of the ijuk fibre biocomposite; to determine the suitable fibre surface modification method; and to assess the suitability of ijuk fibre biocomposite as fishing boat components or its construction. The objectives were successfully achieved. Mechanical properties (tensile, flexural and impact) of ijuk fibre reinforced biocomposite have been determined. Water retting process has been identified as the low cost natural method of fibre surface modification to enhance the interfacial fibre-matrix bonding. A small boat has been fabricated using hybrid ijuk/glass fibre reinforcement.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Leman Z., Sapuan S.M., Saifol A.M., Maleque M.A. and Ahmad M.M.H.M. 2008. Moisture Absorption Behaviour of Sugar Palm Fibre Reinforced Epoxy Composites. <i>Materials and Design</i> 29:1666-1670. 2. Leman Z., Sapuan S.M., Azwan M., Maleque M.A. and Ahmad M.M.H.M. 2008. The Effect of Environmental Treatments on Fibre Surface Properties and Tensile Strength of Sugar Palm Fibre Reinforced Epoxy Composites. <i>Polymer Plastics Technology and Engineering</i> 47:1-7. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Leman Z., Sapuan S.M. and Ahmad M.M.H.M. 2008. Low Cost Natural Methods of Improving the Interfacial Adhesion of Sugar Palm Fibre Reinforced Epoxy Composite. <i>Proceedings of Postgraduate Seminar on Natural Fibre Composites</i>, Universiti Putra Malaysia Press, 10 June 2008. Serdang, Selangor.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	New Transient Converging Thermal Wave Technique
Project Number	03-01-04-SF0812
Project Leader and Team Members	Leader: Mohd Maarof H.A. Maksin Member: Azmi Zakaria
Field of Research	Physical Sciences
Project Summary	The objectives of the project were to generate converging thermal waves in high conducting foils by using optical pulse heating and to detect the thermal waves by using thermocouple in order to determine the thermal diffusivity of the foils. All of the objectives involved with measurement at room temperature were successfully achieved.
Awards/Certificates	<ol style="list-style-type: none"> 1. Malaysia Technology Expo (MTE) 2007: Best Award and 1 Gold Medal 2. International Exchange of North America (IENA) 2007: Gold Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Production and Recovery of Xylitol from Agriculture Waste Product in a Bioreactor Coupled to Membrane Processes
Project Number	03-01-04-SF0815
Project Leader and Team Members	Leader: Abd Ghani Liew Abdullah Members: Norhafizah Abdullah and Siti Mazlina Mustapa Kama
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to use ultrafiltration, reverse osmosis and nanofiltration membranes as an alternative methodology for separating xylitol from the fermentation broth. The overall goal of the project was to develop a membrane separation technology for separating xylitol from a hemicellulose hydrolysate fermentation broth by using a bioreactor coupled by means of membrane processes. The specific objectives were to remove proteins and biomass from fermentation broth by using crossflow ultrafiltration; to investigate the use of reverse osmosis on concentration of xylitol for crystallisation; and to determine the effect of chemical reactions with sugars on separation of xylitol from fermentation broth using nanofiltration or ultrafiltration membranes.
Publications/Products/Outcomes	Journals: 1. Authors Mohamad, N. L.; Mustapa Kamal, S. M. and Liew, A. G. Effects of pH and temperature on xylitol recovery from oil palm empty fruit bunch hydrolysate by <i>Candida tropicalis</i> . <i>Journal of Applied Science</i> 2009 Vol. 9 No. 17 pp. 3192-3195
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fluid Evolutions in Water and Oil Dispersed Flow System
Project Number	03-01-04-SF0821
Project Leader and Team Members	Leader: Siti Aslina Hussain Members: Siti Mazlina Mustapa Kama and Thomas Choong Shean Yaw
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were to design and fabricate new experimental facility on low pressure liquid-liquid flow systems specifically on oil and water systems in horizontal positioned of separator vessel in line with pipeline. Pilot testing and monitoring of performance were conducted based on operating principle, characteristics as well as verification of the model. The second objective was to identify the problems of inlet's separator vessel that can effect the physical changes of fluid flow. In any process equipments involving oil and water contact, one of the phases will always entrain each other. This entrainment was generated by two basic mechanisms which are momentum and energy that significantly affects the flow of evolution. By investigating the poor level of flow evolution and droplets distribution in horizontal pipeline, it could improve the flow visualization in change and minimise the mixing instability. The third objective was to improve experimental performance by investigating geometric of separator and experimental design. All of the project objectives were successfully achieved.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Rashmi, G., Walvekar, T. S. Y., Choong, S. A., Hussain, M., Khalid, T.G. C. 2009. Numerical study of dispersed oil-water turbulent flow in horizontal tube. <i>Journal of Petroleum Science and Engineering</i>. 14 Disember 2008. 2. Siti Aslina, H. Wan Hassan, M. J. and Siti Mazlina, M. K.(2007 accepted). Influence of oil and water holdup on mixture velocity in horizontal flows. <i>Journal of Chemical Engineering of Japan</i>. 41: 837-844. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Siti Aslina, H. and Soo, M. K. 2008. CFD model for determining holdup oil-water dispersion in turbulent flow. <i>AIChE Annual Meeting</i>, 16 – 21Nov 2008, Philadelphia, USA.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Construction of Artificial Consortia of Microorganism Using Dielectrophoresis (DEP) for Wastewater Treatment
Project Number	03-01-04-SF0842
Project Leader and Team Members	Leader: Zurina Zainal Abidin Members: Wan Azlina Wan Ab. Karim, Zalini Yunus and Fakhru'l-Razi Ahmadun
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to study the methods and conditions for constructing and immobilising biofilm using dielectrophoresis focusing on the characteristic and conditions of wastewater as well as to use the constructed bio film for wastewater treatment. All of the project objectives were successfully achieved.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Abidin, Z.Z., Downes, L. and Markx, G. H. 2007. Large scale dielectrophoretic construction of biofilms using textile technology. <i>Biotechnol. Bioeng.</i> 2007;96:1222–1225. © 2006 Wiley Periodicals, Inc. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Zainal Abidin, Z., Liew Abdullah, A.G, Yunus, Z. and Markx, G.H. 2007. Wire cloth electrodes: A study of electric field for Dielectrophoretic Separation of Cells. <i>2nd International Engineering Convention</i>, 17 Mar 2007, Jeddah, Saudi Arabia. 2. Zurina, Z. A., Fadhila, N., Thomas Choong, S.Y., Robiah, Y. and Salleh, J. 2010. Comparison of electrode configuration of a wire cloth for dielectrophoresis application. <i>World Engineering Congress</i>, 2 – 5 Aug 2010, Kuching. 3. Hafiffudin, N., Abidin, Z.Z and Salleh.J. 2010. Optimum concentration of PEI for immobilization of bacteria on wire cloth electrode, <i>World Engineering Congress</i>, 2 – 5 Aug 2010, Kuching.
Awards/Certificates	<ol style="list-style-type: none"> 1. Pameran Reka Cipta, Penyelidikan dan Inovasi (PRPI) 2009: 1 Gold Medal. 2. Malaysia Technology Exhibition (MTE) 2010: 1 Silver Medal.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Cement Column Stabilisation of Peat Soils
Project Number	03-01-04-SF0889
Project Leader and Team Members	Leader: Bujang Kim Huat Members: Azlan Abdul Aziz and Faisal Haju Ali
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to study the effect of cement column on the engineering characteristics (shear strength and compressibility) of hemic, sapric and fibrous tropical peat when tested in laboratory; to propose a construction guide for cement column method suitable for hemic, sapric and fibrous type of peat; and to develop a suitable installer for the cement columns in peat.
Publications/Products/ Outcomes	<p>Journals: 13</p> <ol style="list-style-type: none"> 1. Kazemian, S., Huat, B.B.K. and Prasad, A. 2010 Study of peat media on stabilization of peat by traditional binders, <i>International Journal of the Physical Sciences</i> Vol. 6(3), pp. 476–481, 4 February, 2011 ISSN 1992-1950 ©2011 Academic Journals 2. Kazemian, S., Prasad, A., Huat, B.B.K, Bolouri, B. J., Ali, T.A.M. and Aznieta, F.N. 2011 Effect of aggressive pH media on peat treated by cement and sodium silicate grout. <i>Journal of Central South University of Technology</i> Vol.18 No.3 June 2011 3. Huat, B.B.K, Kazemian, S., Prasad, A., Barghchi, M. and Aznieta, F.N.2011. A study of the engineering behavior of peat stabilized by DMM: Lab model and FE analysis, <i>Scientific Research and Essays Journal</i> 6(1): 196–204, 4 January, 2011 ISSN 1992- 2248 ©2011 Academic Journals 4. Kazemian, S., Prasad, A., Huat, B.B.K., Bolouri, B. J., Aznieta, F.N. and Ali, T.A.M. 2011. Influence of cement-sodium silicate grout admixed with calcium chloride and kaolinite on sapric peat. <i>Journal of Civil Engineering and Management</i> 6(8): 1974-1981. 5. Kazemian, S., Prasad, A. and Huat, B.B.K., Ali, T.A.M. and Aznieta, F.N. 2010. Effect of cement, sodium silicate, kaolinite and water on the viscosity of the grout, <i>Scientific Research and Essays Journal</i> 5: 3434 – 3442. <p>Products:</p> <ol style="list-style-type: none"> 1. Vacuum-Injection Apparatus



Awards/Certificates	1. PAMERAN REKACIPTA PENYELIDIKAN & INOVASI UPM 2010– 1 Gold Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Passive Device Components for Wireless High Temperature Sensors Applications
Project Number	03-01-04-SF0910
Project Leader and Team Members	Leader: Mohd Nizar Hamidon Members: Rahman Wagiran and Roslina Mohd Sidek
Field of Research	Category :Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were to design and develop a passive device components i.e. the resonator, capacitor and inductor. The capacitor (act as the pressure sensing elements) was fabricated and characterised and was compared with an electro-mechanical model for operating temperatures of over 450°C. A typical pressure sensor based on silicon piezoresistors or capacitors for data retrieval using new materials such as silicon carbide, polycrystalline diamond and ceramic materials have been investigated as an alternative to silicon. Meanwhile, the inductor was fabricated from a platinum wire coil around a ceramic rod and will be the tuning elements of the sensor. Finally, the resonator was fabricated on a new piezoelectric material (gallium phosphate) with a platinum interdigital transducer (IDT). These three passive device components were optimised for their reliability, stability and performance at high temperature (up to 450°C) with ISM-band operating frequencies of around 434 MHz. These passive components with high reliability, stability and performance can be applied for high temperature applications. The design of the passive system was completed and the inductor and resonator were fabricated successfully.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mousavi, S.A.; Hamidon, M.N.; Sidek, R.; Rahimi, M 2008. Design and simulation of one-port SAW resonator for wireless and high temperature application. <i>IEEE International Conference on Semiconductor Electronics</i>, 25-27 Nov 2008, Johor Bahru.
Awards/Certificates	International Invention, Innovation and Technology (ITEX) 2010: 1 Silver Medal.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Separation and Characterisation of Vanillin From Soda Lignin Extracted from Black Liquor of Oil Palm Empty Fruit Bunch
Project Number	03-01-05-SF0059
Project Leader and Team Members	Leader: Mohamad Nasir Mohamad Ibrahim Member: Amirul Al-Ashraf Abdullah
Field of Research	Applied Sciences and Technologies
Project Summary	The project objectives were to extract lignin from soda black liquor of empty fruit bunch (EFB) and break the lignin into eight components (vanillin, syringaldehyde, p-hydroxybenzaldehyde, p-coumaric acid, p-hydroxybenzoic acid, vanillic acid, syringic acid, and ferulic acid) using nitrobenzene oxidation; to separate vanillin compound from nitrobenzene oxidation products using crystallisation method; to produce vanillin using other method i.e. fermentation of bacteria; and to study the quality/purity of the vanillin extracted from these two methods; the method for separating vanillin from lignin had been discovered via crystallization.
Publications/Products/Outcomes	<p>Books:</p> <ol style="list-style-type: none"> 1. Mohamad Nasir, M. I., Nor Nadiah, M. Y., Norliyana, M.S. and Shuib, S. 2009. Separation and characterization of the vanillin compound from soda lignin. In: B. Sener (Ed.). <i>Innovations in Chemical Biology</i>, (pp. 103-110). Springer Science & Business Media. <p>Journals:</p> <ol style="list-style-type: none"> 1. Mohamad Nasir, M. I., Coswald Stephen, S., Mohamad Yusof, N. N. 2009. Purification of vanillin by molecular imprinting polymer technique. <i>Separation and Purification Technology</i> 66: 450-456. 2. Mohamad Nasir, M. I., Mohamad Yusof, N. N., Mohd Salleh, N., Coswald Stephen, S. and Sollehuddin, S. 2008. Separation of vanillin from oil palm empty fruit bunch lignin. <i>Clean</i> 36: 287-291. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohamad Nasir, M. I. 2009. Extraction of vanillin from oil palm empty fruit bunch. <i>29th International Conference on Science and Technology</i>, 9-10 July 2009, Prague, Czech Republic.



	<p>Others:</p> <ol style="list-style-type: none"> 1. Mohamad Nasir, M. I. and Farayusnida, K.2007. Minyak wangi daripada kelapa sawit. <i>Dewan Kosmik Jan 2007</i>:18-20
Awards/Certificates	<ol style="list-style-type: none"> 1. Undergraduate Research and Innovation Week at the Universiti Sains Malaysia: 1 Gold Medal and the Best Overall Life Science Category Award. 2. Malaysia Technology Expo (MTE) 2009: 1 Gold Medal
IP Status	Malaysia Patent filed (PI 20070548); A Process for Extracting Vanillin from Oil Palm Lignocellulosic Wastes
Additional Information	Industrial Linkages: Sabutek Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Ti-Al Alloys Development : Effect of Alloying Elements and Surface Treatment on the High-temperature Oxidation Behavior
Project Number	03-01-05-SF0094
Project Leader and Team Members	Leader: Nurulakmal Mohd Sharif Members: Zuhailawati Hussain, Azmi Rahmat and Rizal Astrawinata
Field of Research	Engineering Sciences
Project Summary	The project objectives were to study the oxidation behavior of Ti-Al based alloys with alloying elements such as Nb, Cr, Mn, and TiB ₂ particles; to study the effect of heat treatment and surface treatments on the oxidation behavior; to determine effect of alloying elements and heat treatment on room temperature strength and ductility, and also high temperature creep behavior; and to identify suitable composition and surface treatment to achieve high elevated temperature oxidation resistance.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Natural Rubber Foam and Characterisation of Its Structure-properties Relationship for Sound Proofing and Shock Absorbing Applications
Project Number	03-01-05-SF0096
Project Leader and Team Members	Leader: Zulkifli Mohamad Ariff Members: Azhar Abu Bakar and Coswald Stephen Sipaut
Field of Research	Material Sciences
Project Summary	The project has successfully produced a range of natural rubber foams developed from conventional rubber compound formulations which have been tailored to provide essential foam features for shock absorption and sound proofing applications.
Publications/Products/ Outcomes	Product: 1. NatCell-R: Natural Rubber Foam
Additional Information	Industrial Linkages: Denwell Industries Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	A Study on the Use of Dissolved Air Flotation Process for the Treatment of Leachate from Landfill Site
Project Number	03-01-05-SF0099
Project Leader and Team Members	Leader: Hamidi Abdul Aziz@Abdul Rahman
Field of Research	Environmental Sciences
Project Summary	A new design of air injection nozzle for water treatment was developed. The nozzle produced smaller mean bubble diameters (50 - 60 μm) compared to commercial nozzle (85 to 95 μm). These minute bubbles produce larger interfacial areas and surface forces between bubbles and particles and enhance the flotation process. Smaller bubble size means that larger bubble volume concentration is obtained and thus ensure more collision opportunities between bubbles and particles in the flotation tank and thus greater efficiency for lowering of flock density. The removal of particles in water is then enhanced.
IP Status	Malaysia Patent granted (PN MY-138312-A) An Air Injection Nozzle.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of an Automatic Variable Focus Fluid Lens System
Project Number	03-01-05-SF0121
Project Leader and Team Members	Leader: Mani Maran Ratnam Member: Zahurin Samad
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design and develop an automatic variable focus fluid lens system using image feedback.
Additional Information	Industrial Linkages: Sakura Rubber Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis of Carbon Nanotubes over Novel Carbon Supported Metal Catalysts
Project Number	03-01-05-SF0125
Project Leader and Team Members	Leader: Abdul Rahman Mohamed Members: Subhash Bhatia, Sharif Hussein Sharif Zei and Lee Keat Teong
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were to study the morphology, structure and synthesis mechanism of carbon nanotubes produced by catalytic decomposition of methane over novel developed catalysts. The fundamental findings enable us to develop various effective catalysts in growing a better quality carbon nanotubes and improves the current production process. The production of carbon nanotubes adopted used a single-step conversion of methane. This process is simple, less expensive and very efficient in producing a high purity carbon nanotubes. In this particular process, hydrogen gas will be released, which is a valuable source of energy as a by-product. Various types of carbon nanotubes, so-called multi-walled carbon nanotubes (MWNTs) and single-walled carbon nanotubes (SWNTs) were synthesised using the developed catalysts process. A minimum activation energy requirement for catalytic decomposition of methane was achieved successfully. MWNTs with almost uniform diameters can be produced using the novel developed catalysts.</p>
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Sivakumar, V. M., Ahmad,Z. A. and Abdul Rahman, M. 2010.Studies on carbon nanotubes morphologies formed over Fe/Ac catalyst via methane CVD. <i>Bulletin of Korean Chemical Society</i> 5(3):691-698. 2. Sivakumar, V. M., Abdul Rahman, M., Ahmad, Z. A. And Chai, S. P. 2010. Role of reaction and CNT growth factors in cvd process using methane – a highlight. <i>Journal of Nanomaterials</i>. 3. Sivakumar, V. M., Lam, K. K. and Abdul Rahman, M. 2010.Synthesis of carbon molecular sieve from palm shell using deposition of polyfurfuryl alcohol. <i>Journal of Korean Chemical Society</i> 54(3):323-328.



	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Sivakumar, V. M., Abdul Rahman, M., Ahmad, Z. A. and Chai, S. P. 2008. Synthesis of carbon nanotubes over novel molecular sieve carbon supports by CVD of methane. <i>RSCE- SOMChE</i> 2nd-3rdDec. 2008 Kuala Lumpur. 2. Sivakumar, V. M., Ahmad, Z. A. and Abdul Rahman, M. 2009. Single and multi -wall CNT growth over Fe / Carbon catalyst by thermal CVD of methane. <i>Cambridge-CNT Symposium</i>, 5 Nov 2009, Cambridge, UK. 3. Sivakumar, V. M., Ahmad, Z. A. and Abdul Rahman, M. 2009. Different morphologies of carbon nanotubes formed by CVD of methane over novel carbon supported metal catalyst. <i>Postgraduate Colloquium</i>, Nov 2009, Penang.
Awards/Certificates	<ol style="list-style-type: none"> 1. Malaysia Technology Expo (MTE) 2009: 1 Gold Medal 2. International Trade Fair for Ideas-Inventions-New Products (IENA) 2009: 1 Gold Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis, Characterisation, and Testing of Manganese Oxide/Carbon Nanotube Nanocomposites as Supercapacitor Materials
Project Number	03-01-05-SF0126
Project Leader and Team Members	Leader: Sharif Hussein Sharif Zein Members: Ahmad Zuhairi Abdullah, Abdul Rahman Mohamed and Mohamad Zailani Abu Baka
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to purify the as-synthesised carbon nanotubes; to produce manganese oxide/carbon nanotube nanocomposites; and to test the capacitive properties of the manganese oxide/carbon nanotube nanocomposites.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Kiamahalleh, M.V., Chan I.C., Sata S.A., Buniran S. and Zein, S.H.S. 2010. Highly efficient hybrid supercapacitor material from nickel-manganese oxides/MWCNTs/ PEDOT nanocomposite. <i>NANO</i> 3: 143-148. 2. Kiamahalleh, M.V., Najafpour, G.D., Sata S.A., Buniran S. and Zein, S.H.S. 2010. Nanocomposites of multiwalled carbon nanotubes filled with cheap transition metal oxides as supercapacitor materials. <i>World Applied Sciences</i> 19: 1-7. 3. Kiamahalleh, M.V., Sata S.A., Buniran S. and Zein, S.H.S. 2010. Remarkable stability of supercapacitor material synthesized by manganese oxide filled in multiwalled carbon nanotubes. <i>Current Nanoscience</i> 6: 553-559. 4. Razak, S.I.A.R., Ahmad, A. L. and Zein, S.H.S. 2009. Polymerization of protonic polyaniline/multi-walled carbon nanotubes/manganese dioxide nanocomposites. <i>Journal of Physical Science</i> 20: 27–34. 5. Kiamahalleh, M.V., Sata, S.A., Surani, B. and Zein, S.H.S. 2009. A comparative study on the electrochemical performance of nickel oxides and manganese oxides nanocomposites based multiwall carbon nanotubes. <i>World Applied Science Journal</i> 6: 711-718.



	<p>6. Razak S.I.A.R., Ahmad A.L., Zein, S.H.S. and Boccaccini, A. R. 2009. MnO₂-filled multiwalled carbon nanotube/polyaniline nanocomposites with enhanced interfacial interaction and electronic properties nanocomposites". <i>Scripta Materialia</i> 61:592-595.</p> <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Razak, S. I. A. R., Ahmad, A. L., Jelodar, H. A. and Zein, S. H. S. 2008. Effect of manganese dioxide filling on the properties of polyaniline/multiwalled carbon nanotubes polymerized by in-situ. <i>International Graduate Conference on Engineering and Science (IGCES)</i>, 23 to 24 December 2008. Johor Bahru, Johor. 2. Kiamahalleh, M. V., Sata, S. A., Surani, B. and Zein, S.H.S. 2008. High performance asymmetric supercapacitor from manganese oxide-CNT based composite electrode. <i>The 2nd International Congress on Nanoscience and Nanotechnology (ICNN)</i>, 28-30 October 2008, Tabriz, Iran. 3. Razak, S. I. A. R., Ahmad, A. L., Jelodar, H. A. and Zein, S.H.S. 2008. Ternary nanocomposite film of polyaniline/multiwalled carbon nanotubes/manganese dioxide. <i>International Conference on Science and Technology</i>, 3-5 November 2008, Saudi Arabia. 4. Kiamahalleh, M. V., Sata, S. A., Surani, B. And Zein, S.H.S. 2008. A comparative study on the electrochemical performance of nickel oxides and manganese oxides nanocomposites based multiwall carbon nanotubes. <i>The 2nd International Conference On Nanotechnology (ICN)</i>, 11-13 January 2008, Dubai, UAE.
Awards/Certificates	National Research and Innovation Competition (NRIC) 2008: 1 Gold Medal and Best Project Award.
Additional Information	Industrial Linkages: SIRIM
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The Development of Tilt Measuring Device Using Mems Accelerometer
Project Number	03-01-05-SF0128
Project Leader and Team Members	Leader: Ishak Abdul Azid Member: Aftanasar Md Shahar
Field of Research	Engineering Sciences
Project Summary	<p>The first project objective was to develop the circuit interface system which converts the signal from an accelerometer capacitive sense element to a signal suitable for digital signal processing. In capacitive accelerometers, changes in the capacitance between fixed and movable plates are induced by acceleration, therefore, an interface circuits incorporating this capacitor extract the acceleration signal and convert it to either digital or analog. The second objective was to develop a suitable programme using available software to extract the data. The tilt signal for conversion processing, data recording and visualisation of data display for real time monitoring performance of the MEMS tilt sensing system will be developed by using the available software. The third objective was to measure and monitor the tilt using the developed system of MEMS accelerometer. The main application for this research is to measure the tilt using MEMS accelerometer while the collected output data from MEMS accelerometer will be interfaced with the circuit. The tilt can then be monitored continuously. The GUI system can also be developed to make the integration data system interesting and user friendly.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Formation of Crosslinked Polyolefins Foam by Using Waste Polymer and Agriculture Waste
Project Number	03-01-05-SF0130
Project Leader and Team Members	Leader: Coswald Stephen Sipaut@Mohd Nasri Member: Zulkifli Mohamad Arif
Field of Research	Material Sciences
Project Summary	The objectives of the project were to investigate the processing procedures and material or chemical parameters that will attempt to produce crosslinked polyolefin foams based on plastic waste material. The plastic waste material uses rice husk and oil palm waste as a filler and characterised by density, cell size and mechanical properties. Specific objectives of the project were to separate the plastic waste with a different based of polyolefin; to determine the process and material concentration parameters; to produce the polyolefin foams based on plastic waste material; and to study the polyolefin foams properties such as cell structure, cell size and foam density. All of the project objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Multiple Input Multiple Output (MIMO) Wireless Testbed
Project Number	03-01-05-SF0131
Project Leader and Team Members	Leader: Mohd Fadzil Ain Members: Syed Idris Syed Hassan and Roslina Hussin
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design the MIMO wireless transceiver testbed; and to carry out the specific research on the RF front-end, antenna, modulation scheme as well as the data transmission rate of the MIMO system.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis and Development of Indigenous Nitrocellulose Membrane for Medical Biotechnology Applications
Project Number	03-01-05-SF0133
Project Leader and Team Members	Leader: Abdul Latif Ahmad Members: Syamsul Rizal Abd Shuk and Asma Ismail
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were to synthesise membranes from blended cellulosic material by means of microporous pores diameter range preferably to be used in medical biotechnology application with high wicking speed and high binding capacity; to propose suitable materials that will simultaneously improve the formulation of spreading film (polymer solution) in terms of type and concentration of polymer, solvent, non-solvent and additives; and to focus on optimising the final membrane structure and its properties such as pore size, surface roughness and membrane morphology. The project focuses on conducting experiments in the laboratory to generate technical data needed in order to represent the membrane characterisation including lateral wicking speed, absorption time, absorption capacity, membrane binding capacity and the architecture of the new synthesis nitrocellulose polymeric membrane. The final objective was to study the overall performance of the newly synthesised membrane in biomedical application. All of the project objectives were successfully achieved.</p>
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Ahmad, A. L., Low, S. C., Abd. Shukor, S. R. and Ismail, A. 2009. Morphological and thermal-mechanical stretching properties on polymeric lateral flow nitrocellulose membrane. <i>Industrial & Engineering Chemistry Research</i> 48: 3417-3424. 2. Ahmad, A. L., Low, S. C., Abd. Shukor, S. R. and Ismail, A. 2007. Preparation and Characterization of Various Membrane Morphologies for Lateral Flow Immunoassay development. <i>Journal of Applied Membrane Science and Technology</i> 5 : 23-29. 3. Ahmad, A. L., Low, S. C., Abd. Shukor, S. R. and Ismail, A. 2009. Optimization of membrane performance by thermal-mechanical stretching process using responses surface methodology (RSM). <i>Separation and Purification Technology</i> 66: 177-186.

	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Low, S.C. 2009. Protein determination by Ponceau S on various membrane morphologies. <i>Proceeding of the Postgraduate Colloquium</i>, 31 Oct-1 Nov, Penang. 2. Ahmad, A. L., Low, S. C., Abd Shukor, S. R., Ismail, A., Derek, C.J.C. and Oh, P.C. 2008. Development of lateral flow membrane for immunoassay separation. <i>Proceedings of the Desalination Cooperation among Mediterranean Countries of Europe and the MENA Region (EUROMED)</i>, 9-13 Nov 2008, Dead Sea, Jordan. 3. Ahmad, A. L., Low, S. C., Abd Shukor, S. R. and Ismail, A. 2008. Preparation and characterization of various membrane morphologies for lateral flow immunoassay development. <i>Proceedings of the 6th Regional Symposium on Membrane Science and Technology (MST)</i>, 13-15 Aug 2008, Thailand.
Awards/Certificates	<ol style="list-style-type: none"> 1. Malaysian Technology Expo-Global Invention and Innovation (MTE) 2008: 1 Gold Medal. 2. Graduate Studies Month of Universiti Sains Malaysia 2009: Best Research Project 2009 (Engineering Cluster). 3. 37th International Exhibition of Inventions, New Techniques and Products 2009: 1 Bronze Medal. 4. 20th International Invention, Innovation and Technology Exhibition (ITEX) 2009: 1 Gold Medal.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Portable Generic Intelligent System for Flow Measurement Using Electrical Capacitance Tomography Sensor
Project Number	03-01-05-SF0134
Project Leader and Team Members	Leader: Junita Mohamad Saleh Members: Zalina Abdul Aziz, Zaini Abl Halim and Syed Idris Syed Hassan
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to determine the optimum Electrical Capacitance Tomography sensor parameters for flow measurement by using intelligent system; and to determine the physical (electric) properties of material that can be present within the sensor and developing a generic intelligent flow measurement system.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Hafizah, T., Junita, M. S., Khursiah, Z. M. and Najwan, O. A. 2009. On the comparison of capacitance-based tomography data normalization methods for multilayer perceptron recognition of gas-oil flow patterns. <i>Modern Applied Science</i>3: 108-116. 2. Zainal Mokhtar, K., Mohamad-Saleh, J., Talib, H. and Osman-Ali, N.2008. Flow regime classification using artificial neural network trained on electrical capacitance tomography sensor data. <i>Computer and Information Sciences</i>1:25-32. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Khursiah, Z. M., Junita, M. S. and Zaini, A. H. 2009. Development of a gas-oil flow classifier based on ect sensor with generic primary electrode size. <i>The 2nd International Conference on Control Instrumentation and Mechatronic Engineering (CIM)</i>, 2-3 June 2009, Melaka. 2. Talib, H. and Mohamad Saleh, J. 2008. Performancecomparison of various MLPs for material recognition based on sonar data. <i>Proceedings of the International Symposium of Information Technology (ITSIM)</i>, 26-29 Aug 2008, Kuala Lumpur.

	3. Khursiah, Z. M. and Mohamad Saleh, J. 2008. A study on optimum electrical capacitance tomography data for intelligent system recognition of flow regime. <i>Proceedings of the International Symposium of Information Technology (ITSiM)</i> , 26-29 Aug 2008, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Hydroxyapatite Filled Poly(methyl methacrylate) Dental Materials with High Mechanical Performance, Enhanced Environmental Stability and Radio Opacity Behavior
Project Number	03-01-05-SF0135
Project Leader and Team Members	Leader: Chow Wen Shyang Members: Zainal Arifin Mohd Ishak and Azlan Ariffin
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to characterise and study the variables of the filled PMMA dental base materials; to identify the effects of hydroxyapatite in the PMMA dental base materials; and to improve the mechanical performance, environmental stability and radio opacity behaviour of PMMA dental base materials. All of the project objectives were successfully achieved.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Tham, W.L., Chow, W.S. and Mohd Ishak, Z.A. 2010. Simulated body fluid and water absorption effects on poly(methyl methacrylate)/hydroxyapatite denture base composites. <i>Express Polymer Letters</i> 4: 517-528. 2. Tham, W.L., Chow, W.S. and Mohd Ishak, Z.A. 2010. The effect of 3-(Trimethoxysilyl) propyl methacrylate on the mechanical, thermal and morphological properties of poly(methyl methacrylate)/hydroxyapatite composites. <i>Journal of Applied Polymer Science</i> 118: 218-228. 3. Tham, W.L., Chow, W.S. and Mohd Ishak, Z.A. 2009. Flexural and morphological properties of poly(methyl methacrylate)/hydroxyapatite composites: Effects of planetary ball milling time. <i>Journal of Reinforced Plastics and Composites</i> 29: 2065-2075. 4. Chow, W.S., Loo, Y.K., Azlan, A. and Mohd Ishak, Z.A. 2008. Flexural properties of hydroxyapatite reinforced poly(methyl methacrylate) composites. <i>Journal of Reinforced Plastics and Composites</i> 27:945-952. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Chow, W.S., Tay, H.K., Ariffin, A. and Mohd Ishak, Z.A. 2008. Mechanical and thermal properties of hydroxyapatite filled poly(methyl methacrylate) composites. <i>The Polymer Processing Society 24th Annual Meeting (PPS-24 Meeting)</i>, 15-19 June 2008, Salerno, Italy.

	<ol style="list-style-type: none"> 2. Chow, W.S., Loo, S.F., Loo, Y.K., Ariffin, A. and Mohd Ishak, Z.A. 2008. Mechanical and thermal properties of hydroxyapatite reinforced poly(methyl methacrylate) composites. <i>International Conference and Exhibition on Composite Material & Nano-Structure (iC2MS)</i>, 5-8 Aug 2008, Melaka. 3. Loo, Y.K., Chow, W.S., Ariffin, A. and Mohd Ishak Z.A. 2007. Effects of compatibilizer on the flexural and dynamic mechanical properties of hydroxyapatite filled poly(methyl methacrylate) composites. <i>VIIth National Symposium on Polymeric Materials 2007 (NSPM 2007)</i>, 27-28 Nov 2007, Kuala Lumpur.
Awards/Certificates	<ol style="list-style-type: none"> 1. National Research and Innovation Competition (NRIC) 2008: 1 Silver Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Catalytic Zeolite Membrane for Simultaneous Conversion and Separation of Para-xylene from Xylene Isomers
Project Number	03-01-05-SF0136
Project Leader and Team Members	Leader: Subhash Bhatia Members: Ahmad Zuhairi Abdullah and Abdul Latif Ahmad
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to synthesise and characterise MFI(ZSM-5) zeolite membrane; to determine the optimum operating parameters for the separation of para-xylene from its isomers and aromatics mixture using MFI zeolite membrane; to study the catalytic activities of the functionalised MFI zeolite membrane for maximum conversion and recovery of para-xylene from its isomer; and to propose a suitable process model of zeolite membrane reactor in order to maximise the conversion, flux as well as para-xylene separation selectivity at different operating conditions.
Publications/Products/Outcomes	Journals: <ol style="list-style-type: none"> 1. Yeong, Y.F., Abdullah, A.Z., Ahmad, A.L. and Bhatia, S. 2008. Synthesis and characterization of sulphonic acid 3-mercaptopropyltrimethoxysilane functionalized silicalite-1 membrane. <i>Journal of Engineering Science and Technology</i> 3: 87-9. 2. Yeong, Y.F., Abdullah, A.Z., Ahmad, A.L. and Bhatia, S. 2008. Synthesis, characterization of phenethyltrimethoxysilane (pe) modified organic-inorganic hybrid silicalite-1 molecular sieves and its transformation into solid acid materials. <i>Advanced Materials Research</i> 47-50: 238-241. 3. Yeong, Y.F., Abdullah, A.Z., Ahmad, A.L. and Bhatia, S. 2009. synthesis, structure and acid characteristics of partially crystalline silicalite-1 based materials. <i>Microporous and Mesoporous Materials</i> 123: 1-3. 4. Yeong, Y.F., Abdullah, A.Z., Ahmad, A.L. and Bhatia, S. 2008. Development of functionalized zeolite membrane and its potential role as reactor combined separator for para-xylene production from xylene isomers. <i>Chemical Engineering Journal</i> 139: 172–193.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Utilisation of Recycled Materials for the Production of Wood-plastic Composites Intended for Outdoor Applications
Project Number	03-01-05-SF0137
Project Leader and Team Members	Leader: Razaina Mat Taib Members: Zainal Arifin Mohd. I and Rozman Din
Field of Research	Material Sciences
Project Summary	The objectives of the project were to convert recycled materials into high-value products for outdoor applications by combining wood flour with recycled thermoplastic to form wood-plastic composites; to evaluate and characterise the impact of the environmental exposure on the biodegradation behaviour and lifetime performance to the physical and mechanical properties of wood-plastic composites; and to optimise the composites' performance. Focus will be on improving mechanical properties and durability in service conditions by using additives such as UV stabilisers and fungicides. All of the project objectives were successfully achieved. Wood-plastic composites were successfully manufactured from wood flour and recycled high-density polyethylene using a twin-screw extruder and injection molding. Composite samples were exposed to natural and accelerated weathering as well as buried in soil. The influences of the environments on the physical and mechanical properties of the composites were determined. A few composites additives were added, exposed to similar environments and characterised.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Production of Biodiesel Fuel from Palm Oil via Non-catalytic Supercritical Alcohol Transesterification
Project Number	03-01-05-SF0138
Project Leader and Team Members	Leader: Lee Keat Teong Members: Abdul Rahman Mohamed, Subhash Bhatia and Long Wei Sing
Field of Research	Biotechnology
Project Summary	The objectives of the project were to develop a novel technology for the production of biodiesel fuel from palm oil via non-catalytic supercritical alcohol. The measurable objectives were to set-up an experimental rig suitable for supercritical alcohol reactions; to study the yield of biodiesel under a wide range of operating conditions; to optimise the yield of biodiesel production; to characterise the properties of the biodiesel and the by-products obtained (carotenoids and glycerol); and to study the kinetics of biodiesel formation.
Publications/Products/ Outcomes	Journal: 1. Meei, M. G., Lee, K. T. And Bhatia, S. 2008. Supercritical ethanol technology for the production of biodiesel: process optimization studies. Journal of Supercritical Fluids 2, pp. 286-292, 2009 DOI: 10.1016/j.supflu.2008.12.014
Additional Information	Industrial Linkages: Tejari Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Utilisation of Paper Sludge as Filler in Thermoplastic Elastomer Composites (TPEC)
Project Number	03-01-05-SF0140
Project Leader and Team Members	Leader: Hanafi Ismail Members: Mariatti Jaafar, Azura a.Rashid and Long Wei Sing
Field of Research	Environmental Sciences
Project Summary	The objectives of this study were to utilise paper sludge, a waste from the production of pulp and paper industry as a potential filler in thermoplastic elastomer composites (TPEC); to determine the optimum processing condition, mechanical and thermal properties of paper sludge filled thermoplastic elastomer composites and to determine the potential application of paper sludge filled thermoplastic elastomer composites.
Additional Information	Industrial Linkages: Meridian World Sdn Berhad
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Structural Investigation of Molecular-based Opto-electronic Materials from Porphyrin Chromophores
Project Number	03-01-05-SF0141
Project Leader and Team Members	Leader: Fun Hoong Kun Members: Suchada Chantrapromma, Jing-Lin Zuo, Zhen Shen and Abdul Razak Ibrahim
Field of Research	Physical Sciences
Project Summary	The objectives of the project were to synthesise new porphyrin chromophores with specific opto-electronic properties; to determine the X-ray structures of these new compounds; and to investigate their basic properties pertaining to solar cells and in multi-bit information storage. Solid-state structure of the only one new porphyrin was characterised by single-crystal X-ray diffraction. The structure of the porphyrin cation encountered some problem due to the disordered solvent (DMF) which is probably because of impure solvent.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Impact Study of Renewable Energy (RE) and Energy Efficiency (EE) in Secondary Schools
Project Number	03-01-05-SF0148
Project Leader and Team Members	Leader: Hashimah Mohd. Yunus Members: Kamarulazizi Ibrahim, Munirah Ghazali, Nor Hashimah Hashim, Mohammad Zohir Ahmad@Shaari, Norlida Ahmad and Nordin Abd Razak
Field of Research	Social Sciences
Project Summary	<p>The objectives of the project were to find out the effects of RE and EE implementation in secondary schools which had been implemented in 1800 secondary schools since 2003. The specific objectives of this project were to identify students' knowledge and awareness of RE and EE in the rural and urban schools; to identify teachers' knowledge and awareness of RE and EE in the rural and urban schools; to find out how far do the teachers implement RE and EE in their classroom in the rural and urban schools; to find out how far does the school management supports in implementing RE and EE in the rural and urban schools; to identify the teachers' opinion of the virtual lab CD distributed to schools in implementing RE and EE; and to find out how far the competition helps in raising knowledge and awareness of RE and EE among secondary students in rural and urban schools. All these objectives were achieved. In 2003, implementation of RE and EE in the secondary schools was started by introducing RE and EE concepts in the science subjects. This is done through training of selected secondary schools teachers for the pilot project. A workshop for master trainers was carried out for the preparation of training selected secondary science teachers. Exhibition of RE and EE to all states were carried out through CETREE Mobile Unit. A yearly competition of RE and EE was organised at state and national level starting year 2003 (CETREE reports to Ministry of Energy, Water and Communication, 2004). Therefore, this study was undertaken to look at the impact of the implementation project of RE and EE in the curriculum and co-curriculum carried out by CETREE in year 2003. The different impact of implementing RE and EE in secondary schools at rural and urban areas was identified.</p>

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Nanoparticle based Electrochemical Biosensor System for the Detection of Vancomycin Resistance Enterococci (VRE)
Project Number	03-01-05-SF0152
Project Leader and Team Members	Leader: Chan Yean Yean Members: Manickam Ravichandran, Habsah Hasan and Lalitha Pattabhiraman
Field of Research	Biotechnology
Project Summary	<p>The objectives of the project were to design the vanA-D gene specific primers in order to generate shorter specific amplicons from vancomycin resistant enterococci (VRE); to optimise a cold-chain free thermo stabilised multiplex PCR for the detection of VR; to design disposable screen printed electrode and pencil graphite electrode systems for the detection of VRE; to optimise the biosensor system using PCR amplicons hybridised with gold nanoparticle labelled probe; and to compare the sensitivity and specificity of the biosensor results with conventional PCR results. These objectives were achieved as VanA-D gene specific primers was successfully designed in order to generate shorter specific amplicons from vancomycin resistant enterococci (VRE). In addition, specific primers for ddl gene to speciate/identify <i>E. faecium</i> and <i>E. faecalis</i> for different medication were included in the system and Cold-chain free thermostabilised multiplex PCR was optimised for the detection of VRE. A disposable screen printed electrode and pencil graphite electrode systems were designed for the detection of VRE and the biosensor system using rapid enzyme was optimised based on electrochemical labelled PCR amplicons electrochemical genosensor. Thus, the sensitivity and specificity of the biosensor results were compared to conventional PCR results.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none">1. Chan, Y.Y., Balqis, K., Ariksoysal-Ozkan, D., Lee, S.Y., Lalitha, P., Ozsoz, M. and Ravichandran, M. 2008. Design and development of a novel electrochemical DNA biosensor for rapid molecular identification of <i>Enterococcus faecium</i>. <i>13th International Society for Infectious Diseases (ICID)</i>, 19-22 June 2008, Kuala Lumpur.

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

	3. Chan, Y. Y., Balqis, K., Chua, A. L., Ozkan-Ariksoysal, D., Lee, S. Y., Lalitha, P., Ozsoz, M. and Ravichandran, M. 2008. Design and development of genochromatography based biosensor assay for the rapid identification of vanA gene. <i>48th Annual ICAAC/IDSA 46th Annual Meeting</i> , 25-28 Oct 2008, Washington, US.
IP Status	Patent filed at the intellectual property corporation of Malaysia (mylpo). Date of filling: 12th March 2009.
Additional Information	International Linkages: Prof. Dr. Armando Acosta, Director, Direction of Biotechnology, Finlay Institute, Cuba; Prof. Mehmet Ozsoz, Department of Analytical Chemistry, Faculty of Pharmacy, Ege University, Izmir, Turkey; Dr. Dilsat Ariksoysal Oskan, Department of Analytical Chemistry, Faculty of Pharmacy, Ege University, Izmir, Turkey; Prof. J. Justin Gooding, School of Chemistry, Faculty of Science, University of New South Wales (UNSW), Australia; Prof. Dr. Werasak Surareungchai, School of Bioresources and Technology, King Mongkut's University of Technology Thonburi (KMUTT), Thailand.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Ultrasonic-assisted Solid Base Catalysed Process for the Production of High Quality Monoglycerides through Transesterification of Glycerol and Fatty Acid Methyl Esters
Project Number	03-01-05-SF0161
Project Leader and Team Members	Leader: Ahmad Zuhairi Abdullah Members: Mohamad Zailani Abu Bakar, Sharif Hussein Sharif Zein and Subhash Bhatia
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to develop a high performance solid basic catalyst system for transesterification of glycerol with fatty acid methyl esters; to characterise a catalyst system developed in order to identify its properties related with its catalytic behaviour in the transesterification of glycerol process; to establish suitable reactor set up for an ultrasonic-assisted transesterification of glycerol process towards enhancement in the production of monoglycerides; to identify the most suitable set of process variables for the enhancement and improvement in the production of monoglycerides from glycerol; and to establish a reliable kinetic model to be incorporated into the simulation and scale up processes for the ultrasonic-assisted transesterification of glycerol process catalyzed by solid basic catalyst. All these objectives were achieved and all catalysts were characterised using XRD, surface analyser, SEM, TEM and FTIR and the ultrasonic reactor has been developed and tested. Besides, the process behaviour and optimum conditions for better selectivity and conversion were established.</p>
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Abdullah, A.Z., Razali, N., Lee, K.T., Salamatinia, B. and Mootabadi, H. 2007. Mesoporous solid base catalyst for the transesterification of palm oil to biodiesel. <i>Proceedings of the 1st Engineering Conference on Energy and Environment (ENCON)</i>, 27-28 Dec 2007, Kuching. 2. Triyogo, W. and Ahmad, Z. A. 2008. Selective glycerol esterification over organomontmorillonite catalyst. <i>Proceedings of the Seminar Minyak dan Lemak 2008 (SMILE)</i>, 17-19 Nov 2008, Kuantan.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Enhancing Small Medium Industries (SMI) Agenda on Energy Efficiency (EE) and Renewable Energy (RE)
Project Number	03-01-05-SF0162
Project Leader and Team Members	Leader: Mohammed Zin Nordin Members: Hasrina Mustafa, Kamarulazizi Ibrahim and Shanthi Balraj Baboo
Field of Research	Social Sciences
Project Summary	The objectives of the project were to determine Small Medium Industries knowledge, attitude and practice on energy efficiency and renewable energy; to conduct energy efficiency and renewable energy programmes in Small Medium Industries to enhance awareness, skills and practice on energy efficiency and renewable energy; to determine the effectiveness of the programme on the Small Medium Industries knowledge, attitude and practice on energy efficiency and renewable energy; and to produce a guidebook on implementing energy efficiency and renewable energy. All of the project objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	A Study on the Biological Efficacy of Synthetic Bone Scaffold Enhanced with Plasma Rich Growth Factors In vitro and In vivo
Project Number	03-01-05-SF0176
Project Leader and Team Members	Leader: Nor Shamsuria Omar Member: Haswati@Nurhayati Abdul
Field of Research	Biotechnology
Project Summary	The objectives of the project were to determine the biocompatibility of synthetic bone scaffold on primitive cell lines enhanced with growth factor in vitro; to develop new method of extraction of growth factor from plasma in merino sheep models; and to study the biological efficacy of synthetic bone scaffold enhanced with plasma rich growth factor in vitro and in vivo. The study showed that the biocompatibility of synthetic bone scaffold on primitive cell lines enhanced with growth factor in vitro. The biological efficacy of synthetic bone scaffold enhanced with plasma rich growth factor in vitro were evaluated.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Hilmi, A.B., Fazliah, S.N., Siti Fadilah, A., Asma, H., Siti Razila, A.R., Shaharum, S., Jaafar, S. Asiah, A.B. And Shamsuria, O. 2008. Stem cells from childrens' teeth. <i>Archives of Orofacial Sciences</i> 3: 28-30. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Koay, N. A., Ismail, A. R., Omar, N. S., Mohd Noor, S. N. F, Abu Bakar, M. H. and Fadilah, S. F. 2007. Osteoblastic differentiation of stem cells from human extracted deciduous teeth (SHED). <i>5th Student Scientific Conference Pusat Pengajian Sains Pergigian (PPSG)</i>, 25 Oct 2007, Penang. 2. Aisyah, M.N.N.S., Abd. Razak, N.H. and Shamsuria, O. 2007. Proliferation of osteoblast cell line on Nano Hydroxyapatite/Chitosan scaffold: In vitro study. <i>5th Student Scientific Conference Pusat Pengajian Sains Pergigian (PPSG)</i>, 25 Oct 2007, Penang. 3. Shahrin, A. A., Omar, N. S., Noor, S. N. F. M. and Ismail, A. R. 2007. Detection of mineralization from stem cells of human extracted deciduous teeth (SHED) cultured on NHA/Chitosan scaffold. <i>5th Student Scientific Conference Pusat Pengajian Sains Pergigian (PPSG)</i>, 25 Oct 2007, Penang.



	4. Rahman, N.A.A, Razak, N.H.A, Masudi, S.M. and Omar N. 2007. Cytotoxicity evaluation of nanohydroxyapatitematerial on mesenchymal stem cells. <i>8th Student Scientific conference</i> . 12-13 Dec. 2007, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of High Performance Composite Materials from Semi Amorphous Hybrid Minerals Fillers from Local Resources for Automotive Industry
Project Number	03-01-05-SF0197
Project Leader and Team Members	Leader: Samayamutthirian@Thilagan Palaniandy Members: Khairun Azizi Mohd Azizli, Mariatti Jaafar@Mustapha, Hashim Hussin and Syed Fuad Saiyid Hashim
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop high performance hybrid composite materials in terms of mechanical and thermal properties for automotive industry; to enhance the physical properties of the local minerals that fulfil the specification of composite materials for the automotive industry; and to reduce the product cost by substituting high loading of value added local mineral fillers. All the objectives were achieved successfully. High performance hybrid composite materials in terms of mechanical and thermal properties for the automotive industry were developed using local mineral resources and with cost reduction of the end product.
Additional Information	Industrial Linkages: Sibelco Asia, Imerys Sdn. Bhd. and Seribeau Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Solid Catalysts for Production of Biodiesel from Palm oil
Project Number	03-01-05-SF0207
Project Leader and Team Members	Leader: Bassim H. Hameed Members: Suhairi Abdul Sata and Abdul Latif Ahmad
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to convert palm oil by into biodiesel through transesterification process; to develop and characterise a series of activated carbons, alum and MgZnO-based catalysts for production of biodiesel; to optimise the operating conditions for the transesterification process of palm oil i.e. temperature, catalyst dosage, and palm oil/methanol ratio; and to study the kinetics of the transesterification reaction of palm oil on synthesised catalysts. All of the project objectives were successfully achieved.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Chin, L.H., Hameed, B.H. and Ahmad, A.L. 2009. Process optimization for biodiesel production from waste cooking palm oil (<i>Elaeis guineensis</i>) using response surface methodology. <i>Energy & Fuels</i> 23:1040–1044. 2. Hameed, B.H., Lai, L.F. and Chin, L.H. 2009. Production of biodiesel from palm oil (<i>Elaeis guineensis</i>) using heterogeneous catalyst: An optimized process. <i>Fuel Processing Technology</i> 90: 606-610. 3. Olutoye, M.A. and Hameed, B.H., 2009. $KyMg_{1-x}Zn_{1+x}O_3$ as a heterogeneous catalyst in the transesterification of palm oil to fatty acid methyl esters. <i>Applied Catalysis A: General</i> 371: 191–198. 4. Aderemi, B. O. and Hameed, B.H. 2009. Alum as a heterogeneous catalyst for the transesterification of palm oil. <i>Applied Catalysis A: General</i> 370: 54–58. 5. Hameed, B.H., Goh, C.S. and Chin L.H. 2009. Process optimization for methyl ester production from waste cooking oil using activated carbon supported potassium fluoride. <i>Fuel Processing Technology</i> 90: 1532–1537. 6. Olutoye, M.A. and Hameed, B.H. 2010. Transesterification of palm oil on $KyMg_{1-x}Zn_{1+x}O_3$ catalyst: Effect of Mg–Zn interaction. <i>Fuel Processing Technology</i> 91: 653–659.

	Proceedings/Conferences/Seminars: 1. Chin, L. H., Hameed, B. H. and Ahmad, A. L. 2008. Transesterification of palm oil for production of biodiesel using heterogeneous solid catalysts: preliminary results. <i>International Conference for Young Chemist 2008 (ICYC)</i> , 18-20 June 2008 Penang, Malaysia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Novel Catalyst for the Production of Hydrogen from Oil Palm Biomass Under Supercritical Water Technology
Project Number	03-01-05-SF0208
Project Leader and Team Members	Leader: Lee Keat Teong Members: Abdul Rahman Mohamed, Ahmad Zuhairi Abdullah and Tye Ching Thian
Field of Research	Biotechnology
Project Summary	The objectives of the project were to set up an experimental rig suitable for biomass gasification in supercritical water; to develop preparation methods for catalyst and characterisation based on physical and chemical properties; to study the activity of the catalyst in terms of biomass conversion, yield of hydrogen under a wide range of operating conditions and process optimisation on the reaction; and to study the kinetics of the reaction.
Additional Information	Industrial Linkages: Kumpulan Saintifik Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of High Performance Permanent Magnet Brushless Motor Drives for Electric Vehicle or Hybrid Electric Vehicle Applications
Project Number	03-01-05-SF0215
Project Leader and Team Members	Leader: Dahaman Ishak Members: Sysfrudin Masri, Soib Taib and Othman Sidek
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to determine suitable topologies of permanent magnet brushless motor for Electric Vehicles applications in term of torque density, power capability, motor speed range, copper loss, iron loss and magnet demagnetisation capability. Several motor topologies were considered such as surface -mounted permanent magnet, inset permanent magnet, interior permanent and circumferential permanent magnet. The specific objectives of the project were to identify, quantify and mitigate heat (thermal issue) generated within the motor and drive via proper cooling systems to maintain the temperature at acceptable level; to parameterise and optimise motor dimensions for best performance using finite element software; to develop and simulate 3-phase inverter (power electronics) requirement to drive the motor using the simulation software; to develop and simulate sensor less motor control in Matlab Simulink for prediction of motor drive performance; and to build, assemble and test prototypes in order to measure and compare the results. Objectives achieved included the determination of suitable topologies of permanent magnet brushless motor for Electric Vehicles applications in term of torque density, power capability, motor speed range, copper loss, iron loss and magnet demagnetisation capability. Motor topologies and motor dimensions for best performance using finite element software were parameterised and optimised. The 3-phase inverter (power electronics) requirement to drive the motor were developed and simulated using the simulation software and the sensor less motor control were developed and simulated in Matlab Simulink for prediction of motor drive performance. A 3-phase inverter with PIC18F microcontroller capability was designed and built and with these drives, the motor in brushless dc mode were operated successfully. A PCB inverter was fabricated with dsPIC30F microcontroller for the sensor less control using Field Oriented Control concept.</p>



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Hydrocracking and Hydrotreating of Residual Oil Using Mesoporous Molybdenum Carbide Catalysts
Project Number	03-01-05-SF0216
Project Leader and Team Members	Leader: Tye Ching Thian Members: Abdul Rahman Mohamed and Subhash Bhatia
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to synthesise mesoporous molybdenum based catalysts for hydrocracking of residual oil; to characterise the synthesised catalyst for hydrocracking of residual oil; to test the catalytic hydrocracking activity of mesoporous catalyst in the conversion of heavy feedstock (residual oil) into lighter, distillable fuel products; and to investigate the operating conditions for catalytic hydrocracking reaction using the developed catalyst. All of the project objectives were successfully achieved.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Looi,P.Y., Mohamed,A.R. and Tye,C.T. 2010. Mesoporous molybdenum catalyst for hydrocracking of heavy oil. <i>Proceedings of International Conference on Environment</i> , 13-15Dec 2010, Penang. 2. Looi,P.Y., Mohamed, A. R. and Tye, C.T. 2009. Mesoporous molybdenum catalyst for hydrocracking of heavy oil. <i>International Symposium on Catalysis and Fine Chemicals</i> , 13-17Dec 2009, Seoul, Korea.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Surface Modified Buffer Layer for Superconductors GrowthTemplate
Project Number	03-01-05-SF0217
Project Leader and Team Members	Leader: Zainovia Lockman Members: Zainal Arifin Ahmad, Cheong Kuan Yew and Srimala Sreekantan
Field of Research	Material Sciences
Project Summary	<p>The objectives of the project were to construct a novel buffer layer architecture termed surface modified buffer layer (SMBL) for high temperature superconductor comprising of dispersed nanodots CeO₂ on CeO₂ thin film; to investigate and optimise the SMBL formation by Chemical Solution Deposition (CSD) processes through spin coating technique and spray coating technique; to optimise and elucidate the spray coating process for nanodots CeO₂ formation; and to study the effectiveness of SMBL as a superconductor buffer layer. Objectives achieved were the formation of thin CeO₂ film on various substrates as a buffer layer. CSD technique has been successfully developed for the formation of thin CeO₂ film. The optimised condition for spin and dip coating had been identified, documented and published. Substrates used were nickel based and copper. The nature of CeO₂ growth on these substrates in great depth were investigated. The most outstanding findings were the growth mechanisms on these substrates are different. It was found that nanostructure grown by spin coating cannot be achieved by this coating technique. Spray coating was relied on for the nanodots formation. The product of this project is CeO₂ thin film. This thin film can be used not only for superconductor application but in many other applications. A separate project on the optimisation of the thin film for semiconductor devices had been completed.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Combined Model and Knowledge Based Fault Detector for Detection of Deviations in Chemical Process Reactor
Project Number	03-01-05-SF0220
Project Leader and Team Members	Leader: Mohamad Zailani Abu Bakar Members: Ridzuan Zakaria, Subhash Bhatia, Suhairi Abdul Sata and Zainal Ahmad
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to identify various faults associated with chemical reactor for a selected process; to setup a pilot plant chemical reactor for a selected process; to develop a combined model and knowledge based fault detection system for a selected reactor; and to test and validate the reliability of the developed fault detection system. All of the project objectives were successfully achieved on the OFFLINE basis. An OFFLINE model in detecting fault in a chemical process reactor was produced.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Nonlinear Bio-polymerisation Process Using Neural Networks Technique: Case Study : Bio-polymerisation of Lactones to Polyester
Project Number	03-01-05-SF0224
Project Leader and Team Members	Leader: Zainal Ahmad Members: Suhairi Abdul Sata, Norashid Aziz and Mohamad Hekarl Uzir
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to fabricate a batch biopolymerisation reactor; to develop the model of the proposed biopolymerisation process using artificial intelligent; and to optimise the proposed biopolymerisation process model.A batch biopolymerisation reactor with the necessary instrumentation was fabricated and the process model of the proposed biopolymerisation process was developed using artificial intelligent.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Arumugasamy, S. K. and Ahmad, Z. 2009. Elevating model predictive control using feedforward artificial neural networks: A review. <i>Chemical Product and Process Modeling</i> 4: Article 45. 2. Ahmad, Z., Mat Noor, R. A. and Zhang, J. 2008. Multiple neural networks modeling techniques in process control: A review, <i>Asia-Pacific Journal of Chemical Engineering</i> 4: 403-419. 3. Mat Noor, R. A., Ahmad, Z, Mat Don, M. and Uzir, M. H. 2009. Modeling and control of different types of polymerization processes using neural networks technique: A review, <i>Canadian Journal of Chemical Engineering</i> 88:1064-1084. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mat Noor, R. and Ahmad, Z. 2010. Inferential estimation of biopolymer (Polyester) quality using bootstrap re-sampling neural network technique. <i>IEEE Conference on Cybernetics and Intelligent Systems</i>, 28-30 June 2010, Singapore.

	<ol style="list-style-type: none"> Ahmad, Z. and Mat Noor, R. A. 2008. Development of nonlinear biopolymerisation process using bootstrap re-sampling neural networks: biopolymerisation lactone to polyester. <i>15th Regional Symposium on Chemical Engineering</i>, 2-3 Dec 2008, Kuala Lumpur. Mat Noor, R. A. 2009. Preliminary study on biopolymer quality using bootstrap re-sampling neural networks, <i>USM Chemical Engineering Colloquium</i>, 2 Nov. 2009, Penang. Arumugasamy, S. K. 2009. A comparative study between <i>Candida antarctica</i> lipase B and <i>Pseudomonas fluorescens</i> as catalyst for polycaprolactone synthesis: Effect of temperature, <i>USM Chemical Engineering Colloquium</i>, 2 Nov. 2009, Penang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Studies on the Structural and Optical Properties of III-V Nitrides (InAlGa _N) Quaternary Nitrides Alloys Thin Films (Revised version)
Project Number	03-01-05-SF0268
Project Leader and Team Members	Leader: Haslan Abu Hassan Member: Zainuriah Hassan
Field of Research	Physical Sciences
Project Summary	<p>The objectives of the project were to investigate the effects of alloys composition, x and y, on the structural and optical phonon modes as well as the energy band gap of the III-V nitrides quaternary (In_xAl_yGa_{1-x-y}N) alloys thin films. In_xAl_yGa_{1-x-y}N quaternary alloys thin films of various compositions (various values for x and y) were successfully grown using the PA-MBE on sapphire and silicon substrates. These include undoped and doped materials. Their phonons have been measured using Raman and FTIR spectroscopies, while their energy band gaps were investigated using UV visible and PL spectroscopies. Further characterisations of the structural and optical quality of the thin films have been performed using AFM, SEM, XRD and ATR FTIR. A MREI model has been utilised to investigate the variation of the phonons frequency with x and y and experimental fittings were performed. A SHO model was also used to simulate the surface phonons. The energy band gaps have been simulated using Vegard's Law for quaternary alloys that includes bowing parameters when fitted to the experimental results. The possibilities of using quaternary nitrides as active region for LDs and photodetectors for blue-UV applications were highlighted in this study.</p>
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Abid, M.A., Abu Hassan, H. and Ng S.S. 2010. Theoretical and experimental investigations of zone-center optical phonons in wurtzite Al_xGa_{1-x}N using pseudo unit cell model. <i>Optoelectronics and Advanced Materials - Rapid Communications</i> 4: 693-698. 2. Ng, S.S., Lee, S.C., Bakhori, S.K.M., Hassan, Z., Abu Hassan, H., Yakovlev, V.A., Novikova, N.N. and Vinogradov, E.A. 2010. Surface phonon polariton characteristics of In_{0.04}Al_{0.06}Ga_{0.90}N/AlN/Al₂O₃ heterostructure. <i>Optics Express</i> 18: 10354-10359.

3. Abid, M.A., Abu Hassan, H., Hassan, Z., Ng, S.S., Bakhori, S.K.M. and Abd Raof, N.H. 2010. Structural and optical properties of AlxInyGa1-x-yN quaternary alloys grown on sapphire substrates by molecular beam epitaxy. *Microelectronics International* 27: 148-153.
4. Ng, S.S., Hassan, Z. and Abu Hassan, H. 2009. Surface phonon polariton in InAlGaN quaternary alloys. *World Academy of Science, Engineering and Technology* 55: 189-193.
5. Abd. Raof, N.H., Abu Hassan, H., Mohd Bakhori, S.K., Ng, S.S. and Hassan, Z. 2009. Structural and optical properties of InxAlyGa1-x-yN quaternary alloys. *World Academy of Science, Engineering and Technology* 55: 348-351.
6. Thahab, S.M., Abu Hassan, H. and Hassan, Z. 2009. InAlGaN quaternary multi-quantum wells UV laser diode performance and characterization. *World Academy of Science, Engineering and Technology* 55: 352-355.

Proceedings/Conferences/Seminars:

1. Ahmad, M.A., Lee, S.C., Bakhori, S.K.M., Ng, S.S., Hassan, Z. and Abu Hassan, H. 2010. Polarized infrared reflectance study of InGaN semiconductor. *AIP Conference Proceedings*, 5-16 July 2010, Trieste, Italy.
2. Abid, M.A., Abu Hassan, H., Hassan, Z., Ng, S.S., Raof, N.H.A. and Bakhori, S.K.M. 2010. The study of energy band gap of AlxInyGa1-x-yN quaternary alloys using UV-VIS spectroscopy. *AIP Conference Proceedings*, 5-16 July 2010, Trieste, Italy.
3. Yusof, Y., Abid, M.A., Raof, N.H.A., Ng, S.S., Abu Hassan, H. and Hassan, Z. 2010. XRD analyses of $\text{In}_{0.10}\text{Al}_x\text{Ga}_{0.90-x}\text{N}$ ($0 \leq x \leq 0.20$) quaternary alloys. *AIP Conference Proceedings*, 5-16 July 2010, Trieste, Italy.
4. Bakhori, S.K.M., Lee, S.C., Ahmad, M.A., Ng, S.S. and Abu Hassan, H. 2010. Polarized infrared reflectance studies of quaternary $\text{In}_{0.04}\text{Al}_{10.06}\text{Ga}_{0.90}\text{N}$, *AIP Conference Proceedings*, 5-16 July 2010, Trieste, Italy.
5. Abd. Raof, N.H., Ng, S.S., Abu Hassan, H. and Hassan, Z. 2010. Kramers-Kronig analysis of infrared reflectance spectra for quaternary InxAlyGa1-x-yN Alloy, *AIP Conference Proceedings*, 5-16 July 2010, Trieste, Italy.



	6. Ng, S.S., Hassan, Z. and Abu Hassan, H. 2010. Determination of the Al composition of AlxGa1-xN thin films by means of EDX and XRD Techniques, <i>AIP Conference Proceedings</i> , 5-16 July 2010, Trieste, Italy.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	High Efficiency Multispectrum Solar Cell
Project Number	03-01-05-SF0270
Project Leader and Team Members	Leader: Kamarulazizi Ibrahim Members: Zainuriah Hassan, Haslan Abu Hassan, Md Roslan Hashim and Azlan Abdul Aziz
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to evaluate materials for high efficiency multispectrum solar cells; to evaluate device structures for high efficiency multispectrum solar cells; to optimise the growth parameters for high efficiency multispectrum solar cells; and to determine field reliability of high efficiency multispectrum solar cells.All of the project objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Characterisation and Production of Bio-polymeric Flocculants from Microorganisms
Project Number	03-01-05-SF0271
Project Leader and Team Members	Leader: Norli Ismail Members: Norhashimah Morad and Teng Tjoon Tow
Field of Research	Material Sciences
Project Summary	The objectives of the project were to screen and isolate bioflocculant producing bacteria from various sources; to investigate characteristics of bioflocculants produced from different bacteria; and to compare flocculating activities of various bioflocculants. All of the objectives were successfully achieved.
Publications/Products/ Outcomes	Proceedings/Conference/Seminar: 1. Hazana, R., Norli, I., Ibrahim, M. H. and. Fazilah, A. 2008. Flocculating activity of bioflocculant producing bacteria isolated from closed drainage system (CDS) at the Prai Industrial Zone, Penang, Malaysia. <i>Proceeding International Conference on Environmental research and Technology (ICERT)</i> , 28 April – 3 May 2008, Penang.
Additional Information	International Linkages: ISWA, University of Stuttgart, Germany
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Development of High Speed Permanent Magnet Brushless Machines
Project Number	03-01-05-SF0272
Project Leader and Team Members	Leader: Dahaman Ishak Members: Othman Sidek, Indra Putra Almanar and Soib Taib
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design permanent magnet brushless machine for high speed applications; to optimise the motor dimensions for minimum copper loss, minimum stator iron loss and minimum rotor loss; to design and simulate 3-phase inverter (power electronics) requirement to drive the motor; and to build and test the prototype in order to measure and compare results. In this study, the finite element software (Opera2D) was used to design and model the motor. Back-emf waveforms, cogging torque, flux linkage and inductance variances with rotor position were estimated. Minimum copper loss and minimum iron loss were calculated. The rotor loss which is very critical for high speed motor was computed in 2D finite element analysis.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of New Thermoplastic Elastomers (TPE's) Based on Ethylene Vinyl Acetate (EVA)/Natural Rubber (SMR L) Blends
Project Number	03-01-05-SF0274
Project Leader and Team Members	Leader: Hanafi Ismail Members: Zulkifli Ahmad and Zulkifli Mohamad Arif
Field of Research	Material Sciences
Project Summary	The objectives of the project were to establish an optimum processing condition in order to produce a new class of thermoplastic elastomeric materials based on ethylene vinyl acetate and natural rubber blends (EVA/ SMR L); to determine the properties of new thermoplastic elastomeric (TPE) such as mechanical, physical and thermal properties; to determine the optimum properties of new TPE material by using a suitable compatibiliser; and to study the potential application of new thermoplastic elastomeric (TPE) material. All of the project objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Control of Intensified Neutralisation Reactor
Project Number	03-01-05-SF0276
Project Leader and Team Members	Leader: Syamsul Rizal Abd Shukor Members: Abdul Latif Ahmad and Zainal Ahmad
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop a mechanistic model of the intensified neutralisation reactor; to design a controller using numerical and analytical methods; to investigate the dynamic interactions between the elements in the control loop; to identify the performance threshold of the system; to design and develop the intensified neutralisation reactor; to investigate the developed controller for implementation of advanced supervisory control for the intensified neutralisation reactor; and to compare the existing conventional control strategies via simulation and experimental studies. All of the objectives were achieved successfully.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Barzin, R., Abd Shukor, S.R. and Ahmad A. L. 2010. New spectrophotometric measurement method for process control of miniaturized intensified systems. <i>Sensors and Actuators B</i>146: 403–409. 2. Barzin, R., Abd Shukor, S. R. and Ahmad, A. L. 2008. Challenging issues in control of intensified process. <i>Journal Reintek</i> 3: 258-266. 3. Barzin, R., Abd Shukor, S.R. and Ahmad A. L. 2007. An overview of difficulties in controlling intensified process. <i>ASEAN Journal of Chemical Engineering</i> 7: 8-16. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. AbdShukor, S.R., Lee, K.M., Barzin, R. and Ahmad, A.L. 2010. Development of model-based control strategy for neutralisation process in a microreactor.1st International Conference on Process Engineering and Advanced Materials (ICPEAM), <i>24th Symposium of Malaysian Chemical Engineers SOMChE</i>, 15 – 17 June 2010, Kuala Lumpur. 2. Barzin, R., AbdShukor, S.R. and Ahmad, A.L. 2007. An overview of difficulties in controlling intensified process. <i>14th Regional Symposium on Chemical Engineering (RSCE)</i>, 4-6 Dec 2007, Yogyakarta, Indonesia.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	An Intelligent Sensor-based Micro-robotic Manipulator for a Tele-operated Neurosurgical Application
Project Number	03-01-05-SF0281
Project Leader and Team Members	Leader: Mohd Rizal Arshad Members: Nazri Ali, R.Badlishah Ahmad and Jafri Malin Abdullah
Field of Research	Medical and Health Sciences
Project Summary	The objectives of the project were to develop a highly accurate micro-robotic manipulator for minimal invasive type of application in neurosurgery medical operation; to build an advance as well as intelligent system controller for sensor and system fusion; to develop a reliable and efficient communication infrastructure; and to set-up a performing teleoperation application for medical robots. The robotic manipulator design specifications have been identified and simulated. The design and simulation part of the controller have been completed.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Robust Video Codec Transmission System in Mobile Channels Using Multiple Description Lattice Coding (MDLC) Technique
Project Number	03-01-05-SF0282
Project Leader and Team Members	Leader: Mohd Fadzli Mohd Salleh Members: Othman Sidek and Mohd Fadzil Ain
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to develop a multiple description lattice coding (MDLC) techniques or algorithm whereby multiple videos data are sent through multiple channels all at once increasing robustness of data transmission in mobile channels; to develop an efficient bit allocation joint-source and channel coding algorithm based on the condition of the channels; to implement hardware prototype of the multistage lattice vector quantisation (MLVQ) video codec using FPGA and DSP ICs; and to implement hardware prototype of the MDLC video codec transmission system using FPGA and DSP ICs. The first and second objectives were achieved successfully. For the third objective, the image transmission system was 90% developed using MLVQ technique but testing on images and video have not been done.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Study of Pile/Soil Setup - A Phenomenon of Capacity Gained in Time for Driven Pile in Soft Clay
Project Number	03-01-05-SF0284
Project Leader and Team Members	Leader: Mohamad Razip Selamat Members: Choong Kok Keong and Ng Wen Kuan
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to establish a low cost field testing procedure in investigating soil parameters which affect pile/soil set-up phenomenon; to establish a relation correlating various parameters incorporating the effect of set-up on capacity of a driven pile such as time after driving, pile size, pile type, and soil type especially in soft clay; and to come up with an innovative pile design exploiting the set-up phenomenon.All of the project objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Slope Failure Prediction Using Geophysical Monitoring
Project Number	03-01-05-SF0287
Project Leader and Team Members	Leader: Mohd Nawawi Mohd Nordin Members: Rosli Saad, Khiruddin Abdullah, Zuhar Zahir Tuan Harith and Loke Meng Heng
Field of Research	Earth Sciences
Project Summary	The objectives of the project were to develop a method in order to predict slope failure by real-time monitoring of soil properties by using geophysical techniques i.e. geoelectrical imaging, seismic and ground penetrating radar. The geoelectrical technique was successfully used in monitoring the soil condition. Nevertheless, the seismic and ground penetrating techniques were simply used for subsurface mapping purposed only. The seismic technique could not be utilise near highways because of traffic noise.
Publications/Products/ Outcomes	Proceedings/Conference/Seminar: 1. Rosli, S., Mohd Nawawi, M. N. and Edy, T. 2008. Subsidence prediction along Karak Highway by 2D electrical imaging method. <i>Proceedinds of International Conference on Getechnical and Highway Engineering, Geotropika 2008</i> , 26-27 May 2008, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Lanthanide Doped Bismuth Titanate a Promising Candidate for Potential Fram Application
Project Number	03-01-05-SF0288
Project Leader and Team Members	Leader: Srimala Sreekantan Members: Umar Al-Amani Azlan, Zul Azhar Zahid Jamal, Ahmad Fauzi Mohd Noor and Khairunisak Abdul Razak
Field of Research	Material Sciences
Project Summary	The objectives of the project were to study the formulation of lanthanide doped bismut titanate; to investigate the process parameter in the formation of lanthanide doped bismut titanate; to study the effect of microwave sintering on lanthanide doped bismut titanate; and to characterise the physical, dielectric and ferroelectric properties of functional materials.All except the third objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Impact Response Studies of Knee Implant for Performing High Flexion Activities
Project Number	03-01-05-SF0290
Project Leader and Team Members	Leader: Mohamad Ikhwan Zaini Ridzwan Members: Amran Ahmed Shokri, Hazizan Md Akil and Ahmad Kamal Ariffin Mohd Ihsan
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to develop knee implant that has less fitting problems with femorotibial joint and long lasting implant. The implant may also perform high flexion activities such as sitting cross legged and kneeling position. The measureable objectives were to investigate the dynamic characteristics of the particular bone so that the biological aspect can be understood for effective implantation; to simulate the knee implant model developed for optimisation; to predict the performance under a wide range of operating conditions; and to investigate the low velocity impact (quasi-static) response of constituent material for Total Knee replacement. The file of CT scan datasets of real knee in dicom format was transferred into mimics software in order to generate CAD model whereas the component of real knee implant was scanned by utilising the 3D scanner. Both models (i.e., bone and implant) were assembled in order to simulate the condition of implanted knee. The implant was simulated as it performed high flexion activities, i.e. more than 135 degree angles of flexion. In order to attain this situation, the current geometrical of implant components were modified and improved to allow maximum rotation. The effects of modifying the implant parameters onto the bone interfaces were analysed by using finite element analysis (FEA) under different angle conditions. Stress distributions were relatively high at the anterior side of polyethylene insert when the femoral implant increased its flexion. The samples of UHMWPE were tested tribologically and during low velocity impact.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. Ikhwan Z. R. M., Solehuddin S., Sh. Mohd Firdaus, Sh. A. N. and Shokri, A.A. 2007. Analysis on knee implant during deep flexion. <i>Proceedings of Conference on Applications and Design in Mechanical Engineering (CADME)</i>, 25-26 Oct 2007, Perlis.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Membrane Gas Absorption Technology for the Removal of Carbon Dioxide
Project Number	03-01-05-SF0292
Project Leader and Team Members	Leader: Lee Keat Teong Members: Sunarti Abd Rahman and Abdul Latif Ahmad
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to fabricate a membrane permeation test-rig and membrane gas absorption (MGA) system; to study the permeation of carbon dioxide in various flat sheet and hollow fibre membrane; to characterise the membrane based on its physical and chemical properties; to study the efficiency of carbon dioxide removal using the membrane gas absorption system under a wide range of operating conditions such as different module configuration and types of liquid absorbents; and to optimise the membrane gas absorption process. All of the project objectives were successfully achieved.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ahmad, A.L, Sunarti, A.R, Lee, K.T and Fernando W.J.N. 2008. Effect of DEA in membrane gasabsorption system using polymeric flat sheet membrane. <i>6th Regional Symposium onMembrane Science & Technology</i>, 13-15 Aug 2008, Phuket Thailand. 2. Ahmad, A.L, Sunarti, A.R, Lee, K.T and Fernando W.J.N. 2008. Review of liquid absorbent behaviours in membrane gas absorption process. <i>12th Asia Pacific Confederation of Chemical Engineering Congress</i>, 3-6 Aug 2008, Dalian, China. 3. Ahmad, A.L, Sunarti, A.R, Lee, K.T and Fernando W.J.N. 2008. Thin Film Composite (TFC) membrane in membrane gas absorption system. <i>12th Asia Pacific Confederation of Chemical Engineering Congress</i>, 3-6 August 2008, Dalian, China. 4. Ahmad, A.L, Sunarti, A.R, Lee, K.T and Fernando W.J.N. 2008. Use of AMP as liquid absorbent for the removal of CO₂ from flue gas using polymeric flat sheet membrane contactor, <i>Proceeding of International Conference on Environment 2008 (ICENV 2008)</i>, 15-18 December 2008, Penang.

Additional Information	Industrial Linkages: Lotus Scientific (M) Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Modified, Cost Effective Kaolin Filled Thermoplastic Composites for Automotive Application
Project Number	03-01-05-SF0297
Project Leader and Team Members	Leader: Azlan Ariffin Members: Zulkifli Mohamad Arif and Zainal Arifin Mohd. Ishak
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to study the ability of kaolin as filler for selected thermoplastics (PVC, PP or PE) by understanding the kaolin basic characteristics and through evaluation of single filler composites mechanical and thermal properties; to investigate the feasibility of kaolin partially replace talc as the base filler in selected thermoplastics and minimize the use of more expensive talc in thermoplastic polymer composite; to examine the potential of kaolin to fairly overcome the disadvantages of talc filled thermoplastics; and to identify other possible approach to process thermoplastic composite that could aid in dispersing the kaolin filler evenly throughout the matrix polymer. All of the project objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Integrated Supported Nano-TiO ₂ Photocatalyst Adsorbent (INTPCA) for Photocatalytic Degradation of Phenol in a Fluidised Bed Reactor
Project Number	03-01-05-SF0306
Project Leader and Team Members	Leader: Abdul Rahman Mohamed Members: Zainal Ahmad, Subhash Bhatia and Lee Keat Teong
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to develop a highly active integrated supported nano-TiO ₂ photocatalyst adsorbent (INTPCA); to characterise the physical and chemical properties of INTPCA; to study the performance of INTPCA for the photocatalytic degradation of phenol in a batch reactor; to study the kinetic of photocatalytic degradation of phenol in the batch reactor; and to study the performance of the INTPCA for the photocatalytic degradation of phenol in the fluidised bed reactor under a wide range of process. All of the project objectives were successfully achieved.
Publications/Products/ Outcomes	Journal: 1. Lam, S. M., Sin, J. C. and Abdul R. M. 2008. Recent patents on photocatalysis over nanosized titanium dioxide. <i>Recent Patents on Chemical Engineering</i> 1:209-219. Proceedings/Conference/Seminar: 1. Nor Fauziah, Z., Ahmad, Z. A. and Abdul Rahman, M.2008. Development of supported TiO ₂ photocatalyst based adsorbent for photocatalytic degradation of phenol. <i>International Conference on Environment 2008 (ICENV)</i> , 15-17 Dec 2008, Penang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Nanostructure Thin Film Tetragonal Zirconia for Semiconducting Application
Project Number	03-01-05-SF0313
Project Leader and Team Members	Leader: Ahmad Fauzi Mohd Noor Members: Srimala Sreekantan, Niki Prastomo, Zainovia Lockman and Cheong Kuan Yew
Field of Research	Material Sciences
Project Summary	The objectives of the project were to produce a single phase Tetragonal ZrO ₂ by doping the medium atoms with larger size atoms such as Niobium(Nb), Tantalum(Ta) and Tin(Sn) as well as lower size atom such as Yttrium(Y); to investigate the effect of synthesis process of Tetragonal Zirconia powder to its properties; to produce a thin density film of Tetragonal Zirconia with optimum physical and semiconducting properties; and to investigate the effect of Nb/Ta/Sn to y ratio within the phase of ZrO ₂ (i.e. if the tetragonal phase is retained) and its semiconducting properties. The first and second objectives were successfully achieved. In the third and fourth objectives thin film study was affected by the chamber furnace adopted initially but replacement with tube furnace enables better results to be achieved. The choice of substrate surface was also affected by the quality of thin film and it has been overcome by suitable treatment.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Hydraulic Modeling of Pump Sump Using Physical Model
Project Number	03-01-05-SF0328
Project Leader and Team Members	Leader: Ismail Abustan Members: Muhammad Suhaimi Md Ali, Kamarudin Samuding, Rezaur Rahman Bhuiyan and Mohd Zulkifly Abdullah
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to define the hydraulic characteristics and performances of pumps that operated in limited sump spaces and/or with obstruction close to the pump; to determine the hydraulic problems encountered in pump sumps under extreme pump sump conditions i.e. water level below recommended minimum level and/or large inflow; to develop a comprehensive pumps-pump sumps relationship on hydraulic performance in terms of geometry of pump sumps; and to determine an optimal design of pump sumps with a minimum maintenance and operation cost. The first three objectives were achieved successfully. The validation of the fourth objective could not be certified whereby the operational cost of the pump station could not be evaluated.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis and Characterisation of Magnetic Ni-Au and Co-AuCore-Shell Nanoparticles for Biomedical Applications
Project Number	03-01-05-SF0330
Project Leader and Team Members	Leader: Azizan Aziz Members: Zainovia Lockman and Srimala Sreekantan
Field of Research	Material Sciences
Project Summary	The objectives of the project were to prepare Ni and Co nanoparticles with small size and narrow size distribution; to prepare core-shell Ni-Au and Co-Au nanoparticles; to characterise physical, chemical and magnetic properties of produced nanoparticles; and to determine the effect of the synthesis parameters such as temperature, concentration, pH, time, various surfactants, feeding order and calcination process.Ni and Co nanoparticles in the size range of 3 nm to submicron were successfully synthesised via polyol method. Ni@Au core-shell structures on the other hands were produced through redox-transmetallation process with pre-prepared Ni nanoparticles. Ni, Co and the core-shell structures formation were confirmed with TEM, FE-SEM, XRD and EDX characterisations. Characterisation with VSM showed that morphologies and sizes of nanoparticles influence the magnetic properties of as-synthesised nanoparticles. Tailoring the parameter such as temperature, concentration, pH, surfactant, protective agent and time have great influence on the morphologies and size.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a New Vibration Absorbing Handle Based on Optimal Stiffness Characteristic to Attenuate Hand Arm Vibration during Grass Cutting
Project Number	03-01-05-SF0332
Project Leader and Team Members	Leader: Zaidi Mohd Ripin
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design, analyse and test a new handle mount in order to reduce the hand-arm vibration level exposed to the user of grass trimmer employed in grass cutting; and to reduce the hand-arm vibration or acceleration level from 3.497 m/s ² to 2.5 m/s ² and optimise the stiffness and damping characteristics of the suspension used for the handle of grass trimmer.All of the project objectives were successfully achieved.
Awards/Certificates	1. International Design and Technology Exhibition (ITEX) 2010:1Gold Medal, 1 Special Award,1Best Invention Award.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of New Palm Wood Lumber Materials from Oil Palm Trunk
Project Number	03-01-05-SF0334
Project Leader and Team Members	Leader: Abdul Khalil H P Shawkataly Members: Issam Ahmed Mohammed, Mazlan Ibrahim, Ahmad Md Noor and Abdul Hamid Saleh
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to study the cell wall structure-optimisation, physical and characterisation of solid oil palm trunk; to study microwave irradiation drying process of oil palm sawn timber for improvement properties; to develop and manufacture an artificial wood lumber with optimisation properties; and to evaluate mechanical, physical, thermal and environmental exposure properties of agro-lumber product and comparison with selected heavy hard wood.All objectives were achieved successfully.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fabrication and Characterisation of Blue Lasing Devices
Project Number	03-01-05-SF0336
Project Leader and Team Members	Leader: Azlan Abdul Aziz Members: Md Roslan Hashim, Kamarulazizi Ibrahim, Mat Johar Abdullah, Zainuriah Hassan and Haslan Abu Hassan
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to install fabrication and characterisation facilities for fabricating blue lasing device; to optimise LASER fabrication in terms of contacts, etchants, isolations and packages; to fabricate blue lasing devices from high quality III-V nitrides (GaN/AlGaIn/GaN) and Zinc Oxide (ZnO) using in-house MBE system (III-Nitrides) and high vacuum rf sputtering and e-beam evaporation (ZnO); and conduct reliability and failure analysis on the fabricated blue lasing device.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ali, N.K., Hashim, M.R. and Abdul Aziz, A. 2008. Effects of surface passivation in porous silicon as H₂ gas sensor. <i>Solid-State Electronics</i> 52:1071–1074. 2. Ali, N. K., Hashim, M. R., Abdul Aziz, A. and Abu Hassan, H. 2008. Correlation of Raman and photoluminescence spectra of electrochemically prepared n-type porous GaAs. <i>Semiconductor Science and Technology</i> 23:055016. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Rosli, S. A. and Abdul Aziz, A. 2008. Etching Of Ga-based semiconductor in inductively coupled plasma chlorine-based plasma. <i>2nd International Conference on Functional Materials and Devices (ICFMD)</i>, 16-19 June 2008, Kuala Lumpur. 2. Rosli, S. A. and Abdul Aziz, A. 2008. Cl₂-based dry etching of gan using inductively coupled plasma. <i>2nd International Conference on Functional Materials and Devices (ICFMD)</i>, 16-19 June 2008, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Continuous Production of Carbon Nanotubes via Catalytic Decomposition of Methane Using Rotary Horizontal Reactor
Project Number	03-01-05-SF0337
Project Leader and Team Members	Leader: Abdul Rahman Mohamed Members: Lee Keat Teong, Tye Ching Thian and Sharif Hussein Sharif Zein
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to synthesise the effectiveness of MgO supported metal catalysts for CNTs production; to study the process of producing CNTs in rotary horizontal reactor; to purify the as-produced CNTs; and to study the reaction kinetic and modeling for CNTs production. The first and fourth objectives were successfully achieved whereas the second and third objectives were partially achieved.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Yeoh, W. M., Lee, K. Y., Chai, S. P., Lee, K. T., Abdul Rahman, M. 2010. The effect of molybdenum content in Co-Mo/MgO for the large-scale production of high quality carbon nanotubes. <i>Journal of Alloys and Compound</i> 493: 539-543. 2. Yeoh, W. M., Lee, K. Y., Chai, S. P., Lee, K. T., Abdul Rahman, M. 2009. Synthesis of high purity multi-walled carbon nanotubes over easily purified Co-Mo/MgO catalyst via catalytic chemical vapor deposition of methane. <i>New Carbon Materials</i> 24:119-123. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Yeoh, W. M., Lee, K. Y., Chai, S. P., Lee, K. T., Abdul Rahman, M. 2010. Identification of the effect of active metal contents on large-scale synthesis of high quality carbon nanotubes. <i>Proceeding of the International Conference on Nanotechnology - Research and Commercialisation (ICONT)</i>, <i>Journal of Alloys and Compounds</i>, 493, 539-543, 2010.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Contraction of Bioorganic Emitter and Optoelectrical Properties of Organic Light Emitting (OLE) Molecules from Oil Palm Waste and Related Agro-based Components
Project Number	03-01-05-SF0366
Project Leader and Team Members	Leader: Yeap Guan Yeow Members: Wan Ahmad Kamil Che Mahmood and Boey Peng Lim
Field of Research	Chemical Sciences
Project Summary	The objectives of the project were to prepare a new or modified molecules with electroluminescence (EL) characteristics; to characterise and to determine the chemical structure suitable as luminophores; to assess the workability of the materials derived from the components in locally available natural products as a way to identify the bioorganic light emitting diode (BOLED) materials; and to obtain the BOLED molecules through sustainable development in green chemistry in which the molecules will be derived from locally available natural products. New materials exhibiting nematic chiral (N%) phase and also the unusual blue phase (BP) were successfully prepared. Although the materials can only exhibit the blue light when they are heated up to 140-150 degree Celsius, the materials are still quite stable.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Rare Earths Substituted mg-mn Ferrite System for Microwave Application
Project Number	03-01-05-SF0375
Project Leader and Team Members	Leader: Ahmad Fauzi Mohd Noor Members: Hasmaliza Mohamad, Khairunisak Abdul Razak, . Radzali Othman, Aye Aye Thant and Srimala Sreekantan
Field of Research	Material Sciences
Project Summary	The objectives of the project were to study the formulation of rare-earths substituted MgMn ferrite by conventional and citrate route; and to investigate the processing parameter on ferrite characters such as the structure, composition, electric and magnetic properties.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	One-dimensional Silicon Nanostructures for Nanoelectronic Device Applications
Project Number	03-01-05-SF0384
Project Leader and Team Members	Leader: Sabar Derita Hutagalung Members: Khatijah Aisha Yaacob, Yusof Wahab, Zainovia Lockman, Sharif Hussein Sharif Zein and Uda Hashim
Field of Research	Material Sciences
Project Summary	<p>Silicon nanowire (SiNW) is a promising one-dimensional (1D) nanostructure that shows novel physical properties. In this project, a nanoelectronic device of silicon nanowire transistor (SiNWT) was fabricated using SiNW. Atomic force microscopy (AFM) lithography was performed to create nanoscale oxide pattern of SiNWT structure via local anodic oxidation (LAO) process on silicon on insulator (SOI) surface. These nanoscale oxide patterns will acts as a mask to protect silicon layer during etching process. The SiNWT structures consist of a nanowire as a channel, two pads of source (S) and drain (D), and a lateral gate (G). The fabricated device structure was then wet chemical etched with tetramethylammonium hydroxide (TMAH) and hydrofluoric acid (HF) to remove the uncover silicon layer and oxide layer, respectively. It was found that the 9V tip voltage and 6 $\mu\text{m/s}$ tip writing speed are the most suitable parameters to fabricate nanostructure mask pattern of device by AFM lithography. The TMAH etching at 65°C for 35s was found as the best condition to remove silicon layer completely from uncovered SOI surface. After HF etching at room temperature for 5s, a completed SiNWT device has been fabricated. From the Id-Vd and Id-Vg characteristic confirmed that the fabricated SiNWT is similar to a p-type channel FET.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Abdullah, A.M., Lockman, Z.andHutagalung, S.D. 2010. Effect of KOH etchant concentration and initiator on the fabrication of siliconnanowire transistor patterned by AFM nanolithography. <i>Journal of Industrial Technology</i> 2. Abdullah, A.M., Hutagalung, S.D. and Lockman, Z. 2010. Influence of room humidity on the formation of nanoscale silicon oxide patterned by AFM lithography. <i>International Journal of Nanoscience</i> 9: 251-255.



	<ol style="list-style-type: none"> 3. Lew, K.C. and Hutagalung, S.D. 2010. Silicon nanowire transistor fabricated by AFM nanolithography followed by wet chemical etching process. <i>International Journal of Nanoscience</i> 9: 289-293. 4. Hutagalung, S.D. and Darsono, T. 2009. On dot and out of dot electrical characteristics of silicon oxide nanodots patterned by scanning probe lithography. <i>Physica Status Solidi C</i> 6: 817-820. 5. Hutagalung, S.D., Ahmad, A., Yaacob K.A. 2009. Nickel nanoclusters catalyze growth of silicon nanowires, <i>International Journal of Nanomanufacturing</i> 4: 139-145. 6. Mohd. Adnan, M.A., Hutagalung, S.D. and Cheong K. Y. 2009. Characterization of silicon nanowires prepared by thermal evaporation using AuPd catalyst. <i>Journal of Nuclear and Related Technologies</i> 6: 87-94. 7. Aspaniza, A. and Hutagalung, S.D. 2009. Effect of annealing temperatures on the formation of silicon nanostructures prepared by thermal evaporation. <i>Journal of Nuclear and Related Technologies</i> 6: 217-223. 8. Liong, W.L., Sreekantan, S. and Hutagalung, S.D. 2009. Effect of concentration of sodium borohydride on the synthesis of silicon nanoparticles via microemulsion route. <i>World Academy of Science, Engineering and Technology</i> 59: 551-555. <p>Products:</p> <ol style="list-style-type: none"> 1. Silicon nanowire transistor fabricated by AFM lithography. 2. Silicon nanowire transistor with 33 nm lateral gate gap.
Awards/Certificates	<ol style="list-style-type: none"> 1. International Exposition of Research and Inventions of Institutions of Higher Learning (PECIPTA) 2009: 1 Bronze Medal. 2. International Invention, Innovation & Technology Exhibition (ITEX) 2010: 1 Silver Medal. 3. Second International Conference and Workshop on Basic Sciences & Regional Annual Fundamental Science Seminar (ICORAFSS) 2009: Best Poster Award.
IP Status	<ol style="list-style-type: none"> 1. Malaysian Patent filed (PI 2010004212) and International Patent filed (PCT/MY2010/000112): Silicon Nanowire Transistor (SiNWT) and Process for Fabricating the Same

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Membrane Acid Recovery System for the Production of Bioethanol from Lignocellulosic Biomass
Project Number	03-01-05-SF0389
Project Leader and Team Members	Leader: Lim Koon Ong Members: Mashitah Mat Don and Teng Tjoon Tow
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to recover the acid used in the hydrolysis process and to reduce cost as well as minimise the discharge of pollutants from the hydrolysis process. The main objective of the project was to recover the acid used in the acid hydrolysis process by electrodialysis membrane system. The parameters studied include the effect of washing, feedstock size range, effect of manual mixing, effect of raw material to acid solution ratio, effect of reaction time and effect of copper II sulphate. A study of factors that influence the determination of glucose by colometric method showed the limitations of DNS assay and Glucose Enzymatic GE assay, thus throwing into question the reports of previous researchers on the GE usage.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Study of Effect of Ultrasonic in Enhancement of Dehydration Rates: Vegetable and Fruit Products
Project Number	03-01-05-SF0393
Project Leader and Team Members	Leader: Weeramundage J N Fernando Members: Syamsul Rizal Abd Shukor and Abdul Latif Ahmad
Field of Research	Engineering Sciences
Project Summary	The objectives of the project includes to design, model and commission an experimental ultrasonic dehydration rig for sliced vegetables, agricultural and fruit material; to determine the mass transfer characteristics and structural behaviour of slices drying under general dehydration conditions and also with IR (without ultrasonic application); to study the mass transfer characteristics and the structural behaviour of slices with and without IR under ultrasonic application; to compare structural and other diffusional differences governing the mechanism of mass transfer as a result of ultrasonic application; and to develop and validate a theoretical model for application of ultrasonic for the estimation of dehydration rates based on experimental observations. Experimental ultrasonic dehydration rig for sliced materials was designed and commissioned. All the objectives were successfully achieved.
Publications/Products/ Outcomes	Proceedings/Conference/Seminar 1. Fernando, W.J.N., Ahmad, A.L. and Abd. Shukor, S.R.2010. The effect of infrared radiation on diffusion coefficients and activation energies in convective drying. A case study for slices of banana, cassava and pumpkin. <i>The International Conference on Process Engineering and Advanced</i> , 15 June 2010, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Microstructure and Mechanical Properties of Squeeze Cast A356Al-Si Alloy Inoculated with TiC
Project Number	03-02-11-SF0001
Project Leader and Team Members	Leader: Lim Ying Pio Member: Shamsuddin Sulaiman
Field of Research	Material Sciences
Project Summary	The objectives of the project were to assess the mechanical properties of squeeze cast A356 Al-Si alloys which is inoculated with Al-Ti-C master alloy of different weight percentage and to correlate them with the microstructure and the casting process parameters. The squeezing casting mold complete with core and cavity, mold base, cooling channel and ejector pin system was successfully designed and fabricated. The complete hydraulic squeezing casting machine was not designed and fabricated due to insufficient funds and time constraints. If completed successfully, squeeze casting process and manufacturing technology can replace die casting process to fabricate better quality metal products for the automotive industry.
Publications/Products/ Outcomes	Proceedings/Conference/Seminar: 1. Lim Ying Pio. 2009. Grain refinement response of aluminium alloy A356 gravity die castings towards TiCa15 grain refiner. <i>4th International Conference On Recent Advances In Materials, Minerals & Environment and 2nd Asian Symposium On Materials & Processing (RAMM & ASMP)</i> , 1-3 June 2009, Penang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Investigating the Potential of Harnessing Ocean Energy in Malaysia for Electricity Generation Using Simulation Approach
Project Number	03-02-11-SF0002
Project Leader and Team Members	Leader: Lim Yun Seng Member: Vigna Kumaran Ramachandar
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to assess and establish the potential of harnessing wave energy, tidal energy and ocean thermal energy conversion in Malaysia for electricity generation; to determine the technological viability, economic feasibility and the environmental desirability of utilising ocean energy; and to present the findings and recommendations of the study to the concerned policy makers, decision makers, planners and possible private investors for the eventual formulation of the comprehensive policy and programme/project on the development and utilisation of ocean energy for power generation. A numerical model of oceanography that can access the potential of harnessing wave energy, tidal energy and ocean thermal energy conversion in Malaysia was developed. The results of the numerical model indicate that there is great potential for harnessing tidal energy in Malaysia. However, there is little potential for wave energy and ocean thermal energy conversion. The total amount of energy to be generated from tidal turbines is about 12.4 GWh/year. Studies to identify the technological viability, economic feasibility and environmental benefits of utilising tidal energy was carried out. The depth and the area of coverage on several potential sites are the two important parameters to determine whether marine current turbines can be installed or not. Calculations have been carried out to determine the economical feasibility of installing marine current turbines.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Koh Siong Lee Lim Yun Seng.2008. Preliminary investigation of the potential of harnessing tidal energy for electricity generation in Malaysia, 2008 <i>IEEE PES Transmission and Distribution Conference and Exposition</i>, 21-24 April 2008, Chicago, Illinois USA.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Investigation of Silicon Nanocrystals: Synthesis, Structural and Properties Characterisations
Project Number	03-02-11-SF0004
Project Leader and Team Members	Leader: Teh Geok Bee Member: Saravanan Nagalingam
Field of Research	Material Sciences
Project Summary	<p>The objectives of the project were to investigate the feasibility of using micro-emulsion techniques in preparing unique silicon nanocrystals at room temperature; to elucidate the factors influencing the growth of nanocrystals via micro-emulsion technique; to investigate the photoluminescence properties of silicon nanocrystals in relation to their particle sizes; to elucidate the structural properties of silicon nanocrystals via X-ray diffractometry; and to investigate, if any, structural defects or interfaces of silicon nanocrystals using high resolution electron microscopy. Feasibility study employing microemulsion techniques for synthesis of silicon nanoparticles was done. Two microemulsion techniques employing CTAB and TOAB were found to be able to produce nanosized silicon particles ranging from 5nm - 20 nm. The choice of microemulsion techniques will affect the size and stability of the produced particles. No significant structural defect was detected via high resolution electron microscopy and the silicon nanoparticles appeared spherical and their grain boundary or atomic fine structure gave no indication of possible surface defect. Hence, it is postulated that the photoluminescent property is due to the quantum confinement rather than the surface defects. The established synthetic techniques will be employed to produce sufficient silicon nanoparticles and the silicon nanoparticles will be incorporated into a solar cell project which began in October 2008. The high photoluminescent property of the silicon nanoparticles will be exploited in building a next generation solar cell concentrator.</p>
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. The, G. B., Saravanan, N., Tilley, R. D, Ramesh, S. and Lim Y. S. 2009. Colloidal synthesis of silicon nanocrystals via inverse micelles microemulsion. <i>Zeitschrift für Physikalische Chemie</i> 223: 1417-1426.



	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Teh, G. B., Tan, S. G., Saravanan, N., Kho, C. L., Lim, Y. S. and Ramesh, S. 2009. Efficacy of utilization of microemulsion technique to produce photoluminescent nanoparticles. <i>Proceedings of Young Scientists of Asia Conclave</i>, 15 – 17 January 2009, Bangalore, India. 2. Foo, B. Y. and Teh, G. B. 2008. Investigation of silicon nanoparticles: The effect of capping molecules on silicon nanopaticles. <i>2nd International Conference for Young Chemists</i>, 18 -20 June 2008, Penang. 3. Teh, G. B., Foo, B. Y. and Saravanan N. 2007. Investigation of silicon nanocrystals: synthesis, structural and properties characterisations. <i>Proceedings of Malaysian Science and Technology Congress</i>, 4-6 Sept 2007, Selangor. 4. Teh, G. B., Foo, B. Y., Saravanan, N., Louh, R. F., Chang, C. J. and Yuan, W. L. 2007. Investigation of photoluminescent properties of silicon nanocrystals produced via microemulsion techniques. <i>Proceedings of the 41st IUPAC World Chemical Congress, Lingotto Conference Centre</i>, 5 – 11 Aug 2007, Turin, Italy.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis of Biodegradable Superabsorbent Polymers
Project Number	03-02-11-SF0029
Project Leader and Team Members	Leader: Chee Swee Yong Members: Gan Seng Neon and Wong Ching Lee
Field of Research	Material Sciences
Project Summary	The objectives of the project were to develop biodegradable plastics which contain plant-based materials such as alginate from seaweed; to produce a superabsorbent polymer with excellent water absorbency; and to study the biodegradability and other properties of the superabsorbent polymer. A biodegradable plastic which contain plant-based materials such as alginate from brown seaweed was successfully synthesized. A superabsorbent polymer with water absorbency between 60-80 g/g of dry polymer weight was produced. The superabsorbent polymer produced was biodegradable. The polymer has undergone the highest percent weight loss of 83% in soil extract after 40 days incubation. Other properties of the superabsorbent polymer such as Thermogravimetric analysis and FTIR analysis have been investigated.
Publications/Products/ Outcomes	Journals: 1. CheeSwee-Yong, Wong Ping-Keong and Wong Ching-Lee. 2011.Extraction and characterisation of alginate from brown seaweeds (Fucales, Phaeophyceae) collected from Port Dickson, Peninsular Malaysia. <i>Journal of Applied Phycology</i> 23: 191-196.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Investigation of the Photoluminescence and Antimicrobial Properties of Silver Nanoparticles
Project Number	03-02-11-SF0050
Project Leader and Team Members	Leader: Kho Chiew Ling Member: Saravanan Nagalingam
Field of Research	Material Sciences
Project Summary	The objectives of the project were to investigate the feasibility of using sol-gel precursor and microemulsion techniques in preparing nanosized silver particles in room temperature conditions; to elucidate the factors influencing the growth rate of the silver particles; to investigate (if any) the photoluminescence properties of the silver nanoparticles; to elucidate the structural properties of the silver nanoparticles; to investigate (if any) structural defects or interfaces defects of silver nanoparticles using high resolution electron microscopy; and to investigate the antimicrobial properties of the silver nanoparticles on Gram positive Staphylococcus aureus (S. aureus) and Gram-negative Escherichia coli (E. coli).
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Teh, G. B., Tan, S. G., Saravanan, N., Kho, C. L., Lim, Y. S. and Ramesh, S. 2009. Efficacy of utilization of microemulsion technique to produce photoluminescent nanoparticles. <i>Proceedings of Young Scientists of Asia Conclave</i> , 15 – 17 Jan2009, Bangalore, India. 2. Teh, G. B., Foo, B. Y., Saravanan, N. and Kho, C. L. 2008. Effect of CTAB on the synthesis of photoluminescent silver nanoparticles. <i>Proceedings of Particles</i> , 10 – 13 May 2008, Florida, USA.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis of Biodegradable Superabsorbent Polymers
Project Number	03-02-11-SF0029
Project Leader and Team Members	Leader: Chee Swee Yong Members: Gan Seng Neon and Wong Ching Lee
Field of Research	Material Sciences
Project Summary	The objectives of the project were to develop biodegradable plastics which contain plant-based materials such as alginate from seaweed; to produce a superabsorbent polymer with excellent water absorbency; and to study the biodegradability and other properties of the superabsorbent polymer. A biodegradable plastic which contain plant-based materials such as alginate from brown seaweed was successfully synthesized. A superabsorbent polymer with water absorbency between 60-80 g/g of dry polymer weight was produced. The superabsorbent polymer produced was biodegradable. The polymer has undergone the highest percent weight loss of 83% in soil extract after 40 days incubation. Other properties of the superabsorbent polymer such as Thermogravimetric analysis and FTIR analysis have been investigated.
Publications/Products/ Outcomes	Journals: 1. CheeSwee-Yong, Wong Ping-Keong and Wong Ching-Lee. 2011.Extraction and characterisation of alginate from brown seaweeds (Fucales, Phaeophyceae) collected from Port Dickson, Peninsular Malaysia. <i>Journal of Applied Phycology</i> 23: 191-196.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Modeling and Characterisation of Fiber Grating Sensor Devices with Nano-structured Au Coating
Project Number	03-02-11-SF0083
Project Leader and Team Members	Leader: Faidz Abd Rahman Members: Deepak Kumar, Wong Hin Yong and Pankaj Kumar Choudhury
Field of Research	Physical Sciences
Project Summary	The objectives of the project were to model the effect of nano-structured Au coating on the characteristics of the long period fibre grating (LPG); to deposit Au nano-particles using the electrostatic self-assembly (ESA) technique; and to characterize the Au-coated long period gratings for different values of coating thickness and Auparticle size. All of the objectives were successfully achieved.
Publications/Products/Outcomes	Journal: 1. Faidz Abd-Rahman, Pankaj Kumar Choudhury, Deepak Kumar and Zulfadzli Yusoff.2009. An analytical investigation of four-layer dielectric optical fibers with Au nano-coating - A comparison with three-layer optical fibers. <i>PIER</i> 90: 269–286.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of New Distribution Automation System and Remote Metering System
Project Number	03-01-14-SF0001
Project Leader and Team Members	Leader: Musse Mohamud Ahmed Members: Rosli Omar and Marizan Sulaiman
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to study the existing distribution system; to design new hardware for distribution automation system; to integrate between the hardware and software; to implement complete DAS and fabricate the real system; and to commercialise the product and train three potential researchers for technology transfer. All these objectives were successfully achieved while upscaling is needed for commercialisation.
Publications/Products/Outcomes	Product: 1. Automated Compact Substation
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Fabrication of High Curie Temperature Anisotropic Strontium Ferrite Magnets through Powder Metallurgy Technique
Project Number	03-01-14-SF0012
Project Leader and Team Members	Leader: Azizah Shaaban Members: Rosdi Ibrahim and Zaleha Mustafa
Field of Research	Material Sciences
Project Summary	The objectives of the project were to produce strontium ferrite (SrFe ₁₂ O ₁₉) calcined powder with an average particle size of 1 micron through milling technique using strontium carbonat and iron oxide powder as the starting materials; to investigate the magnetic properties of Sr-ferrite magnets obtained by powder compression moulding; to fabricate strontium ferrite sintered segments doped with Co, Ni and Mn; and to investigate the remanence, coercivity, energy product and Curie temperature of sintered segments doped with Co, Ni and Mn. These objectives were achieved. The magnetic properties of Sr-ferrite magnets obtained by powder compression moulding has been studied and sintered components doped with Mn have been fabricated.
Publications/Products/ Outcomes	Product: 1. Permanent magnet
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Lean Construction Management (LCM)
Project Number	03-01-13-SF0017
Project Leader and Team Members	Leader: Christy Pathrose Gomez Members: Sallehuddin Shah, Mohd Yamani Yahya and Basil David Daniel
Field of Research	Economics, Business and Management
Project Summary	The objectives of the project were to assess the uptake of Lean Production Principles in Construction Contracting companies; to work with industry partners and construction contracting organisations in order to identify methods for increasing productivity in Construction through the application of Lean Principles; to provide conceptual and analytical tools to assist in the implementation of Lean Principles in Construction Project Management; and to improvise a system for measuring productivity on site that is context-specific to methods and tasks involved with respect to work flow, labour flow and supply chain management.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Classification Model for Purpose Built Offices in Malaysia
Project Number	03-01-13-SF0020
Project Leader and Team Members	Leader: Maziah Ismail Members: Sabariah Eni, Mohd Nazali Mohd Noor and Julian Hazri Simandjoenta
Field of Research	Economics, Business and Management
Project Summary	The objectives of the project were to identify the attributes and criteria of purpose-built offices (PBOs) classification in local and global context; to develop and examine the importance and influence of key individual accessibility factors on therental and occupancy rate of PBO; and to produce a generic model of classification scheme for PBOs in Malaysia. Literature review and development of conceptual framework was completed. Benchmarking of PBOs classification model, research methodology design, research instrument, pilot test of research instrument and research outcome was studied.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design of New Cutting Tool Geometry for High Speed Drilling of Titanium Alloy
Project Number	03-01-13-SF0027
Project Leader and Team Members	Leader: Kamaruddin Kamdani Members: Saparudin Ariffin, Darwin Sebay and Safian Shariff
Field of Research	Engineering Sciences
Project Summary	The objectives of this study includes to develop and evaluate the performance of a new drill point geometry in comparison with conventional drill geometry; to establish acceptable cutting conditions for new drill point geometry when drilling with Ti-6Al-4V at various high speed cutting conditions, to investigate the wear mechanism and tool failure modes when drilling with Ti-6Al-4V at various high speed cutting conditions and various drill point geometries, and to investigate the effect of various cutting conditions and various drill point geometries on tool life performance as well as the cutting forces, chatter, surface integrity and chip formation.
Publications/Products/Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Rahim, E.A., Kamdani, K. and Sharif, S. 2008. Performance evaluation of uncoated carbide tool in highspeed drilling of Ti6Al4V. <i>Journal of Advanced Mechanical Design, Systems and Manufacturing</i> 2: 522-531. <p>Proceedings/Conferences/Seminars</p> <ol style="list-style-type: none"> 1. Rahim, E. A., Kamarudin, K. and Thamizhmanii S. 2007. Study on cutting forces, chip formation and vibration when high speed drilling titanium alloy. <i>6th International Conference on High Speed Machining</i>, 21-22 March 2007, San Sebastián, Spain. 2. Kamdani, K., Rahim, E. A. and Sharif S. 2007. High speed drilling Ti6Al4V. <i>4th International Conference on Leading Edge Manufacturing in 21st Century</i>, 7-9 Nov 2007, Fukuoka, Japan. 3. Wong, F.R., Sharif, S., Kamdani, K. and Rahim, E.A. 2008. The effect of drill point geometry and drilling technique on tool life when drilling titanium alloy, Ti-6Al-4V. <i>1st International Conference on Mechanical and Manufacturing Engineering</i>, 21-23 May 2008, Johor.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of High Speed Multiple Sensor Weigh in Motion System
Project Number	03-01-13-SF0028
Project Leader and Team Members	Leader: Ignatius Agung Wibowo Members: Ayob Johari, Nursabahiah Abdul Sukor, Babul Salam KSM Kader, Kemas Ahmad Zamhari and Basil David Daniel
Field of Research	Engineering Sciences
Project Summary	The objective of the project includes developing a Weigh in Motion System which is able to measure the weight of a moving vehicle at high speed. The system was evaluated for functionality, accuracy and durability. All system components have been succesfully developed and funtioned well. However, the accuracy and durability of the system still need to be refined.
Publications/Products/ Outcomes	Proceedings/Conference/Seminar: 1. Ayob Johari. 2007. Automatic moving vehicle weighing system. <i>Proceedings of the 1st International Conference on Control, Instrumentation, and Mechatronics</i> , 2007, Johor Bharu.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Mode-stirred Chamber as a Low-cost Facility for Electromagnetic Compatibility Measurements
Project Number	03-01-13-SF0032
Project Leader and Team Members	Leader: Mohd. Zarar Mohd. Jenu Members: Farhana Ahmad Po'ad and Mohd Erdi Ayob
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to determine the size and associated devices of a mode-stirred chamber (MSC) for immunity and emission testing of electrical and electronic products related to electromagnetic compatibility (EMC); to define the spatial uniformity and isotropicity of the electromagnetic field in the MSC; and to build and commercialise the MSC as a low cost facility for EMC measurements. The modeling of the MSC has been done successfully. The field uniformity and isotropicity for the chamber has been identified for a chamber of size 4m x 3m x 3m (LxWxH). The stirrer shape and size to achieve the desired field uniformity has been identified.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Saizalmursidi, M. M., Azlan, M. and Mohd. Zarar, M. J. 2008. Characterisation of a mode-stirred chamber operating from 200 MHz to 1 GHz. <i>Proceedings of the Malaysian Universities Conferences on Engineering and Technology</i> , 15-16 March 2008, Perlis.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	A 0.35 Micron 16-Bit Pipeline Analog-to-digital Ic Converter for Biomedical Application
Project Number	03-01-13-SF0039
Project Leader and Team Members	Leader: Siti Hawa Ruslan Members: Mohd Zainizan Sahdan, Muhammad Shukri Ahmad, Afandi Ahmad and Rahmat Sanudin
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design a 16-bit Analog-to-Digital Converter (ADC) using CMOS technology with pipeline architecture; to fabricate the device using 0.35 micron technology and to verify the device's workability. However, due to time constraints, only part of the ADC was completely designed and tested. The operational amplifier and one part of the ADC is currently working. The ADC as a whole, cannot be fabricated although it was designed using the pipeline arcitecture. The design is intended to be fabricated by SilTerra, where modifications to the original 0.35 micron technology needed to be changed to a 0.13 micron technology in order to be compatible with design techology supported by SilTerra.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design of a 6 Degree of Freedom (6DOF) Motion Base for Vehicle Driving Simulator
Project Number	03-01-06-SF0006
Project Leader and Team Members	Leader: Mohamad Kasim Abdul Jalil Member: Mohd Shafiek Yaacob
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design and construct a 6 degree-of-freedom (6DOF) motion base for vehicle simulation; to develop algorithm for controlling the motion base to simulate vehicle motion in 6DOF; and to integrate the motion base system with the existing fixed-base simulator (developed under IRPA RMK8) and to evaluate the performance of 6DOF.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of New Nonlinear Robust Controller for Stabilisation of Active Magnetic Bearing System
Project Number	03-01-06-SF0007
Project Leader and Team Members	Leader: Mohamad Noh Ahmad Member: Abdul Halim Mohamed Y
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to establish a mathematical model of an active magnetic bearing (AMB) system; to propose a new robust controller; to develop HIL system to emulate the AMB system; and to determine real-time performance of the system.
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Husain, A. R., Ahmad, M. N., Abdul Halim, M. Y. A new LMI-based sliding mode controller design for an active magnetic bearing. <i>International Conference on Robotics, Vision, Information and Signal Processing (ROVISIP)</i>, 28 Nov - 30 Nov 2007, Penang. 2. Ahmad, M. N., Mohamed, H. S. and Husain, A. R. 2007. Q-parameterization controller design for a magnetic suspended balance beam. <i>International Conference in Control, Instrument and Mechatronic (CIM)</i>, 28th – 29th May 2007, Johor. 3. Husain, A. R., Ahmad, M.N. and Mohd. Yatim, A.H. 2007. Modeling of horizontal active magnetic bearing system with uncertainties in deterministic form. <i>International Conference on Modeling and Simulations (AMS)</i>, 27-30 March 2007, Phuket, Thailand. 4. Husain, A. R., Ahmad, M. N. and Mohd. Yatim, A. H. 2007. Sliding mode control of an active magnetic bearing system with complex valued sliding manifold. <i>International Conference in Control, Instrument and Mechatronic (CIM)</i>, 28th – 29th May 2007, Johor. 5. Husain, A. R., Ahmad, M. N. and Abdul Halim, M. Y. 2008. Asymptotic stabilization of an active magnetic bearing system using LMI-based sliding mode control. <i>International Conference on Mechanical Engineering (ICME)</i>, 06-08 Feb. 2008, Cairo, Egypt.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of an Intelligent Active Vibration Control of a Human-like Arm
Project Number	03-01-06-SF0008
Project Leader and Team Members	Leader: Musa Mailah Members: Mohd Zarhamdy Md Zain, Maziah Mohamad, Hishamuddin Jamaluddin
Field of Research	Engineering Sciences
Project Summary	<p>The objectives of the project were to model and simulate a human-like arm subject to vibratory excitation; to apply active vibration control strategy to specific locations along the arm using active force control technique; and to design and develop an experimental rig employing a full mechatronic approach and perform experiments on the rig based on a number of operating and loading conditions. All the project objectives were successfully achieved. A two-link robotic arm that emulates a human arm was successfully modelled and simulated under a number of loading conditions including vibratory excitation. Active vibration control (AVC) element was also incorporated in the simulation study with the assistance of an active force control (AFC) technique. This is particularly applied to the end of the arm. A rig prototype of the two-link arm was successfully designed and developed incorporating pneumatic actuator muscle (artificial fluidic muscle) and employing a full mechatronic approach. A number of experiments were performed on the developed rig prototype based on a number of operating and loading conditions.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Hossein, J. A., Musa, M., Suhai, K. and Md. Zarhamdy, M. Z. 2007. Robust motion control of a human-like arm for precise trajectory tracking task. <i>Proceedings of International Conference on Robotics, Vision and Signal Processing (ROVISP)</i>, 28 – 30 Nov 2007, Penang. 2. Musa Mailah, Mohd Zarhamdy Md Zain, Gigih Priyandoko and Hossein Jahanabadi. 2009. Modelling and Control of a Human-Like Arm Incorporating Muscle Models. <i>Proceedings of the Institution of mechanical Engineers, Part C, Journal Of Mechanical Engineering Science</i>. 223(C7): 1569-1577.



	<ol style="list-style-type: none"> 3. Hossein, J., Musa, M. and Mohd Zarhamdy, M. Z. 2009. Active force control of a robotic arm with pneumatic artificial muscle actuator. <i>Proceedings of the 3rd South East Asian Technical University Consortium (SEATUC) Symposium</i>, 25-26 Feb 2009, Johor. 4. Hossein, J., Musa, M. and Mohd Zarhamdy, M. Z. 2009. Active force control of a fluidic muscle system using fuzzy logic. <i>IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM2009)</i>, 14 -17 July 2009, Singapore. 5. Hossein, J., Musa, M. and Mohd Zarhamdy, M. Z. 2009. Experimental Implementation of active force/vibration control to a human-like arm. <i>2nd International Conference on Instrumentation and Mechatronics (CIM)</i>, 28-29 May 2009, Melaka.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Development of a Magnetorheological Shock Absorber for Automotive Applications
Project Number	03-01-06-SF0009
Project Leader and Team Members	Leader: Hishamuddin Jamaluddin Members: Rashdi Shah Ahmad, Madzlan Aziz, Roslan Abdul Rahman and Hishamuddin Jamaluddin
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design and develop an indigenous prototype of lower cost and better performance magnetorheological shock absorber for automotive applications; to develop a new control algorithm for the proposed magnetorheological shock absorber; to design the optimum number of coil winding of magnetorheological shock absorber for optimummagnetic field; and to improve the performance of existing magnetorheological fluid in magnetorheological shock absorber.The first 3 objectives were achieved whereby the first prototype was completed for dynamic test.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Generation of Bioelectrochemical Energy from the Degradation of Cellulose in Agriculture Wastes
Project Number	03-01-06-SF0016
Project Leader and Team Members	Leader: Adibah Yahya Members: Zaharah Ibrahim and Madzlan Aziz
Field of Research	Biotechnology
Project Summary	The objectives of the project were to isolate and screen electrochemically active microorganisms from agricultural waste; to optimise physical, biological and chemical factors for the production of electrochemical energy by the microorganisms using bioelectrochemical cell setup; and to monitor the performance of bioelectrochemical cell at the optimised condition in order to elucidate its potential use as biofuel cell-integrated wastewater treatment system. All of the above objectives were successfully achieved.
Publications/Products/Outcomes	<p>Book:</p> <ol style="list-style-type: none"> 1. Adibah, Y. and Aslizah, M. A. 2008. Enzymatic degradation of cellulose for the generation of bioelectrochemical energy in microbial fuel cell. In: <i>Advances in Biosciences and Bioengineering 4</i>, UTM publisher. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Aslizah, M.A, Adibah, Y. and Zaharah, I. 2006. Microbial fuel cell operating on cellulose for electricity generation. <i>Regional Postgraduate Conference on Engineering and Science</i>, 26-27 July 2006, Johor. 2. Aslizah, M.A, Adibah, Y. and Zaharah, I. 2006. Electricity generation by locally isolated cellulases-producing bacteria. <i>KUSTEM 5th annual seminar</i>, 2nd-3rd May 2006, Terengganu. 3. Aslizah, M. A, Adibah, Y. and Zaharah, I. 2006. Development of microbial fuel cell using cellulose-degrading bacteria. <i>International Conferences on Environment</i>, 2-5 May 2006, Penang.
Additional Information	Industrial Linkages: Mahamurni Plantation Sdn. Bhd.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Converter to Interface Ultra-capacitor Energy Storage to an Alternate Energy Resource
Project Number	03-01-06-SF0017
Project Leader and Team Members	Leader: Abdul Halim Mohamed Yatim Members: Abd. Jaafar Shafie, Naziha Ahmad Azli, Awang Jusoh and Nik Rumzi Nik Idris
Field of Research	Applied Sciences and Technologies
Project Summary	<p>The objectives of the project were to model and simulate a converter with its control system interfacing an alternate energy resource such as solar PV, fuel cell, wind, micro turbine generator, etc. to an ultra-capacitor module; to develop a converter that interface an alternate energy resource to an ultra-capacitor module for short term electrical energy storage; and to test the performance of the developed converter control system based on the charging and discharging capabilities of the ultra-capacitor module. Model of a converter for interfacing an alternate energy resource such as solar PV, fuel cell, wind, micro turbine generator, etc. to an ultra-capacitor module has been developed. This converter model, complete with its controller, was simulated by using Matlab Simulink Software. A converter that interface an alternate energy resource to an ultra-capacitor module for short term electrical energy storage has been developed. Performance of the developed converter control system has been tested based on the charging and discharging capabilities of the ultra-capacitor module.</p>
Publications/Products/Outcomes	Journals: <ol style="list-style-type: none"> 1. Samosir, A. S., and Yatim, A. H. M. 2010. Implementation of dynamic evolution control of bidirectional DC-DC converter for interfacing ultracapacitor energy storage to fuel cell system. <i>IEEE Transaction on Industrial Electronics</i> 57:3468- 3473. 2. Samosir, A. S. and Yatim, A. H. M. 2010. A novel control strategy of bidirectional dc-dc converter for interfacing ultracapacitor to fuel cell electric vehicles system based on dynamic evolution control. <i>IREE: International Review of Electrical Engineering</i> 5: 1 – 6.

	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Samosir, A. S. and Yatim, A. H. M. 2008. Dynamic evolution control of bidirectional DC- DC converter for interfacing ultracapacitor energy storage to fuel cell electric vehicle system. <i>Australasian Universities Power Engineering Conference (AUPEC)</i>, 14-17 Dec 2008, Sydney, Australia. 2. Samosir, A. S. and Yatim, A. H. M. 2009. A new control strategy for hybrid fuel cell/ultracapacitor power system. <i>International Conference on Electrical Energy and Industrial Electronic System (EEIES)</i>, 7-8 Dec 2009, Penang.
Awards/Certificates	<ol style="list-style-type: none"> 1. Malaysia Technology Expo 2010: Best of the Best Award and 1 Gold Medal 2. 11th Industrial Art and Technology Exhibition 2009: 1 Silver Medal.
IP Status	Malaysia Patent filed(PI20093439): An Ultra-Capacitor Interface System
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Fuel Cell Power Train Simulator
Project Number	03-01-06-SF0018
Project Leader and Team Members	Leader: Hamdani Saidi
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design a fuel cell power train configuration; to develop a mathematical model for the fuel cell power train; and to develop a simulator for fuel cell power train.
Publications/Products/Outcomes	Proceedings/Conference/Seminar: 1. Jörg Dieter Weigl, Inayati Inayati, Hamdani Saidi. 2009. Pios fuel cellmotorcycle: Endurance test of polymer electrolyte fuel cell vehicle. <i>European Fuel Cell Forum</i> , 29 June - 2 July 2009, Lucerne, Switzerland.
Contact Institution/Entity Address Phone Number e-Mail	UniversitiTeknologi Malaysia (UTM) UniversitiTeknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 03-26914020 H/p: 019-2247325 hamdani@utmkl.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Harnessing Cooling Effects from a Portable Thermoacoustic Refrigeration
Project Number	03-01-06-SF0019
Project Leader and Team Members	Leader: Normah Mohd. Ghazali Members: Aminuddin Saat, Cheng Chin Fook Curtin and Mohd Shafiek Yaacob
Field of Research	Engineering Sciences
Project Summary	The project aims to harness cooling effects from a portable thermoacoustic refrigeration system. The heat transfer was under control because the designed cooling was not achieved with the original systems. After a series of experiments was completed to address the discrepancies between design and operating frequencies at 1 atm, designed cooling was achieved at 1 atm using the discovered correlation. The actual system which operates at high pressure did not perform and needs a correlation for its operation, hence further studies are needed to confirm this observation. A patent is currently being drafted on the relation between theoretical and operational frequencies to help future designs at 1 atm. An interested party has approached this researcher to commercialise thermoacoustic systems in Malaysia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Laboratory Scale for Acid Catalysed Transformation of Petrol-fuel to Clean Fuels
Project Number	03-01-06-SF0020
Project Leader and Team Members	Leader: Sugeng Triwahyono Member: Aishah Abdul Jalil,
Field of Research	Applied Sciences and Technologies
Project Summary	<p>This project synthesised several solid super acid catalysts to improve the octane number of petrol fuel. These catalysts include nano tungsten loaded zirconia, sulfated zirconia, nano zinc loaded HZSM5, tungsten loaded zirconia, molibdenum trioxide and molibdenum trioxide loaded zirconia. The properties of the catalysts were evaluated based on the crystalline structure, acidity of catalyst and catalytic activity. The utilisation of the catalysts on the isomerisation of saturated straight alkane (component of petrol fuel) and commercial petrol fuel with continuous flow reactor and saturated pressure technique were done to increase the octane number of petrol fuel. However, direct isomerisation of commercial petrol fuel was slightly difficult because the additive in the commercial petrol fuel deactivate the catalyst rapidly.</p>
Publications/Products/Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Sugeng, T., Aishah, A. J. and Hattori. H. 2007. Study of hydrogen adsorption on Pt/WO₃-ZrO₂ through Pt sites. <i>Journal of Natural Gas Chemistry</i> 16 (3). pp. 252-257. ISSN 1003-9953. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Triwahyono, S., Abdul Jalil, A. And Hattori, H. 2007. Influence of WO₃ on the Catalytic Properties of WO₃-ZrO₂ Solid Acid Catalyst. <i>International Conference on Advanced Material and Nanotechnology</i>, 30 May – 1 June, Langkawi. 2. Triwahyono, S. and Abdul Jalil, A. 2007. Effect of Na loading on the properties of catalysts and n-heptane isomerization over Pt/SO₄2--ZrO₂ Catalyst. <i>Regional Annual Fundamental Science Seminar</i>, 28-29 May 2007, Johor.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	An Intelligent Ant Colony Algorithm for Optimising Facility Layout
Project Number	03-01-06-SF0024
Project Leader and Team Members	Leader: Wong Kuan Yew Members: Naomie Salim and Adnan Hassan
Field of Research	Engineering Sciences
Project Summary	This project has successfully achieved both its objectives. For the first objective, the equal-area and unequal-area facility layout problems was determined as the important area for optimisation. For the second objective, a new hybrid ACO algorithm as well as a new Ant System have been developed for optimising facility layout.
Publications/Products/Outcomes	Journal: 1. See, P.C. and Wong, K.Y. 2007. A Review on Ant Colony Optimisation algorithms for solving facility layout problems formulated as quadratic assignment problems. <i>International Journal of Applied Decision Sciences</i> 1 (3): 282 – 304.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	MMS : Mobile Monitoring System Using Electrical Capacitance Tomography (ECT)
Project Number	03-01-06-SF0025
Project Leader and Team Members	Leader: Ruzairi Abdul Rahim Members: Shahdan Sudin, Anita Ahmad, Zaharuddin Mohamed, Shahrum Shah Abdullah and Mohd. Fua'd Rahm
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to design and develop 16 electrodes sensor that can measure the liquid flow inside a vessel and can be moved and assembled from vessel to vessel easily; to design an intelligent on-board mobile sensor unit able to produce digital data from electrodes sensor; to develop a variable frequency and variable amplitude sine wave generator that is able to produce up to 30V peak to peak transmitter output voltage and frequency up to 1MHz; to develop a centralised unit to synchronize the intelligent on-board sensor process; to correct the output digital data from sensor and send to a control PC via Universal Serial Bus (USB); and to develop a real time image reconstruction computer software for ECT system.
Publications/Products/Outcomes	Books: <ol style="list-style-type: none"> 1. Ruzairi A. R. 2011. Capacitance tomography – Principles, techniques and applications, UTM Press, 2011. 2. Ruzairi, A. R. and Chan, K. S. 2008. Capacitance tomography techniques for imaging a mixture of water and oil. In: <i>Recent Development in Instrumentation System</i>, Penerbit UTM Press. 3. Ruzairi, A. R., Chan, K. S., Mohd. Hafiz, F. R., Jaysuman, P., Yvette Shaan-Li, S. 2011. New Sensor Design for Capacitance Tomography. In: <i>Progress in Process Tomography & Instrumentation System – Series 1</i>, Penerbit RMC. 4. Ruzairi, A. R., Tee, Z. C., Jaysuman, P., Yvette Shaan-Li, S. 2011. Low cost ECT sensor electrodes design. In: <i>Progress in Process Tomography & Instrumentation System – Series 1</i>, Penerbit RMC.



	Journals: <ol style="list-style-type: none"> 1. Ruzairi, A. R., Tee, Z. C., Mohd. Hafiz, F. R., Jayasuman, P. 2010. A low cost and high speed electrical capacitance tomography system design. <i>Sensor and Transducer Journal</i> 114: 83-101. 2. Rasif, M. Z., Ruzairi, A. R., Mohd. Hafiz, F. R. 2010. Simulation of image fusion of dual modality (electrical capacitance and optical tomography) in solid/gas flow. <i>Sensing and Imaging: An International Journal</i> 11: 33-50. 3. Elmy, J. M., Ruzairi, A. R., Leow, P. L., Chan, K. S. and Mohd. Hafiz, F. R. 2011. Hardware development of electrical capacitance tomography for imaging a mixture of water and oil. <i>Jurnal Teknologi</i> 54.
Awards/Certificates	<ol style="list-style-type: none"> 1. Seoul International Invention Fair 2009 (SIIF) 2009: 1 Gold Medal 2. Malaysia Technology Expo (MTE) 2011: Best of the Best Awards and 1 Gold Medal
IP Status	<ol style="list-style-type: none"> 1. PI 2008 3044 - Real Time Flow Visualization of liquid mixture using electrical capacitance tomography : Sensor Electrodes Design. 2. PI 2008 2800 - Sensing module design for Mobile/ Portable sensor use in electrical capacitance tomography. 3. PI 2008 2104 - Mobile/Portable Sensor Design for electrical capacitance tomography. 4. PI 2008 4168 - Electrical Capacitance Tomography (ECT) Instrument and System Thereof. 5. PI 2009 1701 - A Control Unit for Sensor with Electrode Modules Applied in an Electrical Capacitance Tomography's (ECT) System.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Two-Link Flexible Robot Manipulator with Input Shaping Control Schemes
Project Number	03-01-06-SF0026
Project Leader and Team Members	Leader: Zaharuddin Mohamed Members: Rosbi Mamat, Mohamad Noh and Abd Wahab Ishari Mohd
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to design and develop a two-link flexible robot manipulator; to develop a dynamic model of a two-link flexible manipulator; and to develop input shaping control schemes for end-point tracking and vibration suppression of flexible robot manipulators. All the objectives were achieved. A lab-scale two-link flexible robot manipulator was developed. The system was modelled using assume mode and finite element methods. Input shaping control schemes was developed to control the system, and a significant vibration reduction was achieved using this system.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Ahmad, N., Mohamed, Z. and Sam, Y. M. 2008. Residual vibration suppression of a two- link flexible manipulator using an input shaping technique. <i>CLAWAR08: 11th International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines</i>, 8-10 Sept 2008, Coimbra, Portugal. 2. Mohamed, Z., and Khairudin, M. 2008. Dynamic Modelling of a Two-Link Flexible Manipulator. <i>CLAWAR08: 11th International Conference on Climbing and Walking Robots and the Support Technologies for Mobile Machines</i>, 8-10 Sept 2008, Coimbra, Portugal.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) UTM Skudai, 81310 Johor. Office: 07-553 5290 zahar@fke.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Biomimetic Design and Fabrication of Load Bearing Tissue Scaffolds for Stem Cells Tissue Regeneration
Project Number	03-01-06-SF0028
Project Leader and Team Members	Leader: Mohammed Rafiq Dato' Abdul Kadir Members: Nazri Kamsah and Mohd. Hasbullah Idris
Field of Research	Biotechnology
Project Summary	<p>This project utilised micro computed tomography to produce two cancellous bone image datasets. Three dimensional reconstruction of both cancellous models were successful. The architecture of cancellous bone were analysed using morphometry with parameters such as trabecular thickness, trabecular separation, bone volume fraction, bone surface volume, and plate-like and rod-like architecture. Subsequently, six porous scaffolds suitable for tissue engineering were designed and developed based on the morphometry of the cancellous bone model. All six porous scaffolds design were then fabricated using Solid Free Form Fabrication technique. The mechanical properties of these scaffolds were evaluated using finite element method. Validation of the computer predictions were made based on actual testing of cancellous bone model using Instron machine. Cancellous bone models were harvested from bovine and followed the testing protocol for compression testing. Stress-strain graphs were obtained and elastic modulus were calculated. Computational model were constructed from the cancellous image dataset and compared with experimental results. The computational prediction and experimental results complements each other.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none">1. Mohammed Rafiq Abdul Kadir. 2007. The effects of proximal macrofeatures on micromotion of cementless hip stems. <i>International Conference on Ergonomics</i>, 22-27 July 2007, China.2. Mohammed Rafiq Abdul Kadir, Nazri Kamsah and Muhammad Azuwan Aminullah. 2007. Finite element analysis of a total ankle arthroplasty during the stance phase of a gait. <i>International Conference on Ergonomics</i>, 22-27 July 2007, China.

	<ol style="list-style-type: none"> 3. Mohammed Rafiq Abdul Kadir and Ong Rui Ying. 2007. Mechanical behaviour of the mandible after rigid fixation of mandibular angle fractures. <i>International Conference on Ergonomics</i>, 22-27 July 2007, China. 4. Mohammed Rafiq Abdul Kadir and Ardiyanshah Shahrom. 2007. The effect of tibial component malalignment of stress transfer and stability. <i>International Conference on Ergonomics</i>, 22-27 July 2007, China. 5. Mohammed Rafiq Abdul Kadir, Ardiyanshah Syahrom and Mohd Azrul Rais Yusof. 2007. Microstructural damage of cancellous bone under uniaxial compression. <i>International Conference on Ergonomics</i>, 22-27 July 2007, China.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Ultrasonic Tomography for Composition Determination of Water and Oil Flow
Project Number	03-01-06-SF0036
Project Leader and Team Members	Leader: Ruzairi Abdul Rahim Members: Anita Ahmad, Shahrum Shah Abdullah, Zaharuddin Mohamed, Herlina Abdul Rahim, Shahdan Sudin and Mohd. Fua'ad Rahm
Field of Research	Engineering Sciences
Project Summary	The objectives of the project were to determine the composition of water and oil flow by implementing the transmission mode of ultrasonic tomography; to analyse the characteristic of the ultrasonic sensor and suitable acoustic coupling for the proper transmission and reception of acoustic energy; to design and implement signal conditioning circuits that can measure the time of flight (TOF) of ultrasonic wave and process the signals; to design and implement the microcontroller as the switching device to control the signal generator, signal conditioning circuits and the data acquisition system; and to implement the principle of flow imaging by creating a custom software using Visual Basic that can provide information about the concentration of the water and oil flow.
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mohd. Hafiz, F. R., Ruzairi, A. R. and Herlina, A. R. 2011. Image reconstruction algorithms for ultrasonic tomography. <i>Jurnal Teknologi</i> 54. 2. Hudaibiyah, a. A., Ruzairi, A. R., Mohd. Hafiz, F. R. and Muhammad, J. P. 2011. Front-end design of an ultrasonic tomography measurement system. <i>Jurnal Teknologi</i> 54. 3. Jaysuman, P., Ruzairi, A. R. and Mohd. Hafiz, F. R. 2011. Ultrasonic tomography system in liquid – gas flow monitoring. <i>Jurnal Teknologi</i> 54. <p>Books:</p> <ol style="list-style-type: none"> 1. Ruzairi, A. R. and Ng, W. Y. 2008. Applying ultrasonic transmission-mode tomography in water/particles flow. <i>In Recent Development in Instrumentation System</i>, Penerbit UTM Press.

	<ol style="list-style-type: none"> 3. Mohd Hafiz, F. R., Ruzairi, A. R., Yaacob, S., Zulkarnay, Z., Manan, M. R. 2010. A comparative study on ultrasonic transceiver sensing array for bubbly gas hold ups. In: <i>Progress in Process Tomography & Instrumentation System – Series 1</i>, Penerbit RMC. 4. Jaysuman, P., Ruzairi, A. R., Zulkarnay, Z., Mohd Hafiz, F. R. and Yvette Shaan-Li, S. 2010. Image reconstruction comparison on quantity of ultrasonic transceiver tomography in non-invasive imaging of liquid/gas flow. In: <i>Progress in Process Tomography & Instrumentation System – Series 1</i>, Penerbit RMC. 5. Jaysuman, P., Ruzairi, A. R., Zulkarnay, Z., Mohd Hafiz, F. R. and Yvette Shaan-Li, S. 2010. Application of ultrasonic tomography in non-invasive imaging of liquid/gas flow. In: <i>Process Tomography & Instrumentation System – Series 1</i>, Penerbit RMC. 6. Mohd Hafiz, F. R. and Ruzairi, A. R. 2010. Ultrasonic tomography: The transducer characteristics and hardware control. In: <i>Progress in Process Tomography & Instrumentation System – Series 2</i>, Penerbit RMC. 7. Ruzairi, A. R., Jaysuman, P., Mohd Hafiz, F. R. and Yvette Shaan-Li, S. 2010. Image reconstruction study utilizing ultrasonic transceiver. In: <i>Progress in Process Tomography & Instrumentation System – Series 2</i>, Penerbit RMC. 8. Ruzairi, A. R., Hudabiyah, A. A. and Mohd. Hafiz, F. R. 2010. Ultrasonic tomography for multiphase flow application. In: <i>Progress in Process Tomography & Instrumentation System – Series 2</i>, Penerbit RMC.
Awards/Certificates	<ol style="list-style-type: none"> 1. Seoul International Invention Fair 2008 (SIFF) 2008: 1 Silver Medal 2. Malaysia Technology Expo 2009: 1 Gold Medal
IP Status	<ol style="list-style-type: none"> 1. PI 2009 1871 - A Novel Hybrid Binary Reconstruction Algorithm for Ultrasonic Tomography 2. PI 2009 0265 - Modeling a Non-invasive Tomography Using ultrasonic 3. PI 2009 1870 - Projection Geometry for Ultrasonic Tomography Imaging for Liquid/Gas Two-Phase Flow 4. PI 2009 0652 - Sensitivity map for Ultrasonic Tomography Imaging for Liquid/Gas Two-Phase Flow



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Novel Compaction Extrusion Method for the Production of High Performance Transparent Polyglass Sheets for High Rise Buildings
Project Number	03-01-06-SF0041
Project Leader and Team Members	Leader: Hanizam Sulaiman Members: Mohd Nasir Saadon, Abdul Razak Rahmat, Mohd Faizal Abdul Rahman and Khairul Zaman
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to develop a novel compaction extrusion technique for producing high tension polyglass sheets from cheap commodity plastics, and to identify processing variables that will effect the physical, optical and thermal stability of polyglass sheets. A series of new or novel die designs were fabricated. Processing windows of the production of polyglass from PS were identified. The compaction extrusion process was very slow on the small laboratory scale extrusion machine.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Theoretical and Experimental Study on the Effect of the Turbulence Production on the Mixing in a Tubular Combustor of a Micro-Gas Turbine
Project Number	03-01-06-SF0043
Project Leader and Team Members	Leader: Mohammad Nazri Mohd. Jaafar Members: Tholudin Mat Lazim, Mohd. Shariff Ammoo, Mohd Zamri Yusoff and Mazlan Abdul Wahid
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to simulate the flow in the gas turbine combustor; to investigate the effect of turbulence produced from different configurations of air swirlers on both of recirculation zone, mixing process, and the pressure drop; and to optimise the combustor for best turbulence production and minimum pressure loss. All these objectives were successfully achieved.
Publications/Products/Outcomes	Journals: 1. Eldrainy, Y.A., Muhamad Ridzwan, J.J. and Mohd Jaafar, M.N. Prediction of the flow inside a micro gas turbine combustor, <i>Jurnal Mekanikal UTM</i> . Proceedings/Conferences/Seminars: 1. El Drainy, Y.A., M. Saqr, K. and Mohd. Jaafar, M.N. 2008. Numerical investigation of the effects of zanker plate thickness on air flow characteristics inside pipes. <i>The 1st International Meeting on Advances in Thermo-Fluid</i> , 23 August 2008, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	A New Technique for Predicting Damage in Advanced Interconnect Materials for Microelectronic Applications
Project Number	03-01-06-SF0044
Project Leader and Team Members	Leader: Mohd Nasir Tamin Member: Nazri Kamsah
Field of Research	Applied Sciences and Technologies
Project Summary	The objectives of the project were to develop, validate and examine a predictive technique for quantifying materials damage in electronic interconnect materials subjected to dynamic loading; to quantify the effects of dynamic loading (shock and vibration) on the reliability of microelectronic components; to determine materials parameters required for modeling the micromechanics of interconnection in electronic packages; and to predict fatigue lives of generic microelectronic devices based on a newly-developed technique. All these objectives were successfully achieved. Further, a validated model for reliability prediction of BGA solder interconnects was developed. The results will be used as a basis for reliability model refinement to account for the continuously evolving materials variables.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Performance Characterisation of Advanced Alloys for High-Temperature Recuperators Applications in Improved Efficiency Microturbines
Project Number	03-01-06-SF0045
Project Leader and Team Members	Leader: Mohd Nasir Tamin Member: Nazri Kamsah
Field of Research	Material Sciences
Project Summary	Project objectives were to establish properties and behaviour of candidate materials for metallic recuperators that could safely operate at temperatures up to 900°C; to determine creep deformation of the alloys in the temperature range of 600-750°C; to determine oxidation resistance of the alloys in the temperature range of 750-950°C in air; to simulate "service" environment and establish relations between design stress, operating temperatures and environment (with high watervapor pressure) and to identify the effects of manufacturing parameters (such as rolling direction, welding and metal foil thickness) on durability and reliability of recuperators.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Osman, H. and Tamin, M. N. 2009. Creep Response of Austenitic Stainless Steel Foils for Advanced Recuperator Applications. <i>3rd South East Asia Technical Universities Consortium (SEATUC) Conference</i>. 25-26 Feb. 2009, Johor. 2. Tamin, M. N., Sudin, I. and Mon, T. T. 2007. Thermal-Mechanical Responses of Ti-6Al-4V During Orthogonal Cutting Process. <i>Diffusion in Solids and Liquids III, Trans Tech Publications Inc, Switzerland</i>, 2007, pp. 673.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) UTM Skudai, 81310 Johor. Office: 07-5534564 H/p: 012-7781410 taminmn@fkm.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Low Density Polyethylene/Sago Based Biofilm via Blow Film Molding Technique
Project Number	03-01-06-SF0046
Project Leader and Team Members	Leader: Wan Aizan Wan Abdul Rahman Members: Roshafima Rasit Ali, Rosliza Jamaluddin and Ida Idayu Muhamad
Field of Research	Engineering Sciences
Project Summary	<p>Project objectives were to determine the biofilm compound formulation of sago based biodegradable plastic packaging; to prepare sago based biodegradable plastic films using blown film technique; to characterise and study the mechanical, morphology and thermal properties of the sago based/LDPE films; and to investigate the biodegradability of starch/LDPE film. Starch based biodegradable compound were formulated with various contents of starch. LSPE/ starch:70/30 was found as best formulation compound, as it can be processed via twin screw extrusion, can be blown using conventional blown film machines. The presence of high starch contents had an adverse effect on the mechanical and thermal properties of LDPE/tapioca starch blends. However, the addition of palm based processing aid and compatibiliser to the blends improved the interfacial adhesion between the two materials, hence, improved the mechanical properties of the films. High content of starch amount also was found to increase the rate of biodegradability of LDPE/tapioca starch films.</p>
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Wan Aizan, W. A. R., Roshafima, R. A. and Naterah, Z. 2006. Sago Starch and Sago Waste as Biodegradable in Polyethylene Films. <i>CRAUN Sago Research Journal</i> 2: 1-8. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Rasit Ali, R., Wan Abdul Rahman, W. A. and Zakeria, N. 2007. Biodegradable low densitypolyethylene (LDPE)/ starch packaging film. <i>International Conference on Advancement of Materials and Nanotechnology – The City Bayview Hotel, Langkawi, Kedah</i> pp. 112.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Performance Evaluation of Advanced Finish Sanding on Wood Surface
Project Number	03-01-06-SF0047
Project Leader and Team Members	Leader: Safian Sharif Members: Noordin Mohd. Yusof and Izman Sudin
Field of Research	Forestry Sciences
Project Summary	Project objectives were to develop a novel method to measure wood surface fuzziness using optical system of finish sanding on wood; to identify and evaluate the performance of aluminium oxide sanding tool with different grit sizes during finish sanding of wood; to develop a machinability data base for finish sanding of Malayasian Kembang Semangkok (KSK) wood, American Red Oak wood, Coniferous Spruce wood to support the Malaysian Woodworking industries involved in processing these woods; and to determine the optimum sanding conditions during finish sanding of wood in order to reduce the manufacturing cost. All the objectives had been met. A method has been conceived to measure and quantify accurately the surface fuzziness of machined wood surface.
Publications/Products/ Outcomes	Journal: 1. Tan, P. L., Sharif, S. and Sudin, I. 2010. Roughness models for sanded wood surfaces. Wood Science and Technology 1-14.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Surfactant Modified Synthetic Zeolites as Drug Support System
Project Number	03-01-06-SF0049
Project Leader and Team Members	Leader: Alias Mohd Yusof Members: Mohd. Mansor Manan, Zaharudin Ahmad, Ab. Khalik Wood and Noor Aini Abdul Rashid
Field of Research	Chemical Sciences
Project Summary	Project objectives were to synthesise zeolite A, X and Y from rice husk ash and characterise them; to modify the synthesised zeolite surface with cationic surfactant and characterise them; to prepare the surfactant modified synthetic zeolite composite with drug and characterize them; and to study the performance and the effectiveness of the surfactant modified synthetic zeolite as drug support. All of the project objectives were achieved. The process for the production of surfactant-synthetic zeolites composites will be patented.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Kinetic and Stability Study of Synthetic Pyrethrins Isolated in Inert Matrices and Cationic Nano High Surface Area Metal Oxides
Project Number	03-01-06-SF0050
Project Leader and Team Members	Leader: Abd Rahim Yacob Member: Zaiton Abdul Majid
Field of Research	Chemical Sciences
Project Summary	Project objectives were to identify suitable inert and ionic matrices; to prepare nano high surface area metal oxide; to study the kinetic and stability of synthetic pyrethrin; and to determine spectroscopically the chemical aspect of matrix and pyrethrin.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) UTM Skudai, 81310 Johor. Office: 07-5534505 H/p: 013-7428830 manrahim@kimia.fs.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Novel Natural Rubber Latex Based Membranes Using Interpenetrating Polymer Network (IPN) for the Separation of Azeotropic MTBE/Methanol Mixtures
Project Number	03-01-06-SF0051
Project Leader and Team Members	Leader: Mohd Ghazali Mohd Nawawi Members: Hashim Hassan and Aznizam Abu Bakar
Field of Research	Applied Sciences and Technologies
Project Summary	<p>Project objectives were to develop and modify natural rubber latex based membranes using interpenetrating polymer network (IPN) technology; to characterise the natural rubber latex based membranes; and to characterise the separation performance of natural rubber latex membranes for the separation of azeotropic MTBE/MeOH systems. All the 3 main objectives were achieved. Natural rubber based membranes for the separation of MTBE/MeOH systems were developed and characterised via pervaporation. The membranes were developed using interpenetrating polymer network (IPN). NR of Standard Malaysia Rubber-low viscosity (SMR-L) grade which was supplied by Malaysia Rubber Research Institute (MRRI) was used for the membrane development. Pervaporation was conducted by using varying concentration of MTBE, 10, 30, 50 and 70wt% and at different temperatures (25°C and 55°C). Separation performance of IPN NR/PS membranes were based on the permeation flux and separation factor.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The Development of Nanoelectronic Devices Using TCAD (Technology Computer Aided Design) Tools
Project Number	03-01-06-SF0052
Project Leader and Team Members	Leader: Razali Ismail Members: Michael Tan Loong Peng and Abdul Manaf Hashim
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to investigate the limits at which semiconductor devices particularly MOSFET can be scaled down; to obtain the classical, semi-classical and non-classical nano-MOSFET architectures in order to overcome the problems of scaling down and to further improve performance; to develop new emerging nanoelectronic devices that can replace silicon MOSFET in future; and to obtain more accurate model of the nanoelectronic devices that can be used for circuit simulation. All the objectives of this project were achieved. The investigation of the limits at which semiconductor devices particularly MOSFET can be scaled down was achieved significantly.
Publications/Products/ Outcomes	<p>Proceedings:10</p> <ol style="list-style-type: none"> 1. Taghi Ahmadi, M., Riyadi, M. A., Saad, I. and Ismail, R. 2008. Numerical study of fermi energy for P-Type silicon nanowire, <i>International Conference on Nanoscience and Nanotechnology (NANO-SciTech 2008)</i>, 18-20 November 2008, Shah Alam, Selangor. 2. Riyadi, M. A., Taghi Ahmadi, M., Saad, I. and Ismail, R. 2008. Analytical Study of Carrier Statistic in 2-Dimensional Nanoscale P-MOS, <i>International Conference on Nanoscience and Nanotechnology (NANO-SciTech 2008)</i>, 18-20 November 2008, Shah Alam, Selangor. 3. Taghi Ahmadi, M., Ismail, R. and Arora, V.K. 2008. Carbon nanotube carrier statistic near the minimum band energy. <i>The 4th International conference on Technological advances of Thin Film & Surface Coatings</i>, 13-16 July 2008, Singapore. 4. Taghi Ahmadi, M., Hong, Y. W., Saad, I. and Ismail, R. 2009. MOSFET-like carbon nanotube field effect transistor model. <i>NSTI Nanotechnology Conference (Nanotech 2009)</i>, 3-7 May 2009. Houston, USA.



	5. Saad, I., Michael L. P. Tan, Ismail, R. and Arora, V. K. 2007. Nano-Physics of Transient Phenomenon in Semiconducting Devices and Circuits. <i>23rd IEEE Regional Conference of Solid State Science & Technology (RCSST)</i> , 27-29 Nov. 2007, Johor.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) UTM Skudai, 81310 Johor Office: 07-553 5222 H/p: 019-710 0633 razali@fke.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Photoluminescent Material Based on Silicate Glass Matrix for Display Applications
Project Number	03-01-06-SF0053
Project Leader and Team Members	Leader: Rosli Hussin Members: Mohd Nor Yusuf and Sinin Hamdan
Field of Research	Material Sciences
Project Summary	Project objectives were to identify glass forming region and fabrication method; to determine brightness and photoluminescence time; to determine photoluminescence quantum efficiency; and to determine the relationship between the compositions, structure, physical and photoluminescence properties of glasses. All the project objectives were achieved. Different methods of fabrication were identified. The Pechini, hydrothermal, microwave, sol-gel, combustion, co-precipitation processing steps to prepare the precursor powders are complicated and the duration time is long. The forming region was identified based on glass and crystalline phase product. The photoluminescence properties was measured and analysed. Photoluminescence quantum efficiency was measured by using luminescent decay curve. The relationship between compositions, structure, physical and photoluminescence properties was studied. The stable composition was determined and their structure and physical properties was measured using IR and Raman spectroscopy.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Cost Effective and Environmentally Friendly Solid Fuels from Plastics Waste
Project Number	03-01-06-SF0055
Project Leader and Team Members	Leader: Hanizam Sulaiman Members: Wan Aizan Wan Abdul, Aishah Abdul Latiff, Agus Arsad, Mohd Faizal Abdul Rahman and Rushdan Ibrahim
Field of Research	Environmental Sciences
Project Summary	Project objectives were to cost effectively turn plastics or plastics-rich solid wastes that were typically unsuitable for municipal incinerators into a homogeneous high calorific renewable solid fuel for coal replacement in conventional boilers. This work was aimed at two specific objectives to be achieved within two years i.e. to develop homogeneous, high calorific value and environmentally friendly renewable solid fuels from plastics-rich wastes to be used in conventional combustors; and to formulate dioxins and furans inhibition additives to be added into any plastics or plastics waste prior to combustion or incineration in conventional boilers or combustors.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Mixed Matrix Polymer Electrolyte Membranes for Proton Exchange Membrane Fuel Cell (PEMFC)
Project Number	03-01-06-SF0056
Project Leader and Team Members	Leader: Azeman Mustafa Members: Hasrinah Hasbullah, Ahmad Fauzi Ismail and Wan Aizan Wan Abdul
Field of Research	Applied Sciences and Technologies
Project Summary	<p>Project objectives were to synthesise and characterise suitable material for polymer electrolyte in proton exchange membrane; to produce advanced mixed matrix polymer electrolyte membranes for proton exchange membrane fuel cell application system; and to study the performance of the advanced mixed matrix polymer electrolyte membranes. All the project objective were achieved. New mixed matrix membranes were prepared using sulfonated polyether ether ketone (SPEEK) polymer and inorganic proton conducting fillers were developed from tungstosilicic acids (SiWA) loaded on silica-aluminum oxide (SiO₂-Al₂O₃) composite. It was found that the presence of inorganic proton conducting fillers led to both high water uptake and proton conductivity. Low methanol permeability values were recorded for the membranes which is a very promising material to be used in direct methanol fuel cell. Characterisation and separation performance test of mixed matrix polymer electrolyte membranes by using FE-SEM, TGA, FTIR-ATR, DSC, proton conductivity and water uptake was conducted successfully. SPEEK Membranes fabrication technique was developed by using local expertise and technology which will be tested to ensure that the locally made SPEEK membrane are competitive and more efficient to perform separation task for PEMFC Testing System.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ismail, A. F. Othman and N. H. Mustafa, A. 2009. Polyether ether ketone composite membrane using tungstosilicic acid supported on silica aluminium oxide for direct methanol fuel cell (DMFC), <i>Journal of Membrane Science</i> 329(1-2):18-29.



	<p>2. Nasef, M. M., Zubir, N. A., Ismail, A. F., Dahlan, K. Z. M., Saidi, H. and Khayet, M. (2006) Preparation of radiochemically pore-filled polymer electrolyte membranes for direct methanol fuel cells, <i>Journal of Power Sources</i> 156 (2) 200-210. ISSN 0378-7753.</p>
<p>Contact Institution/Entity Address Phone Number e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) UTM Skudai, 81310 Johor. Office: 07-553 7863 azeman@fkkksa.utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Third Generation High Performance Hybrid Membrane for Effective Removal of Greenhouse Gas from Hydrocarbon Mixtures
Project Number	03-01-06-SF0057
Project Leader and Team Members	Leader: Azeman Mustafa Members: Wan Aizan Wan Abdul, Shahrir Hashim and Ahmad Fauzi Ismail
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to identify suitable inorganic dispersive material for membrane making and to fabricate and characterise hybrid inorganic-polymeric material; and to determine the effective separation of gas by using the fabricated membrane. The project objectives were achieved. The fully developed hybrid membrane technology is considered as the future technology. The successfully developed hybrid membrane technology will generate high quality gas separation process. Third Generation Hybrid Membranes fabrication technique will be developed using local expertise and technology which will be tested to ensure that the locally made third Generation Hybrid membrane system are competitive and more efficient to perform separation task.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Ismail, A. F., Kusworo, T. D., Mustafa, A. and Hasbullah, H. 2006. Advanced Materials for Membrane-Based Gas Separation, <i>Journal of Applied Membrane Science & Technology</i> 3: 29-64. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Tutuk D. Kusworo, A. F. Ismail and A. Mustafa. Oxygen Enrichment Properties of Polyethersulfone/Polyimide Blends-Zeolite 5A Mixed Matrix Membranes, <i>1st Regional Postgraduate Conference on Engineering & Science (RPCES 2006)</i>, 26-27 July 2006, UTM, Skudai, Johor. 2. F. Aziz, A. F. Ismail and A. Mustafa. 2009. Chemical Cross Linking Modification of Matrimid Membranes using P-Phenylenediamine for Gas Separation, <i>7th International Conference on Membrane, Science & Technology</i>, 13-15 May 2009, Corus Hotel, Kuala Lumpur.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Novel Activated-MDEA Hollow Fiber Membrane Contactor for CO ₂ from Natural Gas Removal
Project Number	03-01-06-SF0058
Project Leader and Team Members	Leader: Ahmad Fauzi Ismail Members: Azeman Mustafa, Shahrir Hashim and Wan Aizan Wan Abdul
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to determine the formulation of CO ₂ selective micro-porous hollow fibre membranes; to optimize membrane formation process; to design and fabricate new membrane contactor module and system; and to study and optimise separation performance of hollow fibre membrane contactor system for CO ₂ gas removal. Porous PSf and PVDF hollow fibre membranes were fabricated. Optimisation of membrane formation process was achieved through characterisation of the membranes in terms of surface porosity, pore size, gas permeability, wetting pressure and contact angle. Membranes separation performance of hollow fibre membrane contactor system for CO ₂ gas removal was studied.
Publications/Products/Outcomes	Journals: 8 <ol style="list-style-type: none"> 1. Mansourizadeh, A. and Ismail, A. F. 2011. A developed asymmetric PVDF hollow fiber membrane structure for CO₂ absorption. <i>International Journal of Greenhouse Gas Control</i>. 5: 374-380. 2. Ismail, A. F. and Mansourizadeh, A. 2010. A comparative study on the structure and performance of porous polyvinylidene fluoride and polysulfone hollow fiber membranes for CO₂ absorption, <i>Journal of Membrane Science</i>. 365: 319-328. 3. Mansourizadeh, A. and Ismail, A. F. 2010. Effect of LiCl concentration in the polymer dope on the structure and performance of hydrophobic PVDF hollow fiber membranes for CO₂ absorption. <i>Chemical Engineering Journal</i>. 165: 980-988. 4. Mansourizadeh, A. and Ismail, A. F. 2010. Effect of additives on the structure and performance of polysulfone hollow fiber membranes for CO₂ absorption. <i>Journal of Membrane Science</i>. 348: 260-267.



5. Mansourizadeh, A. and Ismail, A. F. 2011. A developed asymmetric PVDF hollow fiber membrane structure for CO₂ absorption. *International Journal of Greenhouse Gas Control*. 5: 374-380.

Proceedings: 7

1. Mansourizadeh, A. and Ismail, A. F. 2010. CO₂ absorption with NaOH solution through the porous PVDF hollow fiber membrane contactor. *8th International Conference on Membrane Science and Technology*. 30th November-1st December 2010, Bandung, Indonesia.
2. Mansourizadeh, A. and Ismail, A. F., Aroon, M. A. and Mustafa, A. 2009. Preparation of porous polysulfone hollow fiber membranes for CO₂ absorption. Effects of Different Additives. *7th International Conference on Membrane, Science & Technology*, 13th-15th May, 2009, Corus Hotel, Kuala Lumpur.
3. Ismail, A. F. and Mansourizadeh, A. 2008. Effects of fabrication parameters on the morphology of microporous polysulfone hollow fiber membranes. *15th Regional Symposium on Chemical Engineering in conjunction with the 22nd Symposium of Malaysian Chemical Engineers*, Impiana KLCC Hotel & SPA, Kuala Lumpur, Malaysia, 2-3 December 2008.
4. Mansourizadeh, A. and Ismail, A. F. 2008. Removal of acid gas emissions using hollow fiber gas absorption membrane contactors, *International Petroleum Technology Conference 2008*, KLCC, Kuala Lumpur, Malaysia.
5. Mansourizadeh, A. and Ismail, A. F. and Aroon, M.A. 2009. Preparation of porous polysulfone hollow fiber membranes for CO₂ absorption: Effect of different additives, *7th International Conference on Membrane Science and Technology (MST2009)*, 2009, Kuala Lumpur, Malaysia.

Awards/Certificates

1. Malaysia Technology Award 2011: The best award
2. INATEX 2010: Gold Medal Award

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TOWARDS AN INNOVATIVE NATION:
A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	New Concept of Construction Method for Foundations System Using Cold-Formed Steel Section
Project Number	03-01-06-SF0060
Project Leader and Team Members	Leader: Mahmood Md. Tahir Members: Arizu Sulaiman and Ahmadon Bakri
Field of Research	Engineering Sciences
Project Summary	Project objectives were to develop a new cold-formed steel section and construction method for foundation system by taking into account the structural efficiency and cost saving; to study the performance of the proposed foundation system for pad footing and pile cap by carrying out experimental tests and analytical studies; to validate the performance of the proposed steel section and construction method by comparing experimental results with the design requirements as stated in British Standard BS5950: Part 3 and 5; and to prepare the design guide, tables of section properties and member capacities for the cold-formed steel section and the new foundation system.
IP Status	Malaysia Patent filed (PI 2008 336)
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Applications of Adaptive Model Predictive Control for Petroleum Refining Process
Project Number	03-01-06-SF0062
Project Leader and Team Members	Leader: Arshad Ahmad Members: Kamarul Asri Ibrahim and Mohamad Wijayanuddin
Field of Research	Engineering Sciences
Project Summary	Project objectives were to develop a dynamic model of petroleum refining process using commercial simulator; to develop a model-based adaptive model predictive controllers which is able to cope with the process of non-linearities and a wide range of operating conditions; and to produce a set of guidelines in implementing adaptive model predictive controller in chemical industry. The first objective was not achieved. The other two objectives were established on simulation case study.
Publications/Products/ Outcomes	Journal: 1. Ahmad, A. and Wahid, A. 2007. Application of Model predictive control tuning strategy in multivariable control of distillation column, Reaktor. 11: 66-70.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Transmission Usage Allocation Scheme for Deregulated Power Systems
Project Number	03-01-06-SF0078
Project Leader and Team Members	Leader: Mohd Wazir Mustafa Members: Saifulnizam Abd.Khalid
Field of Research	Engineering Sciences
Project Summary	Project objectives were to identify the pros and cons of available usage allocation methods used in deregulated power system; to design and develop a new and an improved real power usage allocation method for future deregulation of TNB energy market; to develop a methodology to identify the reactive power support service of individual participants under deregulated environment; to develop real power loss allocation scheme for the participants in the TNB system; and to develop an educational computer program using the developed algorithm for research purposes.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Normal Incidence Sound Absorption Coefficient of Direct Piercing Carved Wood Panels (DPCWP) with Geometric Pattern
Project Number	03-01-06-SF0079
Project Leader and Team Members	Leader: Mohamad Ngasri Dimon Members: Siti Zaleha Abdul Hamid and Abd Wahab Ishari Mohd
Field of Research	Physical Sciences
Project Summary	Project objectives were to determine the sound absorption coefficient of DPCWP using Boundary Element Method (BEM) and sound intensity to develop sound absorption coefficient.
Additional Information	Industrial Linkages: Technology sharing with JKR Johor and headquarters architect
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and development of a microcontroller system for automatic continuously variable transmission
Project Number	03-01-06-SF0080
Project Leader and Team Members	Leader: Kamarul Baharin Tawi Members: Hishamuddin Jamaluddin, Musa Mailah, Wan Khairuddin Wan Al, Mohamed Hussein, Nurulakmar Abu Husain
Field of Research	Engineering sciences
Project Summary	Project objectives were to design and develop an indigenous microcontroller system for automatic CVT and to investigate its performance parameters. The project objectives were achieved in terms of designing and developing a microcontroller system for automatic CVT applications including its performance parameters investigations
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Supriyo, B., Tawi, K. B., Jamaluddin, H. and Ariyono, S. 2008. Experimental study of PD controller for ratio control of an electromechanical dual acting pulley (EMDAP- CVT) system. <i>2nd Regional Conference on Vehicle Engineering and Technology (Rivet'08)</i> , Kuala Lumpur, Malaysia, 15-16 July 2008
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Preparation and Characterisation of Rare Earth Organometallic Materials for Solar Cells
Project Number	03-01-06-SF0081
Project Leader and Team Members	Leader: Madzlan Aziz Members: Mohd Nordin Garif and Rashdi Shah Ahmad
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to identify and prepare organometallic based material which could absorb and emit light; to characterise organometallic based light sensitisers; to apply the organometallic based sensitisers on solar cells; and to determine the absorption and emission properties of sensitised solar cells.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of marine current energy extraction system
Project Number	03-01-06-SF0082
Project Leader and Team Members	Leader: Omar Yaakob Members: Mohd Arizam Abdul Wahap, Bashiran Begum, Mohamad Afifi Abdu, Adibah Awang, Zuraidah Ali, Kamarul Baharin Tawi, Mohamad Pauzi Abdul G,
Field of Research	Applied sciences and technologies
Project Summary	Project objectives were to develop laboratory scale prototypes of suitable devices to extract marine current energy in Malaysian Water; and to assess the legal and environmental impact of new ocean energy technology, particularly marine current turbine technology and propose new legal and environmental legal framework. Both objectives of the project were achieved successfully. The IP Protection has been applied.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Yaakob, O., Tawi, K. B. and Suprayogi, D. T. 2008. Development Of Vertical AxisMarine Current Turbine Rotor, <i>Proceedings International Conference on Renewable Energy, Royal Institution of Naval Architects</i> , 19-20th November 2008, London, pp. 77-84 2. Yaakob, O., Ghani, M. P. A., Tawi, K. B., Suprayogi, D. T., Aziz, A. and Jaafar, K. E. 2008. Development of Ocean Wave and Current Energy Device. <i>Proceedings Seventh UMT International Symposium on Sustainability Science and Management (UMTAS) 2008</i> , Kuala Terengganu
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) UTM Skudai, 81310 Johor Office: 07-553 5700 H/p: 012-708 6482 omar@fkm.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Thermoelectric Generator (TEG) from automotive exhaust gases waste heat
Project Number	03-01-06-SF0083
Project Leader and Team Members	Leader: Mohd Nor Musa Members: Hayati Abdullah
Field of Research	Applied sciences and technologies
Project Summary	Project objectives were to develop a new prototype of a thermoelectric generator (TEG) system by utilizing heat recovered from exhaust gases; to fabricate a TEG prototype and integrate it into a vehicle engine & coolant system; and to examine performance characteristics of the TEG and to establish a database for thermoelectric for automotive applications. All the these objectives were achieved. The R&D department of Proton has expressed their interest to further investigate this promising technology of TEG.
Publications/Products/ Outcomes	Journal: 1. Saqr, K. M., Mansour, M. K. and Musa. M. N. 2008. Thermal design of automobile exhaust based thermoelectric generators: Objectives and Challenges. International Journal of Automotive Technology. 9: 155-160
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) UTM Skudai, 81310 Johor Office: 07 - 553 4597 mdnor@fkm.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Modeling and analysis of distribution networks connected to waste-heat recovery co-generators
Project Number	03-01-06-SF0084
Project Leader and Team Members	Leader: Khalid Mohamed Nor Members: Saifulnizam Abd.Khalid, Hazlie Mokhlis
Field of Research	Engineering Sciences
Project Summary	Project objectives were to analyze and simulate the capital and operating cost and the impact of waste heat recovery generators; to model the waste heat recovery generators and the unbalanced distribution network components; to analyze the power flow, distribution network losses and the control of the distribution network voltage level; to carry out engineering economic analysis to determine the optimum cogeneration configuration; and to determine the size and capacity of the generators, the reconfiguration needed for the injection point, the optimum injection point as well as an estimate of the cost of the co-generation system. All the objectives of the project were achieved.
IP Status	Malaysia Patent Filed (PI 2008 2107); an optimal sizing of a gas fired grid connected cogeneration system
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) UTM Skudai, 81310 Johor Office: 07-553 5898 H/p: 012-205 8271 khalidmn@fke.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of novel carbon nanotubes-mixed matrix membranes for hydrocarbon gases purification
Project Number	03-01-06-SF0085
Project Leader and Team Members	Leader: Ahmad Fauzi Ismail Members: Wan Aizan Wan Abdul, Azeman Mustafa, Hasrinah Hasbullah, Hamdani Saidi
Field of Research	Applied sciences and technologies
Project Summary	Project objectives were to fabricate carbon nanotube-mixed matrix membranes and to study the separation performance of carbon nanotube-mixed matrix membranes for gas phase separation. A novel method to produce pure multi-walled carbon nanotubes mixed matrix membranes and the pure multi-walled carbon nanotubes mixed matrix membranes was developed through a specialized solution formulation to produce membranes with superior separation characteristics.
Publications/Products/Outcomes	<p>Journals: 7</p> <ol style="list-style-type: none"> 1. Ismail, A. F., Kusworo, T. D. and Mustafa, A. 2010. Enhanced gas permeation performance of polyethersulfone mixed matrix hollow fiber membranes using novel Dynasylan Amino silane agent, <i>Journal of Membrane Science</i>. 319: 306 - 312. 2. Kusworo, T. D., Ismail, A. F., Budiyo, Widiyasa, I. N., Johari, S. and Sunarso. 2010. CO₂ Removal from Biogas using Carbon Nanotubes Mixed Matrix Membranes. <i>International Journal of Science and Engineering</i>. 1: 1-6. 3. Goh, P. S., Ng, B. C., Ismail, A. F. and Aziz, M. 2010. Surfactant Dispersed Multi-Walled Carbon Nanotubes/ Polyetherimide Mixed Matrix Membrane. <i>Solid State Sciences</i>. 12: 319-328. 4. Budiyo, Kusworo T. D., Ismail, A. F., Widiyasa, I. N., Johari, S. and Sunarso. 2010. Synthesis and Characterization of Polyimide-Zeolite Mixed Matrix membrane for Biogas Separation. <i>International Journal of Basic and Applied Sciences</i>. 10: 1-7. 5. Aroon, M. A. and Ismail, A. F. 2010. Effect of raw multi wall carbon nanotubes on morphology and separation properties of polyimide membranes, <i>Separation Science and Technology</i>. 45:16



	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Sanip, S. M., Saidin, M. A. R., Aziz, M. and Ismail, A. F. 2010. Hydrogen adsorption on activated carbon an carbon nanotubes using volumetric differential pressure technique. <i>AIP Conference Proceedings</i>. 1217, pp. 484-488. 2. Sanip, S. M., Ismail, A. F., Aziz, M., Soga, T., Tanemura, M. and Hayashi, Y. 2009. Preparation and characterization of functionalized carbon nanotube-polyimide (PI) mixed membrane (MMM), <i>Nanomaterials Seminar For Reducing Environment Risk in Asia</i>, 2009 Nagoya Institute of Technology Nagoya, Japan. 3. Sanip, S. M., Ismail, A. F., Aziz, M., Tee, J. C. and Soga, T. 2009. Matrimid® and Functionalized Multi-Walled Carbon Nanotubes Mixed Matrix Membrane for Gas Separation, <i>7th International Conference on Membrane, Science & Technology</i>, 13th-15th May, 2009, Corus Hotel, Kuala Lumpur 4. Sanip, S. M., Azes, N. I. A., Aziz, M. and Ismail, A. F. 2008. Preparation and Characterization of Functionalized Multiwalled Carbon Nanotube(f-MWNTs)-Polyimide (PI) Mixed Matrix Membrane, <i>6th Regional Symposium on Membrane Science & Technology 2008</i>, Phuket, Thailand, 13-15 August 2008 5. Sanip, S. M., Ismail, A. F. and Aziz, M. 2008. Cyclodextrin-functionalized carbon nanotubes for mixed matrix membrane, <i>NanoSciTech 2008</i>, UiTM, Selangor, 18-21st Nov 2008
Awards/Certificates	<ol style="list-style-type: none"> 1. INATEX 2008: Bronze medal 2. PECIPTA2009: Gold Medal
IP Status	Malaysia Patent Filed: PI2009 0535
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) 81310 Skudai Johor. Office: 07-553 5592 H/p: 017-771 5545 afauzi@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Production of pure Multi-Walled Carbon Nanotubes (MWNTS) by using Catalytic Chemical Vapour Deposition (CCVD) system for hydrogen storage
Project Number	03-01-06-SF0086
Project Leader and Team Members	Leader: Ahmad Fauzi Ismail Members: Suhaila Mohd Sanip, Madzlan Aziz
Field of Research	Applied sciences and technologies
Project Summary	Project objectives were to produce pure multi-walled carbon nanotubes (MWNTs) by using high performance catalytic chemical vapour deposition (CCVD) system; to determine the purity and to characterize the MWNTs yield; and to determine hydrogen storage capacity of the MWNTs yield. The objectives of this project were achieved. A novel method to produce pure multi-walled carbon nanotubes was established.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Tee, J. C., Buang, N. A., Sanip, S. M. and Ismail, A. F. 2006. Synthesis of Multi-Walled Carbon Nanotubes (MWNTs) over Anodic Aluminium Oxide (AAO) Template (O103), <i>Journal Solid State Science and Technology</i>, 13: 151-152. 2. Ismail, A.F., Goh, P. S., Tee, J. C., Sanip, S. M. and Aziz, M. 2008. A review of purification techniques for carbon nanotubes, <i>NANO: Brief Reports and Reviews</i>, 3:3: 127-143. 3. Saidin, M. A. R., Aziz, M. and Ismail, A. F. 2008. Parametric studies of thin film nickel catalyst for the growth of carbon nanotubes. <i>Jurnal Teknologi</i>. 49: 115-121. 4. Chee, T. J., Aziz, M. and Ismail, A. F. 2008. Effect of reaction temperature and flow rate of precursor on formation of multi-walled carbon nanotubes. <i>Jurnal Teknologi</i>. 49: 141-147. 5. Tee, J. C., Ismail, A. F., Aziz, M. and Soga, T. 2009. Influence of catalyst preparation on synthesis of multi-walled carbon nanotubes, <i>IEICE TRANS. ELECTRON</i>. 92: 1421-1425.



	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Tee, J. C., Aziz, M. and Ismail, A.F. 2008. Effect of reaction temperature and flow rate of precursor on formation of multi-walled carbon nanotubes. <i>AIP Conference Proceedings</i> 1136, pp. 214. 2. Saidin, M. A. R., Aziz, M. and Ismail, A. F. 2008. Parametric Studies of Thin Film Nickel Catalyst for the Growth of Carbon Nanotubes. <i>AIP Conference Proceedings</i>. 1136, pp. 219. 3. Goh, P. S., Ismail, A. F. and Aziz, M. 2008. Effect of Acid Oxidation on the Dispersion Property of Multiwalled Carbon Nanotubes, <i>AIP Conference Proceedings</i> 1136, pp. 224.
Awards/Certificates	1. PECIPTA 2009: Gold Medal
IP Status	Malaysia Patent Filed: PI 20090535
Additional Information	International Linkages: Nagoya Institute of Technology (NIT), Japan.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) 81310 Skudai Johor. Office: 07-553 5592 H/p: 017-771 5545 afauzi@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a remote lightning mapping system utilising existing overhead telecommunication cable
Project Number	03-01-06-SF0089
Project Leader and Team Members	Leader: Zulkurnain Abdul Malek Members: Zuraimy Adzis
Field of Research	Engineering Sciences
Project Summary	Project objectives were to produce a prototype of a lightning mapping system which utilizes the readily available overhead telecommunication cable as its antenna. The following activities were conducted: Modeling the lightning electromagnetic field propagation and the induced voltages at both ends of a 8km-long telecommunication cable, field measurements of induced voltages at both ends of a 8 km long telecommunication cable and improvement of the model obtained to be rigorous and robust and therefore suitable for the lightning mapping system prototype
Publications/Products/ Outcomes	Publications: <ol style="list-style-type: none"> 1. Poniran, Z. and Abdul-Malek. 2007. Life assessment of power transformers via paper ageing analysis, <i>International Conference on Power Engineering, Energy and Electrical Drives</i>, Setubal, Portugal, April 2007. 2. Aulia, B. Zulkurnain, Malek, A., Adzis, Z. 2007. Lightning and Disaster in Peninsula Malaysia and Some Places in Indonesia, <i>International Symposium on Indonesian Disaster</i>, 2007
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) UTM Skudai, 81310 Johor Office: 07-553 5432 H/p: 012-716 7607 zulk@fke.utm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Power Electronics Converter Control Based on Fuzzy Logic (FI)
Project Number	03-01-06-SF0090
Project Leader and Team Members	Leader: Naziha Ahmad Azli Members: Zainal Salam and Shahrin Md Ayob
Field of Research	Engineering Sciences
Project Summary	<p>Project objectives were to design and develop a working prototype of a fuzzy logic (FL) based control system for a power electronics converter and to evaluate the performance of the power electronics converter based on the FL control system. An FL based inverter of conventional topology was successfully designed and simulated by using Mat lab/ Simulink. The overall system performance was evaluated based on the simulation results. SIFPIC was successfully implemented by using a digital signal processor (DSP) with much reduced computation time compared to the conventional Fuzzy PI controller (CFPIC). A laboratory scale inverter prototype (of conventional topology) integrated with SIFPIC was successfully developed. Actual system performance has been evaluated and verified using the prototype. The CFPIC was maintained with the consideration on two types of inference systems (Mamdani and Sugeno). Sugeno type CFPIC was successfully implemented by using a digital signal processor (DSP). It showed significant improvement in terms of computation time as compared to the Mamdani type, while maintaining the same performance. A laboratory scale multilevel inverter prototype integrated with the Sugeno type CFPIC is still in development. Actual system performance is yet to be evaluated and verified.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ayob, S. M., Azli, N. A. and Salam, Z. 2008. PWM inverter regulation using single input Fuzzy Logic controller. <i>Proceedings of 2nd IEEE International Conference on Power and EnergyConference.(PECon 2008)</i>, Johor Bahru, 1-3. 2. Ayob, S. M., Azli, N. A. and Salam, Z.. 2008. Review on controllers of PWM inverters. <i>Proceedings of 2nd IEEE International Conference on Power and Energy Conference 2008 (PECon 2008)</i>, Johor Bahru, 1-3 Dec. 2008.

	<ol style="list-style-type: none"> 3. Mohamed, S. N. F., Azli, N. A., Salam, Z. and Ayob, S. M. 2008. Sugeno-type Fuzzy Logic Controller(SFLC) for a modular structured multilevel inverter (MSMI). <i>Proceedings 2nd IEEE InternationalConference on Power and Energy Conference 2008 (PECon 2008)</i>, Johor Bahru, 1-3 Dec.2008. 4. Mohamed, S. N. F., Azli, N. A., Salam, Z. and Ayob, M. 2008. Performance of Sugeno-type Fuzzy LogicCon-troller (SFLC) for a modular structured Multile-vel Inverter (MSMI). <i>Proceedings of 6th Student Conference on Research and Development (SCOReD 2008)</i>, Johor Bahru, 26-27 Nov.2008.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5535360 H/p: 019-7773556 naziha@ieee.org



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Polymer Coated Hollow Fibre Membrane Microextraction System
Project Number	03-01-06-SF0098
Project Leader and Team Members	Leader: Mohd Marsin Sanagi Members: Wan Aini Wan IbrahimandAhmedy Abu Naim
Field of Research	Chemical Sciences
Project Summary	Project objectives were to synthesise a new multi-functional polymer as a coating material for hollow fibre membrane; to characterise and apply the new multi-functional polymer coating; and to develop the microextraction system into user-friendly extraction system. All of the objectives have essentially been achieved.
Contact Institution/Entity Address Phone Number e-Mail	UniversitiTeknologi Malaysia (UTM) UniversitiTeknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5534517 H/p: 019-7714930 marsin@kimia.fs.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Zeolites as Matrix for Protein Purification
Project Number	03-01-06-SF0099
Project Leader and Team Members	Leader: Noor Aini Abdul Rashid Members: Robiah Adnan, Ab. Khalik Wood, Madihah Md Salleh, Zaharudin Ahmad and Alias Mohd Yusof
Field of Research	Biological Sciences
Project Summary	Project objectives were to synthesise microporous zeolite Y and four ordered mesoporous silica namely, MCM-41, MCM-48, SBA-15 and MCF. The adsorption capacity of the synthesised matrices towards various proteins namely lysozyme, albumin from bovine serum (BSA), cellulase and glucoamylase was determined. The second objective was achieved by functionalising the synthesised ordered mesoporous silica with amino and aldehyde group while batch adsorption technique was used to determine their adsorption capacity towards various proteins. The third objective was achieved by separating the mixtures of different proteins of different sizes. In this research, ordered mesoporous silica molecular sieves can be an alternative to conventional gelmatrix especially in separating proteins according to molecular size.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Rashid, N. A. A., Adil, M., Yusof, A. M. and Salleh, M. M. 2008. The suitability of ordered mesoporous silica in purifying proteins. <i>17th MSMBB Scientific Meeting, 23-25 June 2008</i> , The Saujana Kuala Lumpur Hotel, Kuala Lumpur, Malaysia.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5534495 H/p: 019-7282311 nooraini09@gmail.com/nooraini_nar@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	High Performance Blended Membranes Using a Novel Preparation Technique
Project Number	03-01-06-SF0101
Project Leader and Team Members	Leader: Ani Idris Members: Roslina Rashid and Noordin Mohd. Yusof
Field of Research	Applied Sciences and Technologies
Project Summary	<p>Project objectives were to produce high performance blended membranes consisting of the right proportions of CA-PESLithium bromide composition; to develop novel preparation techniques using the microwave techniques over the traditional method of dope preparation; to identify the most suitable spinning parameters for production of blended hollow fibres (HF) membranes by using design experiments; and to determine the performance of the membranes in terms of separation rates and flux and also the molecular weight cut off size (MWCO) of the produced membranes. All the objective were achieved. A new technique using the microwave heating is used in the preparation of polyethersulfone containing lithium halide membrane dope solutions. In the preparation of a novel derivative polyethersulfone membrane, the use of microwave (MW) instead of the conventional heating technique, as a synthesis preparation technique of polyethersulfone (PES) / dimethylformamide was investigated on the properties of the membrane. The ultrafiltration membranes produced have unique compositions of PES/Lithium halide/DMF/ acetone capable of treating waste water and separating proteins in the ultra and micro range.</p>
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Idris, A. and Ahmad, I. 2008. Viscosity behavior of microwave–heated and conventionally heated polyether sulfone/dimethylformamide/Lithium bromide polymer solutions. <i>Journal of Applied Polymer Science</i>. 108: 302-307. 2. Idris, A. and Ahmad, I. 2007. Performance cellulose acetate-polyethersulfone (CA-PS) blend membranes prepared using microwave heating for palm oil mill effluent treatment. <i>Wat.Sci.Tech</i>. 56: 167-177.

Awards/Certificates	<ol style="list-style-type: none"> 1. INATEX 2008: Gold Medal; Microwave Method of Synthesizing Polyethersulfone/Litium Halide Membrane using two solvent systems. 2. INATEX 2008: Bronze Medal; Retrofitted Microwave apparatus for synthesizing polymeric Membranes.
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed (PI2008 0270): Microwave assisted polymer dissolution apparatus for membrane production. 2. Malaysia Patent Filed(PI 20081825):An immobilization of enzymes using an improved preparation technique of PVA-Alginate matrix. 3. Malaysia Patent Filed(PI 20082299): A membrane and its production thereof by.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5535603 H/p: 019-7776054 ani@fkkksa.utm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Novel Sol-gel Crown Ether Coating Material for Solid Phase Microextraction of Organophosphorus Pesticides
Project Number	03-01-06-SF0102
Project Leader and Team Members	Leader: Wan Aini Wan Ibrahim Members: Mohd Marsin Sanagi and Ahmedy Abu Naim
Field of Research	Chemical Sciences
Project Summary	<p>Project objective was to synthesise a novel sol-gel hybrid sorbent materialbased on poly-dimethylsiloxane-2-hydroxymethyl-18-crown-6 (PDMS 2OHMe18C6) and 2-hydroxymethyl-12-crown-4 for use as fiber coatings in solid phase microextraction (SPME). All the sol-gel hybrid materials synthesised showed superior extraction performance compared to commercial PDMS. The sorbent materials were characterised using field emission scanning electron microscopy and fourier transform infra red spectroscopy. Different sol-gel material compositions are possible by varying the compositions of the coating materials and precursors. Various coating thickness can be produced depending on the coating times and dipping times. Sol-gel hybrid PDMS-2OHMe18C6 sorbent materials were used for extraction of organophosphorus pesticides (OPPs) from several fruits samples and extracted analytes using gas chromatography - electron capture detector. Excellent recoveries and good reproducibility were achieved using the sol-gel hybrid PDMS-2OHMe18C6 coating materials for SPME of OPPs. The novel sol-gel hybrid materials showed high potential for microextraction of environmental pollutants.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ibrahim,W. A. W.,Farhani, H. and Sanagi, M. M. 2009. New Hybrid sol-gel Coating for Solid Phase Microextraction, in <i>Proceeding of the Joint Conference Second International Conference and Workshop on Applied and Basic Sciences and Regional Annual Fundamental Science Seminar</i>. pp.173-177. <p>Others:</p> <ol style="list-style-type: none"> 1. Thesis M. Sc. Hadijah Farhani. Sol-Gel hybrid Polydimethylsiloxane-2hydroxymethyl 18-crown-6 sorbent for solid phase microextraction of prganophosphorus pesticides (UTM, 2010).

	<p>2. Disertasi M. Sc. Hasratul Nadiyah Abdul Rashid. Comparison of extraction performance between sol-gel modified 2-hydroxymethyl-12-crown-4 and polydimethylsiloxane coating for solid phase microextraction (UTM, 2008)</p> <p>Products:</p> <p>1. New sol-gel materials based on crown ether</p>
Awards/Certificates	<p>1. MTE 2011: Silver Medal Award and Bronze Medal Award</p> <p>2. INATEX 2010: Gold Medal Award</p>
IP Status	Malaysia Patent Filed (PI 2011 700003); (Crown ether-based sol-gel hybrid material for microextraction).
Additional Information	International Linkages: National Research Centre, Cairo, EGYPT
<p>Contact</p> <p>Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM)</p> <p>Universiti Teknologi Malaysia (UTM), 81310 UTM, Johor Bahru, Johor.</p> <p>Office: 07-553.4311/07-5534008</p> <p>H/p: 019-7173940</p> <p>wanaini@kimia.fs.utm.my; waini@utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	A functionalised Nanostructure Biomaterial for Improved Separation in Food Processing
Project Number	03-01-06-SF0103
Project Leader and Team Members	Leader: Ida Idayu Muhamad Members: Jasman Zainal, Wan Aizan Wan Abdul and Ahmad Fauzi Ismail
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to determine suitable protein polymers, specifically, designer proteins that link discrete amino acid sequence modules with known properties; and to identify a functionalised nanostructure that could enhance more rapid and specific food bio-separation technologies based on the behaviour at the molecular level. The first objective was achieved with slight modification of sources of polymers (not only protein base) by using theophylline and pyrroline and the second objective was achieved accordingly where novel MIP functional membrane was produced with enhanced capabilities in bioseparation processed. The results of the project are two prototypes which are the new rotary disc bioreactor and a new type of nano-functionalised membrane for protein separation.
Awards/Certificates	<ol style="list-style-type: none"> 1. Malaysian Technology Exhibition (MTE) 2008: Silver Medal; "THEO-BCC® - Nanobiocomposite Membrane for Protein Bioseparation". 2. British Invention Show (BIS) 2008: Gold Medal; THEO-BCC® - Nanobiocomposite Membrane for Protein Bioseparation. 3. British Invention Show (BIS) 2008: Gold Medal; Rotary Disk Reactor Plus Dryer (RDRD) for Enhanced Microbial Cellulose Production using Fruit Waste. 4. Malaysian Technology Exhibition (MTE) 2008: Gold Medal; Rotary Disk Reactor Plus Dryer (RDRD) for Enhanced Microbial Cellulose Production using Fruit Waste. 5. IChemE Innovation and Excellence Award 2009: Awarded Highly Commended Innovation for Food and Drink Engineering Innovation; Rotary Disk Reactor Plus Dryer (RDRD) for Enhanced Microbial Cellulose Production using Fruit Waste.

IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed (PI 2008 1611): A composite membrane and method of production thereof. 2. Malaysia Patent Filed (PI 2008 4815): Nano-reinforced polymeric film. 3. Malaysia Patent Filed (PI 2007 2046): An Improved rotary disc reactor.
Additional Information	<p>International Linkages: IChemE recognition & use of label</p> <p>Industrial Linkages: Frost & Sullivan Sdn Bhd</p>
<p>Contact</p> <p>Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM)</p> <p>Universiti Teknologi Malaysia (UTM),</p> <p>UTM Skudai,</p> <p>81310 Johor.</p> <p>Office: 07-5535577</p> <p>H/p: 016-7393876</p> <p>idayu@cheme.utm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Preparation and Characterisation of Nano Metal Oxides for Solar Cells
Project Number	03-01-06-SF0104
Project Leader and Team Members	Leader: Madzlan Aziz Members: Mohd Nordin Garif and Rashdi Shah Ahmad
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to prepare nano metal oxides. All the objectives were successfully achieved. Metal oxides prepared were Sn, Zn and W. Tb and Er doped metal oxides and their structural and optical charaterisation were successfully done.
Contact Institution/Entity Address Phone Number e-Mail	UniversitiTeknologi Malaysia (UTM) UniversitiTeknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5537803 H/p: 019-7353037 madzlan@kimia.fs.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Natural Rubber Toughened Polyolefin Based Nanocomposites Using Locally Developed Montmorillonite
Project Number	03-01-06-SF0105
Project Leader and Team Members	Leader: Mat Uzir Wahit Member: Azman Hassan
Field of Research	Material Sciences
Project Summary	<p>Project objectives were to modify the interlamellar of nanoparticles MMT by treating them with organic agents in order to obtain systems having specific structure; to investigate the effect of organoclay and elastomer concentration on the mechanical properties; to determine the optimum formulation for the PP/NR/organoclay blends in order to achieve a good balance of mechanical properties; to characterise the formation and morphology of PP/elastomer/MMT i.e. exfoliated/intercalated structure of the organoclay and elastomer particle size and distribution; to relate the mechanical properties of the PP/elastomer/MMT with the morphology (structure property relationship); to study how the melt intercalation method affect the microstructure of the nanocomposites; and to study the effect of rubber functionality on the morphological and mechanical properties of the nanocomposites. In this research, natural clay from Sabah was purified through sedimentation method followed by homoionic Sabah montmorillonite (S-MMT) was prepared using sodium carbonate (Na_2CO_3). Then, modification of S-MMT was done using octadecylamine (ODA) to form organo-Sabah MMT (S-OMMT). S-OMMT was then used as nanofiller in polypropylene (PP).</p>
Publications/Products/Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Surface Modification and Characterization of Sabah-Montmorillonite Using Cationic Surfactant Octadecylammonium. <i>8th National Symposium on Polymeric Materials (NPSM 2008)</i>.
Contact	Universiti Teknologi Malaysia (UTM)
Institution/Entity Address	Enhanced Polymer Research Group, UTM Skudai, 81310 Johor.
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e-Mail	mat.uzir@cheme.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Biomimetic Nanostructured Catalysts Based on Metalloporphyrin Dendrimers Immobilised within Mesoporous Materials
Project Number	03-01-06-SF0107
Project Leader and Team Members	Leader: Salasiah Endud Member: Zainab Ramli
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to develop important, new biomimetic nanostructured catalysts based upon immobilised metalloporphyrin dendrimers within the cavity of mesoporous molecular sieves for preparation and production of precursors of Vitamin E. As well as to use the supported metalloporphyrin dendrimer as a probe to study oxidative mechanisms and the effect of confinement of nanocatalysts in a coordination cage i.e. the structural framework mesoporous molecular sieves. New biomimetic Polyamidoamine (PAMAM) dendrimers up to the second generation were grown in the channel of MCM-41 with a divergent method. Iron(III) porphyrin complex was then immobilised on the PAMAM-MCM-41 of generations 0, 1 and 2, respectively. The catalytic performance of the prepared materials was investigated in oxidation of trimethylphenol to produce trimethylbenzoquinone, a precursor for Vitamin E synthesis. Excellent selectivity towards trimethylbenzoquinone in the reaction was observed by using the prepared catalysts.
Contact Institution/Entity Address Phone Number e-Mail	UniversitiTeknologi Malaysia (UTM) UniversitiTeknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-553 4503 salasiah@kimia.fs.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Fuzzy Techniques for Forecasting Electricity Load Demand
Project Number	03-01-06-SF0177
Project Leader and Team Members	Leader: Zuhaimy Ismail Members: Maizah Hura Ahmad and Azme Khamis
Field of Research	Mathematical Sciences
Project Summary	Project objectives were to study the current modeling practices in the electricity demand industry to explore and propose the best model for peak-load demand using Modified Adaptive Neurofuzzy Inference System (MANFIS) and to minimise forecasting error toward the level between 1 to 2 percent.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5534224 H/p: 019-7133940 zuhaimyi@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Embedded System Based Solid Gas Mass Flow Rate Meter Using Optical Tomography
Project Number	03-01-06-SF0193
Project Leader and Team Members	Leader: Ruzairi Abdul Rahim
Field of Research	Engineering Sciences
Project Summary	<p>Project objectives were to implement embedded system as the main controller in an optical tomography system for the purpose of data acquisition, data analysis and result display; to increase data acquisition rate by using high speed ADC for analogue sensor measurements and voltage comparators for sensors on masking layer; to optimise the performance of hybrid image reconstruction algorithm in terms of accuracy and processing speed when carried out on embedded system; to investigate the application and performance of sensor to sensor cross correlation results in reconstructing flow velocity profile; and to investigate the performance of the overall system in carrying out image reconstruction, velocity profile measurement and mass flow rate measurements.</p>
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Rahim, R. A., Chiam, K. T. and Jayasuman, P. 2009. Embedded System based Optical tomography: The Concentration Profile. <i>Sensor Review</i>. 29: 54-62. 2. Rahim, R. A., Chiam, K. T., Fazalul Rahiman, M. H. and Jayasuman, P. 2009. Optical Tomography System using Digital Signal processor: Velocity Profile Measurement. <i>International Journal of Signal and Imaging Systems</i>. 2: 17-26. 3. Rahim, R. A., Chiam, K. T., Fazalul Rahiman, M. H. 2009. Velocity profile measurement using digital signal processor based optical tomography system. <i>Sensors Journal</i>. 9: 1076-1083. 4. Zain, R. M., Rahim, R. A. and Fazalul Rahiman, M. H. 2009. Simulation of image fusion of dual modality (Electrical Capacitance and Optical Tomography) in solid/gas flow. sensing and imaging. <i>An International Journal</i>. 11: 33-50.

	<ol style="list-style-type: none"> 5. Muji, S. Z. M., Rahim, R. A., Fazal Rahiman, M. H., Sahlan, S., Shaib, M. F. A., Jayasuman, M. and Mohamad, E. J. 2011. Optical tomography: A review on sensor array projection arrangement and image reconstruction algorithm. <i>International Journal of Innovative Computing Information and Control</i>. 7: 1-17.
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed (PI 2009 0490): Apparatus and method for preparation of optical fibre. 2. Malaysia Patent Filed (PI 2009 0196): Optical Tomography system with Remote Computer Control. 3. Malaysia Patent Filed (PI 2009 1868): An optical tomography sensor configuration using two orthogonal and two rectilinear projection arrays. 4. Malaysia Patent Filed (PI 2009 2777): Method for use in image reconstruction for optical tomography. 5. Malaysia Patent Filed (PI 2010 004177): An Optical Tomography System for Imaging.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5535902 H/p: 016-7424180 ruzairi@fke.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Collaborative Teamwork in Construction
Project Number	03-01-06-SF0194
Project Leader and Team Members	Leader: Mohamad Ibrahim Mohamad Members: Abdul Karim Mirasa and Arham Abdullah
Field of Research	Information, Computer And Communication Technology (ICT)
Project Summary	<p>Project objectives were to investigate the limitations in the current approach of collaborative teamwork' environment in Malaysian construction industry to determine the critical factors in establishing the 'true' collaborative working environment concept; to determine the important elements in project communication to support collaborative working environment; to establish the matrix measurement guideline to map the state-of-the-art of the level of collaborative teamwork concept in Malaysian construction industry for medium size project; to design the process and workflow of groupware system to support real time basis communication process for all team Members in collaborative project environment for medium size project; to device a new reengineered concept of project reporting system which is transparent and real time basis to serve the client and other team Members information needs; and to evaluate the benefit of the improved groupware based on project communication system.</p>
Contact Institution/Entity Address Phone Number e-Mail	UniversitiTeknologi Malaysia (UTM) UniversitiTeknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5531757 H/p: 012-7213832 drm2i@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Dynamic Overmodulation and Field Weakening Strategies for Direct Torque Control (DTC) of Induction Machines
Project Number	03-01-06-SF0197
Project Leader and Team Members	Leader: Nik Rumzi Nik Idris Members: Nik Din Muhamad, Abdul Halim Mohamed, Abd. Jaafar Shafie and wang Jusoh
Field of Research	Engineering Sciences
Project Summary	Project objectives were to explore and identify the effectiveness and feasibility of a novel strategy for dynamic overmodulation and field weakening operations in direct torque control (DTC) drives. The main objective of this project were achieved. Significant improvements in terms of torque dynamic and acceleration during field weakening have been observed. All these methods are developed without the need of complex space vector modulator as normally is the case for DTC-SVM induction motor drives.
Contact Institution/Entity Address Phone Number e-Mail	UniversitiTeknologi Malaysia (UTM) UniversitiTeknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5535341 H/p: 019-7205854 nikrumzi@ieee.org

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Prediction and Treatment of Scale in Malaysian OilField Operations
Project Number	03-01-06-SF0200
Project Leader and Team Members	Leader: Abu Azam Md Yassin Member: Noor Shawal Nasri
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to determine common scales deposited during water injection; to identify scale tendency in oilfield production operation; to develop appropriate hardware to predict scaling tendency; and to identify method of removal of deposition to reduce scale tendency.
Publications/Products/Outcomes	Journals: <ol style="list-style-type: none"> 1. Merdhah, A. B. and Yassin, A. A. M. 2009. Scale formation due to water injection in Malaysian sandstone cores. <i>American Journal of Applied Sciences</i>. 6: 1531-1538. 2. Merdhah, A. B. and Yassin, A. A. M. 2009. Strontium sulphate scale formation in oil reservoir during water injection at high-salinity formation water. <i>Asian. Journal of Applied Sciences</i>. 2: 300 - 317. 3. Merdhah, A. B. and Yassin, A. A. M. 2009. Laboratory study onprecipitation of strontium sulphate in Malaysia sandstone cores. <i>International Journal of Oil,Gas and Coal Technology</i>. 2:121- 140. 4. Merdhah, A. B. and Yassin, A. A. M. 2009. Scale formation due to water injection in Berea sandstone cores. <i>Journal of Applied Sciences</i>. 9: 3298- 3307. 5. Merdhah, A. B. and Yassin, A. A. M. 2009. Solubility of common oil field scales of injection water and high-barium concentration and high-salinity formation Water. <i>Jurnal Teknologi</i>. 50: 67-77.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5535579 H/p: 013-7193914 abuazam@fkkksa.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Energy Saving in Building Air-conditioning System
Project Number	03-01-06-SF0204
Project Leader and Team Members	Leader: Mohd Nor Musa Members: Musa Mailah, Hayati Abdullah and Mat Nawi Wan Hassan
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to develop a computer model for the design and simulation of the performance of a multiple-circuit variable speed building air-conditioning system; to design and build a prototype and an experimental rig for the validation of the computer model; to develop a new control system using existing controllers; and to conduct reliability test for the new air-conditioning system prototype. All of the project objectives were achieved.
Contact Institution/Entity Address Phone Number e-Mail	UniversitiTeknologi Malaysia (UTM) UniversitiTeknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-553 4597 mdnor@fkm.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Power Quality Study of PV-inverter System for Distributed Generation Connected to a Network of Adjustable Speed Drives
Project Number	03-01-06-SF0205
Project Leader and Team Members	Leader: Makbul Anwari Members: Taufik and Zainal Salam
Field of Research	Engineering Sciences
Project Summary	Project objectives were to develop a distributed generation system consisting of Photovoltaic (PV)-Inverter system as the renewable source connected to a network of Adjustable Speed Drives as the load; to determine measurement technique for power quality parameters monitoring; to determine and identify optimum operating condition based on the worst and best case operating scenarios; and to provide an efficient planning tool for future expansion of PV system as an alternate source of energy.
Publications/Products/ Outcomes	<p>Books:</p> <ol style="list-style-type: none"> 1. M. I. Hamid and M.Anwari. Single-Phase PV-Inverter Characteristic Operation in Distributed Generation System. <i>Distributed Generation</i>, IN-TECH Publisher, ISBN 978-953-307-046-9. 2. M. I. Hamid, MakbulAnwari and Taufik. Load Sharing Characteristic of Single Phase PV Inverter Connected to Three Phase Grid. <i>Trends in Renewable Energy and Power Electronics Research</i>, ISBN 978-983-52-0639-9. 3. M.Anwari, M. I. Hamid and Taufik. Power Quality Behavior of Single Phase Fed Adjustable Speed Drive from Grid of PV Generation. <i>Trends in Renewable Energy and Power Electronics Research</i>, ISBN 978-983-52-0639-9. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Anwari,M., Rashid, M. I. M. and Taufik. 2010. Harmonic analysis of grid-connected photovoltaic system with adjustable speed drives. <i>Proc. of International Conference on Control, Automation and System</i>, Korea. 2. Anwari,M., Rashid, M. I. M. and Hamid, M. I. 2010. Efficiency analysis of PV-inverter system connected to a network of adjustable speed drives. <i>Proc. of Power Engineering and Optimization Conference</i>, Shah Alam, June 2010.

	<ol style="list-style-type: none"> 3. Anwari,M., Chung,A. N. L. Hamid, M. I. 2009. Power quality analysis of a network of adjustable speed drives. <i>Proceedings of 13th International Middle East Power System Conference (MEPCON 2009)</i>, Egypt. 4. Anwari,M., Rashid,M.I.M.,Hamid, M. I. and Taufik. 2009. Experimental harmonic analysis of a network of adjustable speed drives. <i>Proceedings of IEEE TENCON 2009</i>, Singapore, November 2009. 5. Anwari,M., Hamid, M. I. and Taufik. 2009. Photovoltaic energy conversion system using single phase grid-connected inverter. <i>Proceedings of 2009 International Telecommunications Energy Conference (Intelec 2009)</i> in Incheon, Korea.
Awards/Certificates	<ol style="list-style-type: none"> 1. 9th Malaysia Technology Expo and Invention & Innovation Competition 2010 (MTE 2010): Bronze Medal. 2. 11th Industrial Art and Technology Exhibition, UTM: Bronze Medal.
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent filed (PI 2010 000528); A Power Quality Monitoring System for PV Inverter –ASD Network. 2. Malaysia Patent Filed (PI 2010 000666); Wireless Photovoltaic Monitoring System – WiPV.
Additional Information	International Linkages: California Polytechnic and State University, San Luis Obispo, California,US.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Construction Design Method for Cold-formed Steel Structures Using Partial Strength Joints
Project Number	03-01-06-SF0209
Project Leader and Team Members	Leader: Mahmood Md. Tahir Members: Nordin YahayaandArizu Sulaiman
Field of Research	Engineering Sciences
Project Summary	Project objectives were to develop a new partial strength joints for cold-formed steel section and construction method by taking into account the structural efficiency and cost saving; ,to analyse the performance of the proposed partial strength joints by carrying out experimental tests and analytical studies; to evaluate the performance of the proposed partial strength joints and construction method by comparing experimental results with the design requirements as stated in British Standard BS5950: Part 5 and Eurocode 3 Part 3; and to prepare the design guide, tables of standardised connection design and cold-formed steel member capacities that can be used for design engineers and contractors. All objectives have been achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Low Temperature Catalytic Plasma Reactor for Conversion of Methane to Fuels
Project Number	03-01-06-SF0210
Project Leader and Team Members	Leader: Nor Aishah Saidina Amin Members: Mahadhir Mohamed and Ramli Mat
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to screen new stable and selective catalysts for conversion of methane to fuels (i.e. methanol, dimethylether, gasoline); to determine parameters affecting performance of low temperature plasma reactor; and to develop new low temperature catalytic plasma reactor prototype for methane reaction. Catalysts were identified from screening - CZA was found to be potential catalyst in converting methane to fuel. A set-up of plasma reactor was commissioned. Reactor reactivity and stability were determined.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Embedded Mini Sensor for Monitoring and Assessing Reinforced Concrete Deterioration
Project Number	03-01-06-SF0214
Project Leader and Team Members	Leader: Mohammad Ismail Members: Rashdi Shah Ahmad and Yap Yung Szen
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to develop mini-sensors that can be used in reinforced concrete structures to assess and monitor corrosion of reinforced concrete specimen by monitoring their potential, resistivity and polarisation resistance and to validate the develop mini sensor with the current NDT technique. All of the stated objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Optimal Audit - An Integrated Resource Conservation Software for Sustainable Development
Project Number	03-01-06-SF0215
Project Leader and Team Members	Leader: Zainuddin Abdul Manan Members: Haslenda Hashim and Sharifah Rafidah Wa
Field of Research	Engineering Sciences
Project Summary	Project objectives were to standardise the audit methodologies for energy, water and gaseous resources involving various processes and equipment; to integrate a software solution that simultaneously incorporates energy, water and wastewater as well as gaseous emissions audit; and to demonstrate case studies on applications of Optimal Audit to two selected factories/buildings. Alpha version and part of Beta Version to integrate a software solution that simultaneously incorporates energy, water and wastewater as well as gaseous emissions were completed. Case studies on application of Optimal Audit on two selected factories/buildings were successfully done. We plan to promote our product through smart partnership with PTM who will be one of our marketing agents. Our software is designed to fulfill the requirements as stated by the Ministry of Energy, Energy Commission and PTM.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-553 5512 zain@fkkksa.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Polymer-Modified Ferroconcrete
Project Number	03-01-06-SF0219
Project Leader and Team Members	Leader: Mohamed Ismail Member: Mohammad Ismail
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to establish the properties of concrete modified with pre-packed polymer-modified mortar (PPPM); to investigate the behaviour of a combination of PMC and wire meshes as reinforcement; to develop PMFC composites; to categorise PMFC as repair material for flexural Members; and to improve repair and rehabilitation methods.
Contact Institution/Entity Address Phone Number e-Mail	UniversitiTeknologi Malaysia (UTM) UniversitiTeknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5532456 H/p: 013-7468800 m.ismail@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of High Performance Sulfonated Poly (Ether Ether Ketone) (SPEEK) Poton Exchange Membrane for Direct Methanol Fuel Cell (DMFC) Application
Project Number	03-01-06-SF0224
Project Leader and Team Members	Leader: Azeman Mustafa Members: Ahmad Fauzi Ismail, Wan Aizan Wan Abdul and Suhaila Mohd Sanip
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to prepare a dense sulfonated poly (ether ether ketone) membranes for direct methanol fuel cell (DMFC) application; to characterise the resulting sulfonated poly membranes in terms of ion exchange capacity (IEC), watercapability, thermal stability, proton conductivity, methanol permeability and membrane structure morphology; and to study the performance of the sulfonated poly membranes by incorporating the polymer electrolyte membrane in a single cell of direct methanol fuel cell (DMFC) system.This novel invention of SPEEK/BPO4 composite membrane was developed by using blending technology in mixing of sulfonated PEEK and BPO4. The developed SPEEK/BPO4 membrane exhibited better methanol barrier property, high proton conductivity value and highly suitable to be used as electrolyte membrane in DMFC system. This product helps to overcome the greenhouse gases effects that contribute to global warming.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5537863 azeman@fkkksa.utm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Full-scale Test of Trial Embankments on Bamboo-geotextile Composite Reinforced Soft Clay
Project Number	03-01-06-SF0236
Project Leader and Team Members	Leader: Aminaton Marto Members: Loke Kean Hooi, Mohd Tamizi Mustafa, Fauziah Kassim, Mohd Idrus Mohd Masirin and Kamarudin Ahmad
Field of Research	Engineering Sciences
Project Summary	<p>Project objectives were to determine the deformation of bamboo-geotextile composite as a reinforcement of soft clay, subjected to static load from trial embankment; to determine and compare the effect of using bamboo-geotextile composite as soil reinforcement on the deformation of trial embankment; and to develop design chart and procedure for construction of embankments on bamboo-geotextile composite reinforced soft clay. From this research, the deformation of bamboo-geotextile composite as reinforcement of soft clay in terms of the strain measured and monitored was achieved. However, strains at only limited positions of the bamboo and geotextile could be analysed as many strain gauges became faulty after a few months of monitoring due to acidic nature of the water at the site. The deformation of embankment on bamboo-geotextile composite reinforced soft soil is much lower than the deformation of embankment on unreinforced soil. This shows the effectiveness of this newly proposed reinforcement method for constructing of embankment on soft soils. The design chart and procedure for construction of embankments on bamboo-geotextile composite reinforced soft clay is still being developed. The newly proposed bamboo-geotextile composite reinforcement method is proven to be effective in solving the settlement and slope failure problems.</p>
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5537781 H/p: 012-7165310 aminaton@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Temperature Effects on the Voltage Current Characteristics of Distribution ZnO Surge Arrester
Project Number	03-01-06-SF0237
Project Leader and Team Members	Leader: Zulkurnain Abdul Malek
Field of Research	Engineering Sciences
Project Summary	Project objectives were to determine the effects of temperature on voltage-current characteristics of complete distribution arresters and to determine the effects of temperature on voltage-current characteristics of ZnO discs or blocks. All the objective were archived. One copyright and one patent pending were filed from this project and UTM needed to capitalise on the IP patented and software written.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5535432 H/p: 012-7167607 zulk@fke.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Development of a Novel System for Evaluating Disassemblability of Product End-of-life Considerations for Polymer-based Automotive Components Manufacture
Project Number	03-01-06-SF0242
Project Leader and Team Members	Leader: Muhamad Zameri Mat Saman Members: Rozaimi Mohd Saad and Sha'ri Mohd. Yusof
Field of Research	Engineering Sciences
Project Summary	Project objectives were to define functional specification of the proposed system; to design and develop the system for evaluating/incorporating disassemblability of product end-of-life consideration; and to apply the proposed system on selected car component.The functional specification of the proposed system was successfully achieved. The proposed system successfully integrate the end-of-life option determination, disassemblability evaluation and disassembly sequencing optimisation. The proposed system was applied to analyse the end-of-life option, evaluate the disassemblability and optimise the disassembly sequence of the door of Kelisa (manufactured in 1997).
Publications/Products/Outcomes	<p>Book:</p> <ol style="list-style-type: none"> 1. Afrinaldi, F., Mat Saman, M. Z. and Mohamed Shaharoun, A. 2008. End-of-Life ProductDisassembly Analysis, Chapter 8: Advance in Manufacturing and IndustrialEngineering, Penerbit UTM, 2008, Johor, Malaysia. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Afrinaldi, F., Mat Saman, M. Z. and Mohamed Shaharoun, A. 2009. A New Methodology for End-of-Life Product Disassembly Analysis and Disassembly Sequencing", <i>1st International Congress on Sustainability Science and Engineering (ICOSSE2009)</i>, 9-12 August 2009, Cincinnati, USA. 2. Afrinaldi, F., Mat Saman, M. Z. and Mohamed Shaharoun, A. 2008. A Methodology for End-of-LifeProduct Disassembly Analysis, <i>Proceeding of the International Graduate Conference on Engineering and Science (IGCESS2008)</i>, 23-24 December 2008, Johor Bahru, Malaysia.

	<ol style="list-style-type: none"> 3. Afrinaldi, F., Mat Saman, M. Z. and Mohamed Shaharoun, A. 2009. A Decision Making Software for End-of-Life Vehicle Disassemblability and Recyclability Analysis. Accepted to be presented in <i>IEEE International Conference on Industrial Engineering and Engineering Management (IEEM2009)</i>, 8-12 December 2009. 4. Afrinaldi, F., Mat Saman, M. Z. and Mohamed Shaharoun, A. 2008. A Computer-based End-of-Life Product Disassemblability Evaluation Tool, <i>The 9th. Asia Pacific Industrial Engineering and Management Systems Conference (APIEMS2008)</i>, 3 - 5 December 2008, Bali, Indonesia.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5534675 H/p: 019-7796872 zameri@fkm.utm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of New Solvent-free Coagulation Process for the Production of Polyacrylonitrile-based Carbon Fiber
Project Number	03-01-06-SF0258
Project Leader and Team Members	Leader: Ahmad Fauzi Ismail Members: Wan Aizan Wan Abdul, Azeman Mustafa and Hasrinah Hasbullah
Field of Research	Material Sciences
Project Summary	Project objectives were to fabricate the spinneret with multiple holes for fabricating the PAN fibre in the solvent-free coagulation bath; to study the performance of PAN fibre and resulting carbon fibre; and to characterise the PAN fibre and the resulting carbon fibre. All the objectives were achieved. Specialised, locally designed and fabricated spinnerets with multi holes for fabricating the PAN fibre produced. Characterisation of PAN fibre and the resulting carbon fibre was done. Production of PAN fibre through a multi-hole spinneret was optimised. Dry-Wet Spinning System and fabrication technique of PAN Fibre was developed and the technology was tested for specific PAN Fibre manufacturing technique to ensure that the locally made Dry-Wet Spinning system are competitive and more efficient in performing the separation task.
Publications/Products/Outcomes	Publication: 1. Ismail, A. F., Mahmud, D. S. A., Rahman, M. A. and Mustafa, A. 2008. Fabrication of polyacrylonitrile/acrylamide (PAN/AM) fibers using a solvent-free coagulation bath, Carbon fibre material for tomorrow. <i>Advanced Materials Research Centre (AMREC) 2008</i> . pp. 65-74.
IP Status	Malaysia Patent Filed: PI 2010002109
Additional Information	Industrial Linkages: Collaboration with SIRIM AMREC
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor. Office: 07-553 5592 H/p: 017-771 5545 afauzi@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Antimicrobial Starch-based Film for Fruits and Vegetables Packaging
Project Number	03-01-06-SF0260
Project Leader and Team Members	Leader: Eraricar Salleh Members: Ida Idayu Muhamad and Wan Aizan Wan Abdul
Field of Research	Biotechnology
Project Summary	Project objectives were to formulate a suitable starch, chitosan and lauric acid ratio in order to get the best edible and biodegradable packaging film; to determine the effectiveness of the film; to determine the effect of the composition on antimicrobial, chemical, mechanical and physical properties; and to optimise the process parameter to produce the film.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Salleh,E., Muhamad, I. I. and Khairuddin, N. 2007. Preparation, characterization and antimicrobial analysis of antimicrobial starch-based film incorporated with chitosan and lauric acid. <i>Asian Chitin Journal</i>. 3: 55-68. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Salleh, N. E., Muhamad, I. I. and Khairuddin, N. 2007. Inhibition of <i>B. subtilis</i> and <i>E. coli</i> by antimicrobial starch-based film incorporated with lauric acid and chitosan" <i>3rd International Symposium Food and Agricultural Products: Processing and Innovations</i>, Naples, Italy, 24-26 September 2007. 2. Salleh, N. E. and Muhamad, I. I. 2007. Starch-based antimicrobial films incorporated with lauric acid and chitosan. <i>International Conference on Advancement of Materials and Nanotechnology 2007 (ICAMN2007)</i>, Langkawi 29 May-1 June. 3. Salleh, N. E. and Muhamad, I. I. 2007. Mechanical properties and antimicrobial analysis of antimicrobial starch-based film. <i>Polymer Advanced Technologies (PAT2007)</i>, Shanghai, China, 22-25 October 2007.
Contact	Universiti Teknologi Malaysia (UTM)
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Intelligent Packaging for Food
Project Number	03-01-06-SF0261
Project Leader and Team Members	Leader: Ida Idayu Muhamad Members: Eraricar Salleh, Wan Aizan Wan Abdul and Ahmad Fauzi Ismail
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to develop an intelligent biodegradable packaging material for food; to formulate a starch based packaging material via blown-film process with indicators for food; and to determine the effectiveness of the indicators in giving information with respect to temperature variation, pH and relative humidity. All the objectives were achieved.
Publications/Products/Outcomes	Products: Prototype of intelligent packaging: AMI+ and EMOfilm
Awards/Certificates	<ol style="list-style-type: none"> 1. IChemE Innovation and Excellence Award 2008: Awarded Highly Commended Innovation for the SRG Award of Food and Drink Engineering Innovation. 2. BioMalaysia 2009: Silver Award, Biolnno award. 3. Salon International des Inventions, Geneva, 2007: Gold Medal. 4. Malaysian Technology Exhibition (MTE) 2007: Gold Medal.
IP Status	<ol style="list-style-type: none"> 1. Malaysia Patent Filed (PI No: 2009 5045); An Electroactive Biofilm from Polysaccharide Incorporated with PANI. 2. Malaysia Patent Filed (PI No: 2009 5045);an ElectroactiveBiofilm from Polysaccharide Incorporated withPANI. 3. Malaysia Patent Filed (PI No: 2007 1577); an ActivePackaging using A Smart Bio-switch Concept.
Additional Information	International Linkages: Linkage to SIIF Women Inventor Association Spin-off: In the process (MTDC-Symbiosis program)
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Faculty of Chemical Engineering, Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Optimisation of Standard Geometrical Properties of Steel Section with Trapezoid Web Profile
Project Number	03-01-06-SF0268
Project Leader and Team Members	Leader: Mohd. Hanim Osman Members: Sariffuddin Saad, Arizu Sulaiman and Hanizah Abdul Hamid
Field of Research	Engineering Sciences
Project Summary	Project objectives were to propose optimised geometrical properties of trapezoid web steel sections, based on analytical and experimental studies; to develop a guide for beam-column joints of trapezoid web structures using standard steel connection with trapezoid web beam; and to develop the fatigue strength curve of trapezoid beam section.
Contact Institution/Entity Address Phone Number e-Mail	UniversitiTeknologi Malaysia (UTM) UniversitiTeknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5532147 mhanim@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Corrosion Assessment Standard for Inspection Data to Evaluate the Remaining Lifetime of Corroding Structures
Project Number	03-01-06-SF0272
Project Leader and Team Members	Leader: Norhazilan Md Noor Member: Nordin Yahaya
Field of Research	Engineering Sciences
Project Summary	<p>The aim of the project was to develop a probabilistic-based methodology specifically designed to assess continuous integrity of corroding structures. The proposed methodology can be used to extract important information related to corrosion growth behaviour by fully utilising historical data from on-site inspection activities. The methodology also comprises of corrosion-related model and data correction mechanisms developed solely based on metal loss evidence to eliminate the dependency of corrosion progress upon structure material and environmental properties. The information extracted from inspection data can then be used to predict the remaining life of corroded structures at the time of inspection and in the future by using Monte Carlo simulation procedure. The methodology exhibits an integration of data sampling, statistical analysis and reliability prediction to produce a generic statistical-based assessment standard intended for on-site inspection data. All research objectives were successfully achieved.</p>
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. N. M. Noor, G. H. Smith and N. Yahaya. 2007. Probabilistic Time-Dependent Growth Model Of Marine Corrosion In Seawater Ballast Tank, <i>Malaysian Journal of Civil Engineering (MJCE)</i>, 19(2): 142-155 2. N.M.Noor, N.Yahaya and S.Rabeah. 208. The Effect of Extreme Corrosion Defect on Pipeline Remaining Life-Time, <i>MJCE</i>, 20(1): 47-57 3. N. M. Noor, M. A. Ngadi. 2008. Mechanize Feature-To-Feature Matching System Utilizing Repeated Inspection Data. <i>Jurnal Teknologi Maklumat</i>, 20(3):46-54. 4. N. Yahaya, N.M. Noor, M. M. Din and S.H. M. Nor. 2009. Prediction of CO2 Corrosion Growth in Submarine Pipelines. <i>MJCE</i>, 21(1): 69-81 5. N.M. Noor, N. Yahaya, M. M. Din AND S.H. M. Nor. 2009. Prediction of Corroding Pipeline Remaining Life-Time Using Semi-Probabilistic Approach, <i>MJCE</i> 22(2):204-220

	<ol style="list-style-type: none"> N. M. Noor, N. Yahaya, N. A. N Ozman and S. R. Othman. 2010. The Forecasting Residual Life of Corroding Pipeline based on Semi-Probabilistic Method, <i>UNIMAS e-Journal of Civil Engineering</i>, 1(2). N.M. Noor, N. Yahaya, N.A.N Ozman, M.N.M.A. Hanapiah and Z.Abdullah. 2010. PICA: Pipeline Integrated Corrosion Assessment Tool for Structure Integrity', <i>MJCE</i> 24(2): 246-263, 2010 <p>Article:</p> <ol style="list-style-type: none"> N.M.Noor. Risk-based Maintenance towards Sustainability, <i>JURUTERA Bulletin</i>, August 2007. <p>Book Chapters:</p> <ol style="list-style-type: none"> N.M.Noor. Corrosion in Steel Concrete, Chapter 4 and 8. Penerbit UTM, 2008, ISBN 978-983-52-0570-5.
Awards/Certificates	Best paper at ICET 2007
IP Status	1 Copyright
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5531626 H/p: 012-5768115 norhazilan@utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Novel Cds-titanosilicate Hybrid Photocatalyst for Hydrogen Gas Generation
Project Number	03-01-06-SF0273
Project Leader and Team Members	Leader: Mustaffa Shamsuddin Member: Sugeng Triwahyono
Field of Research	Chemical Sciences
Project Summary	Project objectives were to synthesise Engelhard Titanosilicate-10 (ETS-10) incorporated Cds nanoparticle photocatalyst; to characterise the band gap and visible light adsorption characteristic of the photocatalyst; to determine the rate of hydrogen generation by using Cds/ETS-10 photocatalyst; and to optimize the hydrogen generation through techniques of catalyst preparation. All objectives have been achieved. The ETS-10 was successfully synthesised by hydrothermal method when Ludox-30 and RHA was used as silica source. The Cds nanoparticle was successfully synthesised by in-situ reduction and reverse micelle method. Band gap energy of ETS-10 was successfully reduced by chemical treatment with hydrogen peroxide from 4.03 to 3.41 eV. Conduction edge of Cds/ETS-10 and Cds/METS-10 were more -ve than the redox potential of H ⁺ /H ₂ . The Cds supported ETS-10 was found to function well to generate H ₂ from water under visible light irradiation.
Awards/Certificates	Malaysia Technology Expo 2010: Gold Medal
Contact	Universiti Teknologi Malaysia (UTM)
Institution/Entity Address	Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor.
Phone Number	Office: 07-5534515 H/p: 013-7724768
e-Mail	mustaffa@kimia.fs.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	New Substrate Surface Finishes for Lead-free Soldering
Project Number	03-01-06-SF0274
Project Leader and Team Members	Leader: Ali Ourdjini Member: Astuty Amrin
Field of Research	Material Science
Project Summary	Project objectives were to develop alternative printed circuit surface finishes for lead-free soldering focusing on immersion silver and palladium finishes; and to investigate and characterise the intermetallics formed during the solder – board finish interaction. Both objectives were achieved successfully.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-553 7863 ourdjini@fkm.utm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Organic Electroluminescent Device Based on Metal-hydrazone Complexes as Emitting Layer
Project Number	03-01-06-SF0275
Project Leader and Team Members	Leader: Mustaffa Shamsuddin Members: Sugeng Triwahyono and Rosly Abdul Rahman
Field of Research	Chemical Sciences
Project Summary	Project objectives were to synthesis and characterise aluminium and/or zinc hydrazone complexes; to design and construct the organic light emitting diode (OLED) device by using metal hydrazone complexes as the emitting material; and to evaluate the performance of the fabricated OLED device based on the current-voltage characteristics. All objectives were achieved. The fabricated device shows the current-voltage relationship similar to a semiconductor material. However, some difficulties were faced in measuring its current- luminance characteristic.
Contact	Universiti Teknologi Malaysia (UTM)
Institution/Entity Address	Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor.
Phone Number	Office: 07-5534515 H/p: 013-7724768
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Evaluation of GaAs-based Rectenna Devices for Intelligent Quantum Chips
Project Number	03-01-06-SF0277
Project Leader and Team Members	Leader: Abdul Manaf Hashim Members: Shaharin Fadzli Abd Rahman, Abdul Rahim Abdul Rahman, Farahiyah Mustafa and Norfarariyanti Parimon
Field of Research	Engineering Sciences
Project Summary	<p>Project objective was to develop wireless microwave power transmission/supply and detector technology. Integrated on-chip device (integration between antenna and Schottky diode) was one of the most potential devices to be integrated on the IQ chip to act as the wireless power supply as well as power detector. The feasibility of direct integration between planar dipole antennas with Schottky diode via coplanar waveguide (CPW) transmission line without any matching circuits inserted between them for nanosystem application was studied. The fabrication and radio frequency (RF) characterisation of planar dipole antenna facilitated with CPW structure on semi-insulated gallium arsenide (GaAs) were performed. The return loss of dipole antennas were evaluated by varying their lengths, widths and also metal thicknesses for the purpose of use in the super high frequency (SHF) band.</p>
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. F. Mustafa, A. M. Hashim, N. Parimon, S. F. A. Rahman, A. R. A. Rahman, M. N. Osman, A. A. Aziz and M. R. Hashim. 2011. Fabrication and Characterization of Planar Dipole Antenna Integrated with GaAs Based-Schottky Diode for On-chip Electronic Device Application", IOP Conf. Series: <i>Materials Science and Engineering</i>, 17:012-023 2. N. Parimon, F. Mustafa, A. M. Hashim, S. f. A. Rahman, A. R. A. Rahman and M. N. Osma. 2011. Fabrication and Characterization of n-AlGaAs/GaAs Schottky Diode for Rectenna Device Application", IOP Conf. Series: <i>Materials Science and Engineering</i> 17:012-022.



3. N. Parimon, F. Mustafa, A. M. Hashim, S. F. A. Rahman, A. R. A. Rahman, M. N. Osman, A. A. Aziz and M. R. Hashim. 2010. Prediction of n-AlGaAs/GaAs Schottky diode properties for milliwatt range application", *World Applied Sciences Journal*, 9: 43-51.
4. F. Mustafa, N. Parimon, A. M. Hashim, S. F. A. Rahman, A. R. A. Rahman and M. N. Osman. 2010. RF-DC Power Conversion of Schottky Diode Fabricated on AlGaAs/GaAs Heterostructure for On-Chip Rectenna Device Application in Nanosystems, *Microsystem Technologies*, 16:1713–1717.
5. F. Mustafa, S. F. A. Rahman, A. M. Hashim, N. Parimon, A. R. A. Rahman and M. N. Osman. 2010. RF-to-DC Direct Power Conversion of AlGaAs/GaAs Schottky Diode for On-Chip Rectenna Device Application in Nanosystems, *Journal of Applied Sciences*, Vol. 10(18):2041-2046.

Conferences:

1. F. Mustafa, N. Parimon, A. M. Hashim, S. F. A. Rahman and M. N. Osman. 2010. Power Conversion Efficiency Characteristics of AlGaAs/GaAs Based Schottky Diode for On-Chip Rectenna Devices in Nanosystem", *International Conference on Enabling Science and Nanotechnology (Nanotech Malaysia 2010)*, 1-3 December 2010, Kuala Lumpur.
2. A. N. Syazwana, M. Farahiyah, H. Abdul Manaf, A. R. Shaharin Fadzli. 2010. Characterization of Planar Meander Antenna on the Semi-Insulated GaAs for On-Chip Rectenna Devices", *Regional Annual Fundamental Science Symposium 2010*, 8-9 June 2010, Kuala Lumpur.
3. F. Mustafa, N. Parimon, A. M. Hashim, S. F. A. Rahman, A. R. A. Rahman and M. N. Osman. 2010. Power Conversion Efficiency of Schottky Diode Fabricated on n-AlGaAs/GaAs HEMT Structure for Rectenna Application", *Asia-Pacific Symposium on Applied Electromagnetics and Mechanics 2010*, 28 - 30 July 2010, Kuala Lumpur.
4. N. Parimon, F. Mustafa, S. F. A. Rahman, A. R. Rahman, M. N. Osman and A. M. Hashim. 2009. RF-to-DC Characteristics of AlGaAs/GaAs HEMT Schottky Diode for On-Chip RF Detector and Rectenna Application in Nanosystems", *2009 Nanotech Malaysia*, 27-29 October 2009, Kuala Lumpur.

	<ol style="list-style-type: none"> 5. FF. Mustafa, N. Parimon, S. F. Rahman, A. M. Hashim, and M. N. Osman. 2009. RF-DC Power Conversion of Schottky Diode Fabricated on AlGaAs/GaAsHeterostructure for On-Chip Rectenna Device Application in Nanosystem", 2009 <i>IEEE International Conference on Electron Devices and Solid-State Circuits</i>, 25-27 November 2009, Xi'an, China.
Awards/Certificates	<ol style="list-style-type: none"> 1. INATEX 2009: Silver medal. 2. Malaysian Technology Expo 2010: Bronze medal.
IP Status	<p>IP Filed:</p> <ol style="list-style-type: none"> 1. Malaysia Patent Filed (PI 2009-0780): Rectenna device for use in providing wireless power supply. 2. Malaysia Patent Filed (PI2009-1279): On-chip integration of dipole antenna and Schottky diode for rectenna device structure. 3. Malaysia Patent Filed (PI2009-1295): On-chip integration of meander antenna and Schottky diode for rectennadevice structure. 4. Malaysia Patent Filed (PI2010-0818): On-chip Planar Dipole Antenna for Super High Frequency Range Operation. 5. Malaysia Patent Filed (PI2010-0320): Integrated Dipole Antenna and AlGaAs/GaAsSchottky Diode for On-chip RF Power Detector.
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>UniversitiTeknologi Malaysia (UTM) Material Innovations and Nanoelectronics Research Group, Faculty of Electrical Engineering, UniversitiTeknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5536230 manaf@fke.utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Wide Bandgap Semiconductor Hydrogen Gas Sensors
Project Number	03-01-06-SF0281
Project Leader and Team Members	Leader: Abdul Manaf Hashim Members: Mazuina Mohamad and Shaharin Fadzli Abd Rahman
Field of Research	Engineering Sciences
Project Summary	<p>Project objective was to reveal a possibility of utilising III-V base material as a sensing device, in particular as a hydrogen (H₂) gas sensor. High temperature operation and long term stability are important requirements for a H₂ sensor, thus an undoped-Aluminium Nitride/Gallium Nitride (AlGaN/GaN) high-electron-mobility-transistor (HEMT) structure was chosen as the base material. The sheet concentration and mobility of epitaxial layers determined by Hall measurement were $6.61 \times 10^{12} \text{ cm}^{-2}$ and $1860 \text{ cm}^2/\text{Vsec}$, respectively. The devices fabrication were etched by an inductively-couple-plasma reactive ion etching (ICP-RIE) system for mesa isolation with a Chlorine (Cl)-based gas system consisting of Boron Trichloride (BCl₃) and Chlorine (Cl₂) gases. The ohmic contacts were formed by deposition of Titanium/Aluminium/Titanium/Aurum (Ti/Al/Ti/Au) (20/50/35/50 nm) multilayers followed by rapid thermal annealing at 850°C for 30 s in nitrogen (N₂) ambient. The Schottky contact was produced by evaporating 5 nm thick catalytic Platinum (Pt) metal. Finally, Titanium/Aurum (Ti/Au) was evaporated as interconnection contact.</p>
Publications/Products/Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mohamad, M., Mustafa, F., Rahman, S. F., Abidin, M. S. Z., Al-Obadi, N. K. A., Hashim, A. M., Aziz, A. A. and Hashim, M. R. 2010. The sensing performance of hydrogen gas sensor utilizing undoped-AlGaN/GaN HEMT. <i>Journal of Applied Sciences</i>, 10: 1797-1801 2. Mohamad, M., Mustafa, F., Hashim, A. M., Rahman, S. F., Aziz, A. A. and Hashim, M. R. 2010. Fabrication of Pt-circular Schottky diode on undoped AlGaN/GaN HEMT. <i>Journal of Applied Sciences</i>, 10: 2338-2342. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. M. Mohamad, F. Mustafa, M. S. Z. Abidin, S. F. Rahman, N. K. A. Al-Obaidi, A. M. Hashim, A. A. Aziz and M. R. Hashim. 2010. The Sensing Performance of Hydrogen Gas Sensor Utilizing Undoped-AlGaN/GaN HEMT", IEEE

	<p>International Conference on Semiconductor Electronics, <i>Proceedings ICSE</i>, art.no. 5549369, pp. 301-304.</p> <p>2. M. Mohamad, Y. M. Fong and A. M. Hashim. 2008. The Sensing Performance of undopedAlGaIn/GaN/Sapphire HEMT Hydrogen Gas Sensor", <i>Proceedings-2nd Asia International Conference on Modelling and Simulation, AMS 2008</i>, art.no. 4530610, pp. 985-986.</p> <p>3. S. Mohamad Nizam, M. Mazuina, M. Farahiyah, A. R. ShaharinFadzli, H. Abdul Manaf and N. K. A. Al-Obaidi. Hydrogen Sensors Fabricated on Undoped-AlGaIn/GaN HEMT Structure, <i>Regional Annual Fundamental Science Symposium 2010</i>, 8-9 June 2010, Kuala Lumpur.</p>
Awards/Certificates	<p>1. Malaysia Technology Expo 2010: Silver medal.</p> <p>2. Industrial Art & Technology Exhibition 2009: Bronze medal.</p>
IP Status	<p>1. Malaysia Patent Filed (PI 2009-0779): SchottkyDiode Type Hydrogen Gas Sensor with UndopedAlGaIn/GaN HEMT Structure.</p> <p>2. Malaysia Patent Filed (PI2009-4328): FET – Type Hydrogen Gas Sensor with UndopedAlGaIn/GaN HEMT Structure.</p> <p>3. Malaysia Patent Filed (PI2009-5377): Gateless FET Si-Doped AlGaIn/GaN Gas Sensor.</p> <p>4. Malaysia Patent Filed (PI2009-5376): Gateless FET Hydrogen Gas Sensor.</p> <p>5. Malaysia Patent Filed (PI2010-0299): SchottkyDiode Type Hydrogen Gas Sensor with Si-Doped AlGaIn/GaN HEMT Structure.</p> <p>6. Malaysia Patent Filed (PI2010-0297): Si-Doped AlGaIn/GaN Field-Effect-Transistor for Gas Sensing</p>
<p>Contact</p> <p>Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>UniversitiTeknologi Malaysia (UTM)</p> <p>Material Innovations and Nanoelectronics Research Group, Faculty of Electrical Engineering, UniversitiTeknologi Malaysia (UTM), UTM Skudai, 81310 Johor.</p> <p>Office: 07-5536230</p> <p>manaf@fke.utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Advanced Antibacterial Hybrid Nanofiltration Membrane for Environmental and Biological Applications
Project Number	03-01-06-SF0282
Project Leader and Team Members	Leader: Ahmad Fauzi Ismail Members: Azeman Mustafa, Madzlan Aziz and Suhaila Mohd Sanip
Field of Research	Applied Sciences and Technologies
Project Summary	<p>Project objectives were to prepare hybrid nanofiltration membranes by using carbon nanotubes and nanosilver as additives; to optimise the physical and mechanical properties of hybrid nanofiltration membrane for waste water treatment; and to perform test on the hybrid nanofiltration membranes in actual waste water treatment system. Preparation of hybrid nanofiltration membranes by using carbon nanotubes and nanosilver as additives were completed and optimisation of the physical and mechanical properties of the hybrid nanofiltration membrane for waste water treatment was done. Performance test of the hybrid nanofiltration membranes in actual waste water treatment system was also carried out. Permeability and rejection test of nanofiltration hybrid membranes was also done. An advanced hybrid membranes for antibacterial separation in waste water fabrication technique have been developed successfully using local expertise and technology.</p>
Publications/Products/Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. H. Basri, A. F. Ismail and M. Aziz. 2008. Characteristic and Performance Studies of Polyethersulfone (PES)-Ag Polymer Composite, <i>NanoSciTech</i>, UiTM, 18-21 Nov 2008, Selangor. 2. H. Basri, A. F. Ismail and M. Aziz. 2008. Preparation and Characterization of polyethersulfone (PES) membranes incorporated with silver nitrate (AgNO₃), <i>6th Regional Symposium on Membrane Science & Technology 2008</i>, 13-15 August 2008 Phuket, Thailand. 3. H. Basri, A. F. Ismail and M. Aziz, The Effect of PVP Addition in The Preparation of Polyethersulfone(PES)-Ag Antibacterial Membrane, <i>7th International Conference on Membrane, Science & Technology</i>, 13-15 May, 2009, Hotel Corus, Kuala Lumpur.

Awards/Certificates	<ol style="list-style-type: none"> 1. MTE 2011: Silver Medal Award 2. INATEX 2010: Silver Medal Award
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), 81310 Skudai, Johor. Office: 07-5535592 H/p: 017-7715545 afauzi@utm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of GaAs-based Interdigital-Gated HEMT Plasma Devices for Solid-state THz Wave Amplifier
Project Number	03-01-06-SF0283
Project Leader and Team Members	Leader: Abdul Manaf Hashim Members: Zon Fazlila Mohd Ahir and Farahiyah Mustafa
Field of Research	Engineering Sciences
Project Summary	<p>Project objectives were to study microwave region using DC-connected interdigital gate structure and plasma wave interactions. The plasma wave interactions were successfully confirmed. However, the negative conductance was not obtained due to the non-uniformity of electric field distribution under such interdigital gate structure. This work also presented an analysis including the newly proposed AlGaAs/GaAs HEMT plasma device with capacitively coupled interdigital gate structure. This structure was introduced in order to produce uniform field distribution and thus produce uniform drift velocity along the channel. The interdigital fingers were designed and fabricated on AlGaAs/GaAs HEMT substrate. The carrier mobility and the carrier sheet density of AlGaAs/GaAs HEMT structure obtained by Hall measurements at room temperature is 6040 cm²/V-s and 8.34 x 10¹¹/cm², respectively. Theoretical analysis of potential distribution in the interdigital-gated HEMT plasma wave device was carried out. The DC I–V characteristics of capacitively coupled interdigital structure showed that uniformity of electric field under the interdigital gates was improved compared to the DC-connected interdigital gate structure. Admittance measurements of capacitively coupled interdigital gate structure in the microwave region of 10–40 GHz showed the conductance modulation by drain–source voltage. This absolutely could be explained in terms of interactions between the input RF signals and 2DEG surface plasma waves. Absolute conductance values were smaller than the theoretical prediction, due to the small capacitance between interdigital fingers attenuating the propagation of RF signal at these frequencies. These results indicate the existence of plasma wave interactions. Further optimisation of device structure and measurement method may lead to the occurrence of negative conductance.</p>

Conferences:

1. Z. F. M. Ahir and A. M. Hashim. 2009. Novel Approach for Solid-State THz Wave Amplifier Utilizing Capacitively Coupled Interdigital-Gated HEMT Plasma Devices, *2009 IEEE Regional Symposium on Micro and Nano Electronics (IEEE-RSM2009)*, 10-12 August 2009, Kota Bharu.
2. Z. F. M. Ahir, A. M. Hashim and M. H. M. Mohammad. 2009. Plasma Interactions In a Capacitively Coupled n-AlGaAs/GaAs Interdigital-Gated HEMT Device, *International Advanced Technology Congress 2009*, 3-5 November 2009, Kuala Lumpur.
3. A. M. H., Z. F. M. Ahir, S. Kasai and H. Hasegawa. 2009. Odd Harmonic Responses in Two-Dimensional AlGaAs/GaAs HEMT Devices Due to Plasma Wave Interaction", *International Meeting on Frontiers of Physics*, 12 – 16 January 2009, Kuala Lumpur.
4. A. M. H., Z. F. M. Ahir, S. K., T. Hashizume and H. Hasegawa. 2009. Analysis of Interactions between Drifting Plasma Waves in 2DEG Semiconductors and Electromagnetic Space Harmonic Waves using Three-Dimensional Transverse Magnetic Mode Method, *International Meeting on Frontiers of Physics*, 12 – 16 January 2009, Kuala Lumpur.
5. Z. F. M. A. and A. M. H. 2008. Modeling and Characterization of Capacitively Coupled Interdigital-Gated Plasma Device for Terahertz Wave Amplification. *Asia Modeling Symposium 2008 (AMS2008) Second Asia International Conference on Modeling and Simulation*, May 13th – May 15th, 2008, Kuala Lumpur.

Awards/Certificates

1. Malaysia Technology Expo 2010-MTE 2010: Silver medal
2. Malaysia Technology Expo 2010: Bronze medal: GaAs-Based Interdigital-Gated HEMT Plasma Wave Device for Solid-State THz Amplifier
3. 11th industrial Art & Technology Exhibition, INATEX 2009 UTM : Silver medal; GaAs-Based Interdigital-Gated HEMT Plasma Wave Device for Solid-State THz Amplifier.
4. 11th industrial Art & Technology Exhibition, INATEX 2009 UTM: Bronze medal; GaAs-Based High Electron Mobility Transistor for Solid-State THz Detector.



<p>IP Status</p>	<ol style="list-style-type: none"> 1. Malaysia Patent Filed (PI2009-0465): High electron mobility transistor for solid-state THz detector. 2. Malaysia Patent Filed (PI2009-0267): GaAs-based DC-connected interdigital-gated HEMT plasma wave device for solid-state THz amplifier. 3. Malaysia Patent Filed (PI2009-0464): GaAs-based capacitively connected interdigital-gated HEMT plasma wave devices for solid-state THz amplifier. 4. Malaysia Patent Filed (PI2009-0857): Three dimensional transverse magnetic mode analysis of drifting plasma waves in two-dimensional electron gas structure of semiconductor. 5. Malaysia Patent Filed (PI2009-3759): Three dimensional transverse magnetic mode method for analysis of interaction between drifting plasma waves in 2DEG semiconductor and electromagnetic space harmonic waves. 6. Malaysia Patent Filed (PI2009-2703): Three dimensional transverse magnetic mode analysis of drifting plasma waves in two-dimensional electron gas structure of semiconductor-insulator interface structure.
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>UniversitiTeknologi Malaysia (UTM) Material Innovations and Nanoelectronics Research Group, Faculty of Electrical Engineering, UniversitiTeknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5536230 manaf@fke.utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis of Electrogenerated Zinc-Containing Zeolite(EGZn/Zeolite) Catalyst for Dehydrocyclodimerization of C1-C4Alkanes
Project Number	03-01-06-SF0289
Project Leader and Team Members	Leader: Aishah Abdul Jalil Member: Sugeng Triwahyono
Field of Research	Material Sciences
Project Summary	Project objectives were to design and synthesise a novel electrogenerated zinc-containing zeolite (EGZn/Zeolite) catalysts; to establish physical and chemical properties of EGZn/Zeolite catalyst; and to develop simple and efficient method to modify abundant C1-C4 alkanes into more valuable products by dehydrocyclodimerisation over EGZn/Zeolite catalyst. All of the objectives were achieved. A novel electrogenerated zinc-containing zeolite (EGZn/HZSM5) catalyst for producing aromatics was synthesised. The properties of the catalysts were evaluated based on the crystalline structure, acidity of catalyst and catalytic activity.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Analysis of Springback and Its Effect on Mild Steel in Shape Winding
Project Number	03-01-06-SF0297
Project Leader and Team Members	Leader: Masine Md. Tap Members: Ahmad Mahir Makhtar, Abdul Kadir Marsono and Zulkepli Muhd
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to develop a model which was able to predict springback characteristics of various shape winding made from mild steel rod and to develop guidelines for tool and die design of shape winding process.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Nanobiosensor Based on Enzyme Encapsulated Silica Aerogel
Project Number	03-01-06-SF0313
Project Leader and Team Members	Leader: Halimaton Hamdan Members: Lee Yook Heng, Mohd Nazlan Mohd Muhi, Nor Suriani Sani and Lee Siew Ling
Field of Research	Applied Sciences and Technologies
Project Summary	<p>Project objectives were to design and synthesise enzyme (tyrosinase) encapsulated silica aerogel; to characterise these materials and investigate the influence of synthesis conditions on biocatalytic reaction of encapsulated enzymes; and to study the relationship of the fundamental biocatalytic reactions of encapsulated enzymes and their effect on the response characteristic of biosensors. Tyrosinase encapsulated silica aerogel (TESA) was successfully prepared via alcohol-free aqueous colloidal sol-gel route via ambient drying. The physicochemical properties of TESA were determined using X-ray diffraction (XRD) technique, fourier transformed-infrared (FTIR) spectroscopy, field emission-scanning electron microscopy (FESEM), energy dispersive X-ray (EDX) analysis, transmission electron microscopy (TEM) and thermogravimetry (TGA) analysis. The structure of the TESA was not converted to other phases and there were no impurities in the product after the encapsulation process. FESEM and TEM revealed that silica aerogel and TESA were successfully synthesised in nano-sized particles in the range of 20 to 25 nm. TESA revealed the remarkable enhancement of encapsulated tyrosinase which was active at wider temperature and pH range. The maximum catalytic activity was observed at pH 7 and significant activity was also observed at pH ranging from 4 to 9 and at temperature ranging from 5 to 80 °C.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The Effect of Time Periodic Resonant Thermal Forcing on the Strongly Nonlinear Convection in Porous Media
Project Number	03-01-06-SF0314
Project Leader and Team Members	Leader: Ibrahim Mohd Jais Member: Norsarahaida Saidin
Field of Research	Engineering Sciences
Project Summary	Project objectives were to determine the critical Rayleigh number for the onset of unsteady convection; to simulate the process of convection in several phases; to determine the intensity of the convections by means of Heat Transfer; and to identify the weakly nonlinear regime which is embedded in the fully nonlinear regime. From this research, the critical Rayleigh numbers were achieved and two unsteady convection were found which is the Type II convection that is stable and Type III convection that is unstable. The simulations of the convection process in several phases were found to be varying with the periods of wave of the imperfection. The heat transfer was measured by Nusselt number by taking the mean heat transfer of bottom and top layer throughout the period. The results in this project spurn the idea of extending the related analysis into three dimensional convection where hexagonal convection rather than parallel rolls was involved in the media.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Immobilisation of Cholesterol Oxidase in Modified Zeolitic Materials for Electrochemical Cholesterol Biosensor Application
Project Number	03-01-06-SF0318
Project Leader and Team Members	Leader: Alias Mohd Yusof Members: Abdull Rahim Mohd, Noor Aini, Abdul Rashid, Madiah Md Salleh and Shafinaz Shahir
Field of Research	Material Sciences
Project Summary	Project objectives were to modify the surface characteristics of large pore zeolites and mesoporous silicates for cholesterol oxidase immobilisation; to study the enzymatic of cholesterol oxides in the immobilised state; to optimise the preparation condition of zeolite/ mesoporous silicate-modified electrode; and to fabricate a reliable amperometric biosensor with long-term stability, high sensitivity and selectivity, faster response and good reproducibility. At the end of this research, meso-structured Cellular Foam (MCF) materials were synthesised and modified for the purpose of immobilisation of cholesterol oxides. Optimisation of immobilisation was done for free enzyme and specific activity of the immobilised enzyme was determined. Carbon paste electrode was fabricated using synthesised support. Newly developed biosensor was used for determining cholesterol concentration and different parameters like linear range, sensitivity, effect of initial potential, response time and detection limit were determined.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Low Cost and High Yield Carbon Nanotubes from Hydrocarbon Using Floating Catalyst Potential for Biomedical Application
Project Number	03-01-06-SF0319
Project Leader and Team Members	Leader: Alias Mohd Yusof Members: Nor Aziah Buang, Noor Aini Abdul Rashi and Ab. Khalik Wood
Field of Research	Chemical Sciences
Project Summary	Project objectives were to investigate the CNT formation mechanism and feasibility in continuous production method and to study the adsorption and desorption of drug loaded CNT.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design of Vertical MOSFET's for Future Development of Nanoelectronics Device Using TCAD tools
Project Number	03-01-06-SF0322
Project Leader and Team Members	Leader: Razali Ismail Members: Michael Tan Loong Peng, Ismail Saad and Abdul Manaf Hashim
Field of Research	Applied Sciences and Technologies
Project Summary	<p>Project objectives were to develop MOSFETs with a CMOS compatibility processes for gate length of 50nm and below; to characterise and analyse the electrical performance of surround gate and single/double gate of vertical MOSFETs for sub-100nm channel length; to optimise the design of vertical MOSFET structure in trade-off for enhancing its electrical performance and suppression of parasitic elements; and to develop a SPICE technology file based on vertical MOSFET structure for circuit level analysis and optimisation. All objectives were achieved. A fully depleted (FD) vertical MOSFETs with a CMOS compatibility processes for gate length of 50nm and below was designed and simulated. The electrical performance of surround gate and single/double gate of vertical MOSFETs for sub-100nm channel length was characterised and analysed and the design of vertical MOSFET structure in trade-off for enhancing its electrical performance and suppression of parasitic elements was optimised.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. M. A Riyadi, M. T.i Ahmadi, I. Saad and R. Ismail. 2008. Vertical Double Gate MOSFET for Nanoscale Device with Fully Depleted Feature " <i>International Conference on Nanoscience and Nanotechnology (NANO-SciTech 2008)</i>, Shah Alam, 18-20 November 2008. 2. I. Saad, M. L.P Tan , E. L. Chii, R. Ismail and V. K. Arora. 2008. Scattering-Limited and Ballistic Transport in <i>Nano-CMOS Transistors, Workshop on Recent Advances of Low Dimensional Structures and Devices (WRA_LDSD 2008)</i>, Nottingham University, UK, 7 – 9, April 2008.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Personalisable Urban-mass Housing Unit Prototype
Project Number	03-01-06-SF0325
Project Leader and Team Members	Leader: Ahmad Bashri Sulaiman Members: Mahmud Mohd Jusan, Shuhana Shamsuddin, Salihuddin Radin Suma and Sariffuddin Saad
Field of Research	Environmental Sciences
Project Summary	Project objectives were to identify the values related to house design attributes (spatial arrangements, facilities, etc.); to establish design guidelines related to the continuous personalisation practices; to develop a flexible and open-ended house design model that allows future modifications; and to identify the appropriate construction techniques that allows future modifications.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synthesis of Gold Nanoparticles Embedded with Polymeric Layer for Application as Novel Label for Biological Diagnostics
Project Number	03-01-06-SF0326
Project Leader and Team Members	Leader: Hadi Nur Members: Lim Kheng Wei and Zainab Ramli
Field of Research	Material Sciences
Project Summary	Project objective was to synthesise gold nanoparticle embedded with polymeric layer for application as novel label for biological diagnostics. A new integrated chemical system based on gold nanoparticle embedded on polyvinyl alcohol (PVA) polymer has been successfully synthesised. It was demonstrated that PVA-Gold has potential application as heterogeneous oxidation catalyst and can be explored as probes for biosensing applications.
Publications/Products/Outcomes	Journals: <ol style="list-style-type: none"> 1. Nur, H., Misnon, I. I. and Hamdan, H. 2009. Alkylsilylated gold loaded magnesium oxide aerogel catalyst in the oxidation of styrene. <i>Catalysis Letters</i>. 130:161-168. 2. Nur, H., Wei, L. K. and Endud, S. 2009. Hydrolyzed octadecyltrichlorosilane functionalized with amino acid as heterogeneous enantioselective catalysts. <i>React. Kinet. Catal. Lett.</i> 98: 157-164. 3. Nasir, S. M. and Nur, H. 2008. Gold nanoparticles embedded on the surface of polyvinyl alcohol layer. <i>Journal of Fundamental Sciences</i>. 4: 245-252.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Green Nanocomposites with Enhanced Toughness
Project Number	03-01-06-SF0328
Project Leader and Team Members	Leader: Azman Hassan Members: Mat Uzir WahitandAbdul Razak Rahmat
Field of Research	Material Sciences
Project Summary	Project objectives were to develop environmental friendly polymers as matrix (LLDPE as toughened and organoclay as fillers), to determine effect of organoclay and LLDPE on the mechanical properties of PLA/LLDPE nanocomposites, to characterise the formation and morphology of PLA/LLDPE nanocomposites after melt intercalation, to investigate the effect of organoclay and LLDPE concentration on the thermal properties and biodegradability of PLA/LLDPE nanocomposites. All the objective were achieved. The effect of organoclay and LLDPE on the mechanical properties of PLA/LLDPE nanocomposites has been successfully investigated.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Neutron Scattering Correction Functions to Enhance Neutron Radiographic Images
Project Number	03-01-06-SF0337
Project Leader and Team Members	Leader: Wan Muhamad Saridan Wan Hassan Members: Sumilah Marto, Mohd Khalid Kasmin and Azali Muhammad
Field of Research	Physical Sciences
Project Summary	Project objectives were to develop neutron scattering functions to be used for quantitative studies of neutron radiographic images and to develop a neutron scattering correction algorithm for the enhancement of neutron radiographic images. Methods to determine neutron scattering functions for neutron radiographic images was developed. The functions in the form of line spread functions, edge spread functions and point spread functions were estimated by Monte Carlo particle transport code MCNP. Experiments were performed to estimate some of the functions and developed neutron scattering correction algorithms for enhancement of neutron radiographic images based on the neutron scattering functions. Parameters from spread functions, such as the full width at half maximum and sigma, were used in image restoration algorithms such as constrained least squares filtering and Lucy-Richardson algorithm.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars:: <ol style="list-style-type: none"> 1. W. M. S. W. Hassan, S. Marto, K. Kasmin and A. Muhammad. 2007. Spatial Resolution Properties of Neutron Radiography by Monte Carlo Simulation, <i>Paper presented at National Physics Conference 2007 (PERFIK 2007)</i>, Terengganu Heritage Bay Club, Kuala Terengganu, 26-28 Dec 2007, 2. S. Marto, W.M. S. W. Hassan and A. Muhamad. 2007. MCNP for Calculation of the Thickness of Radiation Shielding", <i>Paper presented at National Physics Conference 2007 (PERFIK 2007)</i>, Terengganu Heritage Bay Club, Kuala Terengganu, 26-28 Dec 2007.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Filtration Membranes from Empty Fruit Bunches (EFB) for the Pre-treatment of Palm Oil Mill Effluent (POME)
Project Number	03-01-06-SF0338
Project Leader and Team Members	Leader: Mohd Ghazali Mohd Nawawi Members: Hashim Hassan and Aznizam Abu Bakar
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to develop and modify novel filtration membranes from palm oil empty fruit bunches (EFB) and to characterise and study the efficiency of the EFB based membranes for the pre-treatment of palm oil effluent (POME). All the objectives were achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Development of a High Frequency Power Supply for Ozone Gas Generation
Project Number	03-01-06-SF0343
Project Leader and Team Members	Leader: Zainal Salam Members: Zolkafle Buntat and Shahrin Md Ayob
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to design, develop and construct a high frequency, high voltage power supply for ozone gas generator using power electronics technology. The project has successfully developed a high frequency and high voltage power supply utilising only single power electronic switch. The topology is simple and reliable. The output of the power supply is a pure sinusoidal operated at high frequency (above 30 kHz). The voltage is amplified from 12V DC to 4 kV AC. In addition a low cost ozone chamber based on various dielectric materials was also developed. The combination of the power supply and ozone chamber produced ozone concentration up to 3000 ppm or 6500 mg/m ³ for 1 liter per minute flow rate. The result demonstrates that large amount of ozone can be achieved using simple power electronics topology.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Modeling and Control of a Class of Aerial Robotic Systems
Project Number	03-01-06-SF0350
Project Leader and Team Members	Leader: Johari Halim Shah Osman Members: Mohamad Noh Ahmad@M, Yahaya Md Sam
Field of Research	Engineering Sciences
Project Summary	Project objectives were to obtain the mathematical dynamic model (equations) of an aerial robotic system for controller design purposes and to develop a new robust control technique for the aerial robotic system based on hierarchical control method. A mathematical dynamic model (equations) of an aerial robotic system for controller design purposes has been completely achieved. A new robust control technique for the aerial robotic system based on hierarchical control method was achieved partially due to time constraint. Due to the nature of the aerial robotic system under study which was highly nonlinear, multivariable and unstable, more time than the proposed duration was needed to achieve the proposed target, that was to develop an advanced robust control technique that out perform the simple linear control technique and capable of doing more aggressive autonomous flight (in real-time) for the unmanned aerial robotic system.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Hydroxyapatite Biomimetic Coating of Biomedical Grade Metallic Implant Using Investment Casting Technique
Project Number	03-01-06-SF0354
Project Leader and Team Members	Leader: Mohd. Hasbullah Idris Members: Nazri Kamsah and Mohammed Rafiq Dato
Field of Research	Engineering Sciences
Project Summary	Project objectives were to produce hydroxyapatite coated metallic implant by using the investment casting technique and to evaluate <i>in vitro</i> bioactivity of the cast samples using simulated body fluid (SBF). Both objectives have been achieved. Hydroxyapatite has been successfully coated onto biomedical grade stainless steel. Two new techniques have been proposed and filed for patents. Analysis of the samples has also been done using simulated body fluids.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Chattering-free Robust Unified Smooth Sliding Mode Controller Design for Mismatched Uncertain Systems
Project Number	03-01-06-SF0356
Project Leader and Team Members	Leader: Johari Halim Shah Osman Members: Mohamad Noh Ahmad@MandYahaya Md Sam
Field of Research	Engineering Sciences
Project Summary	Project objectives were to develop a robust and smooth sliding mode controller using the Linear Matrix Inequality (LMI) approach to completely eliminate the chattering problem as well as robust to mismatched uncertainties present in systems suffering from uncertainties and nonlinearities. The research objectives as stated above were achieved. A new sliding mode controller with a unified smooth control (US-SMC) has been developed based on the idea of two-phase sliding mode controller together with the LMI approach to completely eliminate the chattering problem as well as robust to mismatched uncertainties present in systems suffering from uncertainties and nonlinearities. Working with BIP UTM to find suitable industrial partners/ companies/vendors who would like to use the developed algorithm for enhancing their precision machines.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Virtual Industrial Plant Simulation for Energy Efficiency and Optimisation
Project Number	03-01-06-SF0357
Project Leader and Team Members	Leader: Mohd Salman Leong
Field of Research	Engineering Sciences
Project Summary	Project objective was to develop a virtual industrial gas turbine typically used in a power plant and petrochemical facility (two versions). The objective was fully achieved. This virtual reality machine can be used for simulation studies for energy efficiency and optimisation in the operations and maintenance of the plant. The virtual machine can also be used for simulation of design changes and improvement of process involved in the components making up the machine.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Ultrasonic Assisted Distillation System for Separation of Azeotropic Mixtures
Project Number	03-01-06-SF0359
Project Leader and Team Members	Leader: Adnan Ripin Members: Muhammad Abbas, Rosli Mohd Yunus, Arshad Ahmad and Mohd. Ariffin Abu Has
Field of Research	Applied Sciences and Technologies
Project Summary	<p>Project objectives were to obtain vapor-liquid equilibrium data for various types of binary mixtures affected by ultrasonic wave; to design and modify existing distillation column and construct new unit of distillation column equipped with ultrasonic transducers (Ultrasonic Assisted Distillation System-UADS); and to run process commissioning and experimental studies using various types of binary mixtures in order to evaluate the performance of the UADS. The effect of ultrasonic wave on vapor-liquid equilibrium (VLE) of selected normal binary mixture and binary azeotropic mixtures was investigated and managed to design azeotropic distillation system of MTBE-methanol binary mixture, assisted by ultrasonic wave, which was attempting to explore the potential of using continuous columns for the batch distillation in order to achieve a high recovery and high purity of the selected component. The key specific contribution that has emerged from this work is a novel technique that involves application of ultrasonic waves to enhance the separation of normal binary mixtures and solve the difficulty during separating binary azeotropic mixtures in conventional distillation column. The VLE data obtained from this study will be useful in designing a new distillation process for separation of normal binary and binary azeotropic mixtures. This new process may require only one distillation column equipped with ultrasonic transducer, instead of using two or more units of distillation column for separating the mixtures. In addition, this technology may offer great benefits in terms of cost reduction since it does not need the usage of a third component to alter the mixtures' relative volatility and eliminate the azeotropic point.</p>



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	The Development of Hydrophilic Glass Surface
Project Number	03-01-06-SF0363
Project Leader and Team Members	Leader: Rosli Hussin Members: Mohd Nor Yusuf and Sinin Hamdan
Field of Research	Material Sciences
Project Summary	Project objectives were to synthesis hydrophilic glass surface; to characterise hydrophilic glass surface; and to evaluate the photo catalysis behaviour of hydrophilic glass surface and their influence on the self-cleaning effect and anti-fogging. All the objectives were achieved. Different methods of fabrication have been identified. Different types and composition of sample – thin films, or coated on glass surface has been used. Film preparation through sol–gel method has also been tried to prepare composite films but difficult to control their stability. In this research coating material has been prepared using radiofrequency magnetron sputtering method. The hydrophilic property has been evaluated by measuring the contact angle of a water droplet on the films under an ambient condition and in air atmosphere based on sessile-drop method.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Nano-sized Hydroxyapatite Particles Reinforced Ultra High Molecular Weight Polyethylene for Biomedical Applications
Project Number	03-01-06-SF0368
Project Leader and Team Members	Leader: Mat Uzir Wahit Members: Mohd Rafiq Abdul Kadir and Khairul Zaman Mohd Dahlan
Field of Research	Engineering Sciences
Project Summary	<p>Project objective was to develop a new UHMWPE composites formulation for biomedical implant applications, which has the potential to be commercialised. The utilise of UHMWPE composite were increased with the improvement of its processability, mechanical, bioactivity and biocompatibility properties which provided extra advantage compared to the present composite. In this work, UHMWPE was blended with HDPE together with small amount of PEG in order to develop composite with excellent performance in terms of processability, mechanical and wear properties, also with enhanced of HA dispersion. It was found that the elastic and flexural modulus of UHMWPE/HDPE blends increased at the expense of tensile strength, flexural strength and impact strength values with increasing content of HDPE. However, the incorporation of PEG has resulted in a further decrease of all mechanical properties. No significant changes observed in melt viscosity of UHMWPE/HDPE blends with increasing of HDPE loadings. The presence of PEG was successfully decreased the melt viscosity of UHMWPE/HDPE/PEG blends. The optimum blend formulation was chosen based on mechanical and rheological properties. A blend of 40%UHMWPE/60%HDPE/PEG is deduced as the optimum composition to be used to investigate the effect of HA on mechanical properties of UHMWPE/HDPE/PEG/HA composites. The incorporation of HA fillers from 10 to 50 phr resulted in the increase of modulus and strength of the composites with a reduction of impact strength values compared to UHMWPE/HDPE/PEG blends. The composites morphology reveals a uniform dispersion of HA in polymer matrix and it was found that HA particles embedded in the interspaces among the UHMWPE fibrils. Formation of apatite layer at the surface of the composites evidence of excellent bioactivity properties of HA. The composites of 40% UHMWPE/ 60% HDPE/ 2 phr PEG with 40phr HA was chosen as the optimum composition with improved processability and mechanical properties.</p>

	Overall, development of Hydroxyapatite particles reinforced ultra high molecular weight polyethylene composite for biomedical applications was successfully achieved.
Contact	
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Growth of Indium Gallium Arsenide Quantum Dots
Project Number	03-01-06-SF0370
Project Leader and Team Members	Leader: Zulkafli Othaman Members: Yussof Wahab, Sabar Derita Hutagalung and Rosnita Muhammad
Field of Research	Material Sciences
Project Summary	Project objectives were to identify optimum growth parameters for Indium Gallium Arsenide Quantum Dots; to identify growth characteristics of Indium Gallium Arsenide Quantum Dots; and to implement selective area growth of Indium Gallium Arsenide Quantum dots on patterned wafer. The method and technique of growth using MOCVD is standard for this kind of research. The technology was transfered from NanoEpi, Korea under supervision of Profesor Jeong and Dr. Tan Hak Hoe of Australian National University. The recipe however, can be further explored for different percentage of indium content and also for other promising materials.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Recurrent Fuzzy Power System Stabiliser and Its FPGA Implementation
Project Number	03-01-06-SF0371
Project Leader and Team Members	Leader: Mohd Fauzi Othman Members: Mohamed Khalil Moh, Shahdan Sudin and Abd Wahab Ishari Mohd
Field of Research	Engineering Sciences
Project Summary	Project objectives were to design a stable PSS controller using recurrent neurofuzzy control algorithm; and to investigate, implement and test the control strategies on FPGA for hardware implementation for design flexibility and ease of programmability.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Experimental and Numerical Characterisation of Metallic Hollow Sphere Structures
Project Number	03-01-06-SF0372
Project Leader and Team Members	Leader: Andreas Oechsner Member: Mohd Nasir Tamin
Field of Research	Material Sciences
Project Summary	Project objectives was to bring hollow sphere structures (HSS) to application. The main focus of the project was to develop robust and high efficient simulation tools and techniques for hollow sphere structures and their application in novel composite structures. Special emphasis was given to investigate the HSS core/face sheet interphase and fortunately the planned objectives were all achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Developing an Implementation Model for the Development of Biotechnology Entrepreneurship in Malaysia
Project Number	03-01-06-SF0374
Project Leader and Team Members	Leader: Mohd Hassan Mohd. Osman Members: Wan Rosli Wan IshakandMohamad Shah Kassim
Field of Research	Economics, Business and Management
Project Summary	Project objectives were to identify factors affecting biotech startup and growth of biotechnology small and medium sized enterprises (SMEs); to evaluate the strength, weakness and constraint encountered by biotechnology SMEs and to explore ways to overcome these constraints; and to develop an implementation model for developing entrepreneurs/ enterprise in the biotechnology business.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Bio-electricity Generation by Palm Oil Mill Effluent (POME) Using Fuel Cell Reactor (FCR)
Project Number	03-01-06-SF0378
Project Leader and Team Members	Leader: Mohd. Fadhil Md Din Member: Zaini UjangandAzmi Aris
Field of Research	Environmental Sciences
Project Summary	Project objectives were to develop a prototype of lab-scale Fuel Cell Reactor which could generate electricity from fermentation (anaerobic) and cultivation (aerobic) processes; to optimise the main operating factors in the production of hydrogen and methane from the developed FCR, such as pH, volatile suspended solid to suspended solid ratio (VSS/SS) and nutrient limitation in POME; and to assess the bio-electricity generation from FCR using proton exchange membrane mechanisms. All the objectives were successfully achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Benchmarking of Quality Engineering Practices between Malaysian and Thailand Automotive Manufacturing and Related Organisations
Project Number	03-01-06-SF0381
Project Leader and Team Members	Leader: Sha'ri Mohd. Yusof Member: Wong Kuan Yew
Field of Research	Engineering Sciences
Project Summary	Project objectives were to assess the level of quality engineering initiatives (e.g. design of experiments, QFD, Six sigma, SPC, FMEA, ISO 9001, TS 16949) implementation between different countries; to benchmark industry best practices in quality engineering tools and techniques adoption; to develop a Quality Engineering Benchmarking Audit Tool; and to propose a Strategic Model of Quality Engineering implementation for Malaysian automotive manufacturers and suppliers. A transfer of experimental results through Research Colloquium conducted in May 2009 was completed together with Proton.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Reactive Membranes Based on Nanoparticles for Water Treatment
Project Number	03-01-06-SF0388
Project Leader and Team Members	Leader: Ani Idris Member: Nor Aishah Saidina
Field of Research	Environmental Sciences
Project Summary	Project objective were to develop reactive membranes based on nanoparticles for water treatment. The present invention provides dual function magnetic photocatalyst beads showing excellent sensitivity in solar radiation (sunlight-driven photocatalyst) and synergistic reduction of Chromium VI. In addition it can also be served as a bioadsorbent with special characteristics.
Awards/Certificates	Malaysian Technology Exhibition 2010: Silver Medal; ferrophoto gel- ual-function photocatalyst magnetic beads.
IP Status	1. Malaysia Patent Filed (PI 2009 4221): Photocatalytic Magnetic Bead. 2. Malaysia Patent Filed (PI 2009 4307): A method of treating waste water.
Additional Information	International Linkages: Marie Curie University Francel
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5535603 H/p: 019-7776054 ani@fkkksa.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Purification of Recovered Base Oil from Used Lubricants Using Chitosan and Zeolite
Project Number	03-01-06-SF0389
Project Leader and Team Members	Leader: Mohamad Wijayanuddin Ali Members: Arshad Ahmad and Adnan Ripin
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to extract oil from used lubricants; to characterise the recovered oil; to compare the performance of zeolite and chitosan on decolorisation and deodorisation of recovered oil; and to optimise the adsorption processes using Statistica Software. All the objectives were achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Online Process Monitoring System Using Multivariate Statistical Process Control (MSPC) for Chemical Plant
Project Number	03-01-06-SF0391
Project Leader and Team Members	Leader: Kamarul 'Asri Ibrahim Members: Mohamad Wijayanuddin and Khairiyah Mohd. Yusof
Field of Research	Applied Sciences and Technologies
Project Summary	<p>Project objectives were to develop an online fault detection, diagnosis and control system using Multivariate Statistical Process Control (MSPC) for a complex chemical process with multiple unit operations; and to develop a program package that utilises several analysis strategies and multiple types of statistical control charts for process monitoring. Both of the objectives were achieved. This work succeeded in developing the program package that utilises several analysis strategies and multiple types of statistical control charts for process monitoring. The Fault Detection and Diagnosis (FDD) algorithm was developed using MSPC and correlation coefficients between process variables. Normal Correlation (NC), Modified Principal Component Analysis (PCA) and Partial Correlation Analysis (PCorrA) were used to develop the correlation coefficients between selected key process variables and quality variables of interest. Shewhart Control Chart (SCC) and Range Control Chart (RCC) were used with the developed correlation coefficients for FDD. The developed FDD algorithm was implemented on a simulated distillation column, which is a single equipment process. Results showed that the developed FDD algorithm successfully in detecting and diagnosing the pre-designed faults. However, the online fault detection, diagnosis and control system using Multivariate Statistical Process Control (MSPC) work superbly with a single unit process but when applied to multiple units the predicament becoming more complicated due to the plant wide control problem. More time is needed to research on Plant Wide Control problem and applying the MSPC after the Plant Wide Control being resolved.</p>

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of GaN-based Ion-sensitive FETs for Ion Sensing
Project Number	03-01-06-SF0394
Project Leader and Team Members	Leader: Abdul Manaf Hashim Core Members: Mastura Shafinaz Zainal Abidin, Shaharin Fadzli Abd Rahman and Maneea Eizadi Sharif Abad
Field of Research	Engineering Sciences
Project Summary	<p>Project objective was to develop GaN-based ion-sensitive FETs for ion sensing, to investigate the feasibility of AlGaIn/GaN HEMT structure for pH sensing by fabricating an AlGaIn/GaN HEMT structure pH sensor and investigate pH-sensing characteristics of the fabricated sensor. We have investigated the basic transistor characteristics and liquid-phase sensing capability of open-gate devices with bare undoped-AlGaIn surfaces in aqueous solutions. The results show the typical current-voltage (I-V) characteristics of HEMTs with good gate controllability in aqueous solution. The potential of the AlGaIn surface at the open-gate area is effectively controlled via aqueous solution by silver/silver chloride (Ag/AgCl) reference gate electrode. The open-gate undoped AlGaIn/GaN HEMT structure is capable of stable operation in aqueous electrolytes and exhibit linear sensitivity, and high sensitivity of 1.9 mA/pH or 3.88 mA/mm/pH at drain-source voltage, $V_{DS} = 5\text{ V}$ is obtained. The Nernstian's like characteristics is not observed since the occurrence of large leakage current. Suppression of leakage current should improve the sensing performance. The fabricated open-gate undoped-AlGaIn/GaN structure is shown to be suitable for pH sensing application.</p>
Awards/Certificates	<ol style="list-style-type: none"> 11th industrial Art & Technology Exhibition, INATEX 2009 : Bronze medal; Novel GaN-Based On-Chip pH Sensor. 9th Malaysia Technology Expo 2010-MTE 2010: Silver medal; Novel GaN-Based On-Chip pH Sensor,
IP Status	<p>IP Filed:</p> <ol style="list-style-type: none"> Malaysia Patent Filed (PI2009-0856): Schottky diode type pH sensor utilising undoped AlGaIn/GaN HEMT Structure. Malaysia Patent Filed (PI2009-1645): FET type pH sensor utilising undoped AlGaIn/GaN HEMT structure. Malaysia Patent Filed (PI2009-1509): Gateless FET type pH sensor utilising undoped AlGaIn/GaN HEMT structure.

	<ol style="list-style-type: none"> Malaysia Patent Filed (PI2010-0300): Si-Doped AlGa_N/Ga_N Field-Effect-Transistor for pH sensing. Malaysia Patent Filed (PI2010-0415): Schottky Diode pH Sensor on Si-Doped AlGa_N/Ga_N High Electron Mobility Transistor Structure. Malaysia Patent Filed (PI2010-0819): Gateless pH Sensor on Si-Doped AlGa_N/Ga_N High Electron Mobility Transistor Structure.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Material Innovations and Nanoelectronics Research Group, Faculty of Electrical Engineering, Universiti Teknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5536230 manaf@fke.utm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	A Humanoid with Stable Dynamic Gaits
Project Number	03-01-06-SF0399
Project Leader and Team Members	Leader: Shamsudin Mohd Amin Members: Rosbi Mamat and Zaharuddin Mohamed
Field of Research	Engineering Sciences
Project Summary	Project objectives were to design and build a dynamically stable biped emulating human walking gait and to design a humanoid mechanism capable of stable walking on inclined surfaces. All the objectives were achieved. A full body humanoid has been successfully designed and built, with typical human walking capability and it is able to perform self-balancing and climbing up the staircase (with small steps).
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Smart Glove with Intelligent Tremor Control Using Piezo-electric Actuators
Project Number	03-01-06-SF0408
Project Leader and Team Members	Leader: Mohd Zarhamdy Md Zain Members: Mohamed Hussein and Musa Mailah
Field of Research	Applied Sciences and Technologies
Project Summary	Project objectives were to develop control strategies for suppression of hand tremors by using intelligent active force control, PID control and piezoelectric actuator; and to design and develop a smart glove for the performance of experiments using the proposed control strategies. All the objective were successfully achieved. A smart glove using sensor and actuator to control human hand tremor and an experimental rig to investigate human hand tremor behaviour at the palm of the hand were developed.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Metal Oxide and Polymer-added Semiconductor Photocatalyst for Amine Removal in Petroleum Refinery Effluent
Project Number	03-01-06-SF0409
Project Leader and Team Members	Leader: Rusmidah Ali Members: Mohd Nordin Garif, Noor Khaida Mohd Sa, Wan Azelee Wan Abu Ba and Mohd Yusuf Othman
Field of Research	Material Sciences
Project Summary	Project objectives were to develop photocatalyst of semiconductor materials with an excellent photocatalytic activity. The effectiveness of the catalyst activity of the prepared photocatalyst on simulated waste water was tested. The physical, chemical, optical and electrical properties of the prepared photocatalyst materials were characterised. Amine from petroleum industrial effluent were degraded using the prepared photocatalyst.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Failure Prediction of Cancellous Bone Using Morphological Data of Trabeculae Structure
Project Number	03-01-06-SF0410
Project Leader and Team Members	Leader: Habibollah Haron Members: Mohammed Rafiq Dato' and Nazri Kamsah
Field of Research	Engineering Sciences
Project Summary	<p>Project objectives were to reconstruct cancellous bone structure to predict possible failure of bone pathology. High resolution Micro Computed Tomography was used to obtain raw data of cancellous bone. The raw data was in two dimensional slices stacked at 100 microns interval to a thickness of 5-10mm. The three dimensional micro-model was then used to analyse several significant morphological parameters such as the bone volume fraction, the trabecular number, the trabecular thickness, trabecular separation and the degree of anisotropy. These parameters were significantly different from patient to patient and depend on the pathological condition of the bone. Patient who suffers from osteoporosis tend to have cancellous bone stock with degenerated morphological parameters. Virtual experiment was carried out to determine the onset of failure or fracture. This project is important as it can be used as a predictor to cancellous bone failure and is crucial in the development of cancellous bone graft.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Bio-tribocorrosion Performance of High Carbon and Low Carbon Biomedical Grade CoCrMo Alloys
Project Number	03-01-06-SF0411
Project Leader and Team Members	Leader: Fadzilah Adibah Abdul Majid Members: Nazri Kamsah and Mohammed Rafiq Dato'
Field of Research	Engineering Sciences
Project Summary	<p>Project objectives were to design and fabricate a specially made rig for testing bio-tribocorrosion of materials used as endosteal implants. The rig consisted of a container to hold the specimen immersed in body solutions, with mechanical wear mechanism to simulate human joint tribological condition. Upon completion of the test rig, high carbon and low carbon cobalt chrome alloy was used as specimens and tested under simulated body condition. The original objectives were, to construct a device for the measurement of bio-tribocorrosion properties of advanced biomaterials and to create a bio-tribocorrosion mapping of high carbon and low carbon CoCrMo alloy under simulated body fluids. All the objectives were achieved. The device for measurement of bio-tribocorrosion properties of advanced biomaterials has been constructed and bio-tribocorrosion mapping of high and low carbon CoCrMo alloy under simulated body fluids has been conducted.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Security Constrained and Loss Minimised Electrical Power System Operation
Project Number	03-01-06-SF0419
Project Leader and Team Members	Leader: Khalid Mohamed Nor Members: Dalila Mat Said and Mohammad Yusri Hassan
Field of Research	Engineering Sciences
Project Summary	Project objectives were to develop an improved algorithm in operating electric utility system. All operating constraints were accounted for especially the security constraints and transmission and distribution losses. The objectives were achieved. The project managed to minimise generation, transmission and distribution loss, operate electrical power system securely, developed a practical security constraints and optimum operation for Malaysian environment.
Contact Institution/Entity Address Phone Number e-Mail	UniversitiTeknologi Malaysia (UTM) UniversitiTeknologi Malaysia (UTM), UTM Skudai, 81310 Johor. Office: 07-5535898 H/p: 012-2058271 khalidmn@fke.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Selective Separation of Carbon Dioxide from Natural Gas by Emulsion Liquid Membrane (ELM) in Rotating Disc Contactor (RDC)
Project Number	03-01-06-SF0425
Project Leader and Team Members	Leader: Khairul Sozana Nor Kamarudin Members: Hanapi Mat, Technician: 1, Research Officer : 2
Field of Research	Engineering Sciences
Project Summary	Project objectives were to formulate a stable emulsion liquid membrane (ELM) for CO ₂ separation from natural gas; to design the rotating disc contactor (RDC) for ELM system; to evaluate the performance of ELM system in separating CO ₂ from natural gas; and to determine the optimum process parameters for CO ₂ separation. In this study, ELM extraction in rotating disc contactor with auxiliary equipment was designed and used as an innovative process for the separation of CO ₂ from natural gas mixtures in order to overcome the mass transfer limitation encountered in conventional absorption process so that the existing performance of CO ₂ separation from natural gas could be enhanced. In addition, this study covered the fundamental understanding of the ELM system towards solving the needs of the process industry.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Brake Squeal Suppression Technique Using Structural Modifications
Project Number	03-01-06-SF0427
Project Leader and Team Members	Leader: Abd Rahim Abu Bakar Members: Mohd Zarhamdy Md Zain and Roslan Abdul Rahman
Field of Research	Engineering Sciences
Project Summary	Project objectives were simulate disc brake squeal from passenger cars using the finite element method; to propose brake structure modifications that resulted in the lowest brake squeal value based on the simulated result; and to verify and validate the effectiveness of the modified brake using the brake test facilities developed. All the specified objectives were completely achieved. A 3-dimensional finite element model was successfully developed and validated. The FE model was validated through three different stages namely, model analysis at component and assembly level and stability analysis. Good correlation was achieved between prediction and test data for all the stages.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Heteroepitaxial Growth of Sic Thin Film on Si Substrate Using Cat-CVD Method
Project Number	03-01-06-SF0463
Project Leader and Team Members	Leader: Norlaili Mat Safri Core Members: Abdul Manaf Hashim, Kanji Yasui and Budi Astuti
Field of Research	Applied Sciences and Technologies
Project Summary	<p>Project objective was to design and construct hot mesh chemical vapour deposition (HMCVD) system to grow silicon carbide (SiC) thin film on silicon (Si) substrate. In the growth processes related to the low temperature growth, tungsten (W) mesh temperature and distance substrate to W-mesh wire have been studied in respect to fundamentals involved in the growth and the structural quality of the grown material. The HMCVD technique was used for generation of high density hydrogen radicals. In particular, hydrogen (H) atoms with atomic density over 10^{14} cm^{-3} could be easily produced by catalytic cracking reaction of hydrogen molecules (H_2) with heated W catalyser, the density of which could not be easily realised in conventional plasma-enhanced CVD (PECVD) and atmospheric-pressure CVD (APCVD) process. In the conventional process mentioned above, cubic SiC (3C-SiC) thin film on Si at lower temperature, however, the structure damage and the formation of void were liable to occur at the interface between SiC and Si. The HMCVD method was one of the most promising techniques to grow 3C-SiC/Si at low temperature with fewer defects. By HMCVD method, hydrogen radicals generated around W-catalyser were considered to enhance the crystal growth at low temperatures through the extraction of H atoms and excessive methyl group from source molecule on growing film surface. By HMCVD method, the growth of 3C-SiC/Si heteroepitaxial film could be successfully carried out at substrate temperature above 750°C, whereas in case of low pressure CVD, the growth temperature higher than 950°C was required. Expected properties of 3C-SiC/Si film can be useful in future devices application of piezoresistive sensors and microelectromechanical systems operating in physically and chemically harsh environments.</p>
Awards/Certificates	12th Industrial Art & Technology Exhibition-INATEX 2010: Bronze medal; Method for Growth of Carbonization Layer by Acetylene Reaction on Silicon Substrates.

<p>IP Status</p>	<ol style="list-style-type: none"> 1. Malaysia Patent Filed (PI2009-5532): Method for growth of carbonization layer by acetylene reaction in silicon substrates fabrication. 2. Malaysia Patent Filed (PI2009-5109): Method for fabrication of Silicon substrate heterostructures using rapid thermal triode plasma CVD. 3. Malaysia Patent Filed (PI2010-1137): Hot Mesh Chemical Vapor Deposition System for Silicon Carbide Thin Film Deposition.
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Material Innovations and Nanoelectronics Research Group, Faculty of Electrical Engineering, UTM Skudai, 81310 Johor.</p> <p>Office: 07-5535435 norlaili@fke.utm.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of High Efficiency Ni-Cu/TiO ₂ -SiO ₂ Photocatalyst for Solar-Generation of Hydrogen and Oxygenates
Project Number	03-02-02-SF0002
Project Leader and Team Members	Leader: Chong Fai Kait Members: Noor Asmawati Mohd and Sharifah Bee O A Ab.
Field of Research	Applied Sciences and Technologies
Project Summary	The objective of this project was to develop Ni-Cu/TiO ₂ -SiO ₂ photocatalyst with dual properties i.e. solar-hydrogen evolution and photooxidation of glycerol from water-glycerol system. All the objectives were achieved. Ni-Cu/TiO ₂ photocatalyst with dual properties were developed. TiO ₂ was used as the base for photocatalyst instead of TiO ₂ -SiO ₂ . Although some TiO ₂ -SiO ₂ support was prepared, they did not show any photocatalytic activity. The expertise required to prepare photoactive TiO ₂ -SiO ₂ was not available. Therefore, TiO ₂ which is photoactive was used as a substitute.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi PETRONAS (UTP) Director, Research Enterprise Office, Universiti Teknologi PETRONAS (UTP), Bandar Seri Iskandar, 31750 Tronoh, Perak. Office: 05 - 368 7688 chongfaikait@petronas.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of a Soft Sensor for Inferential Control of Fatty Acid Concentration in Palm Oil Fractionation Plant
Project Number	03-02-02-SF0003
Project Leader and Team Members	Leader: Marappagounder Ramasamy Members: Haslinda Zabiri and Chai Siew Wah
Field of Research	Engineering Sciences
Project Summary	Project objective was to develop the most suitable inferential method (soft sensor) to measure the concentration of different fatty acid fractions having carbon number from C10 to C18 such as capric acid, lauric acid, myristic acid, palmitic acid, stearic acid, oleic acid and linoleic acid in the distillate products of the fatty acid fractionation process; to determine the most important process variables such as flow rates and temperatures which should be considered as inputs in developing a soft sensor; to design and develop an optimal Neural Network Structure to predict the acid compositions with an error of less than 5%; to develop an inferential control scheme for the palm oil fractionation chain based on the inferential measurement using the NN soft sensor; and to develop the prototype controller and test the prototype controller in an operating palm oil fractionation plant.
Additional Information	Industrial Linkages: Cognis Oleochemicals (M) Sdn. Bhd., Karang.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi PETRONAS (UTP) Chemical Engineering Department, Universiti Teknologi PETRONAS (UTP), Bandar Seri Iskandar, 31750 Tronoh, Perak. Office: 05-3687585 H/p: 012-5790820 marappagounder@petronas.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Hydrogen Sensor based on Titania Nanotubes for Medical Applications
Project Number	03-02-02-SF0015
Project Leader and Team Members	Leader: Norani Muti Mohamed Member: John Ojur Dennis
Field of Research	Material Sciences
Project Summary	Project objective was to develop a sensitive and stable hydrogen sensor for low concentration detection using titania nanotubes; and to design a test model (prototype) to be used for medical applications in the diagnosis of diabetic gastroparesis and neonatal necrotising enterocolitis (NEC). The objectives were further sub-divided into the following key metrics: production of titania nanotubes film as the sensing element; optimisation of methodology and process to produce titania film with specific characteristics; and establishment of the structure and property relationship through characterisation techniques namely scanning (SEM) and transmission electron microscopy (TEM) and X-ray diffraction (XRD).All of the key metrics mentioned above have been achieved.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Inherent Safety Software for Process Plant Design
Project Number	03-02-02-SF0016
Project Leader and Team Members	Leader: Azmi Mohd Shariff Members: Chan Tuck Leong, Risza Rusli and Azizul Buang
Field of Research	Applied Sciences and Technologies
Project Summary	Project objective was to develop models of inherent safety index and quantitative risk assessment as part of the inherent safety features in new software for process plant design and plant expansion; to validate the performance of developed models with established data; to interface the developed models with process design simulator as an integrated inherent safety software; and to test the integrated inherent safety software using industrial case studies. Some of the objectives were achieved and inherent safety index, process route index and process stream index were developed. The integrated inherent safety prototype, Inherent Safety Intervention Tool, was developed. The prototype tool was validated against the acrylic acid production and methyl methacrylate acid (MMA) data as case studies.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Design and Implementation of Switching and Commutation Strategies for Linear Motor
Project Number	03-02-02-SF0018
Project Leader and Team Members	Leader: M Noh Karsiti Members: Abdul Rashid Abdul Az and Mohd Haris Md Khir
Field of Research	Engineering Sciences
Project Summary	<p>Project objective was to obtain, analyse, simulate and verify an integrated model of a linear motor used in the unique application of starting a free-piston linear engine-generator. The research mainly focused on seeking the optimum electrical switching and commutation strategy for the brushless, permanent-magnet linear motor to achieve the required motion for starting of the free piston, linear engine. In addition, a suitable linear motor driver/power amplifier will be designed, analysed and fabricated for this project. An integrated model of a linear motor that contains the electrical and mechanical subsystem models has been developed. It consisted of a 3-phase permanent-magnet electric machine model, a 6-switch MOSFET voltage-source inverter (VSI) model, switching commutation algorithm, engine compression-expansion force model (including leakage), friction and magnetic cogging force models. The integrated model was extensively validated with field experimentation and further improved. A lab consisting of off-the-shelf linear motor, inverter stage and motor controller has been installed and configured. In addition, a reconfigurable controller system based on National Instruments' FPGA platform (CompactRIO) and LabVIEW software are in place for experimentation of the switching, commutation and control strategies. Components for building an IGBT inverter (higher power capability than the MOSFET inverter) have also been procured to design and fabricate a much improved linear motor driver.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Development of Graphitic Nanofibre and Carbon Nanotubes for Hydrogen Storage
Project Number	03-02-02-SF0020
Project Leader and Team Members	Leader: Suzana Yusup Members: Fakhru'l-Razi Ahmadun, Azmi Mohd Shariff and Suriati Sufian
Field of Research	Material Sciences
Project Summary	Project objective was to synthesise carbon nanotubes and graphitic nanofibres as adsorbent for hydrogen storage using floating catalyst vapour decomposition (FCVD) method; to characterise the developed carbon nanotubes and graphitic nanofibres; and to study the storage capability of the developed carbon nanotubes and graphitic nanofibres for hydrogen storage. All the objectives were achieved. Carbon nanotubes and graphitic nanofibres as adsorbent for hydrogen storage using floating catalyst vapor decomposition (FCVD) method were produced. The developed carbon nanotubes and graphitic nanofibres were characterised and the storage capability of the developed carbon nanotubes and graphitic nanofibres for hydrogen storage were studied.
Additional Information	International Linkages: University of Nottingham, UK
Contact Institution/Entity Address	Universiti Teknologi PETRONAS (UTP) Director, Mission Oriented Research- Green Technology, Universiti Teknologi PETRONAS (UTP), Bandar Seri Iskandar, 31750 Tronoh, Perak.
Phone Number	Office: 05-3687642 H/p: 013-5213736
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (INDUSTRY)

Project Title	Synergetic Effect of Fe ₃ O ₄ and MnFe ₂ O ₄ Biphasic Nanocatalysts as the Driving Force for Higher Ammonia Yield
Project Number	03-02-02-SF0031
Project Leader and Team Members	Leader: Noorhana Yahya Members: Norani Muti Mohamed, Chong Fai Kait and Irmawati Ramli
Field of Research	Material Sciences
Project Summary	Project objective was to produce ammonia under conditions of 250 atmosphere (atm) and temperature of 450-500°C using iron oxide catalyst. This work was proposed to address the problem of low yield of ammonia as well as the short life span of the iron oxide catalyst used conventionally by using nano size catalysts to enhance reactivity due to the large surface area; using biphasic catalysts to enhance the electron density and as such resulted in higher reactivity; and using biphasic catalysts to increase the life span of the catalysts.
Awards/Certificates	iENA , Germany: Gold Medal ITEX 2010: Gold Medal ITEX 2010: Best Russian Award
IP Status	Malaysia Patent Filed (PI2010005696): Ammonia Synthesis Driven by Nano Catalyst in High Magnetic Flux Density-
Additional Information	International Linkages: Cambridge University Industrial Linkages: PETRONAS Fertilizer Keda Sdn. Bhd.
Contact Institution/Entity Address	Universiti Teknologi PETRONAS (UTP) Director, Research Enterprise Office, Universiti Teknologi PETRONAS (UTP), Bandar Seri Iskandar, 31750 Tronoh, Perak.
Phone Number	Office: 05-368 7849 H/p: 012-217 6094
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COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (BIOTECHNOLOGY)

Project Title	Pre-commercial Validation of MyDENKit™ – A Molecular Diagnostic Kit for Dengue Disease Screening and Virus Serotyping
Project Number	TF0308B030
Project Leader and Team Members	Leader: S. Geetha Subramaniam
Field of Research	Industrial and Environmental Biotechnology
Project Summary/ Objectives	Dengue disease is an endemic viral disease in more than 100 countries, which spreads across Asia, Central Africa and South America. The World Health Organization (WHO) estimated that there might be 100 million cases of dengue disease worldwide per year, which resulted in 250,000-500,000 cases of DHF and 24,000 deaths each year (WHO, 1997). The diagnosis of dengue virus infection on the basis of clinical syndromes is not reliable and the diagnosis should be confirmed by laboratory tests, which will take more than 7 to 8 days to detect the serotype and advice on the health status of the infected individuals. Therefore, there is a need for rapid detection and serotyping of dengue viruses. Conventional methods are not suitable for screening a large population in an endemic region. In this proposal, we strongly advocate the application of biotechnology in the diagnosis and screening of dengue disease.
Publications/Products/ Outcomes	Product : MyDENKit™ - First Malaysian PCR-based dengue detection and serotyping kit. It is a polymerase chain reaction (PCR) based diagnostic and screening kit. The kit is based on a patented technology (IP No: PI20053042) licensed by Geneflux™ through a Technology Licensing Agreement between University Malaya. The kit differentiates four serotypes of dengue virus by a single reaction. It is available in two different versions, a conventional gel-based RT-PCR kit (MyDENKit) and a real-time version using SYBRGreen Technology (MyDENKit-RT).
IP Status	1. Patent filed (PI 20053042); Title: Method for Detection of Dengue Virus

Contact Institution/Entity Address	Geneflux™ Biosciences Sdn. Bhd. Geneflux™ Biosciences Sdn. Bhd., Suite 3-22, Pusat Perdagangan KLH, Menara KLH, Bandar Puchong Jaya, 47100 Puchong, Selangor.
Phone Number	Office: 03-8070 6154 H/p: 017-939 7075
e-Mail	geneflux@gmail.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (BIOTECHNOLOGY)

Project Title	Establishment of a Pilot Plant for the Production of Malaysia's First Refined Kappa (K) Carrageenan Hydrocolloid from Red Seaweed, <i>Euchema cottoni</i>
Project Number	TF0007B001
Project Leader and Team Members	Leader: Abdullah Rahman Din
Field of Research	Agricultural Sciences
Project Summary/ Objectives	The objective was to produce food and pharmaceutical grade of refined kappa carrageenan (RC) from red seaweed <i>Euchema cottoni</i> . A pilot plant was set up in Semporna, Sabah, that can produce 0.7 t to 1.4 t of refined kappa carrageenan extract from 3.5-7 t of dried <i>E. cottoni</i> per day. The pre-commercialisation prototype was tested by the Ministry of Health's accredited laboratories. The product complied to the Food and Agriculture Organisation (FAO) Great Britain Standards.
Publications/Products/ Outcomes	Product : 1. Food and pharmaceutical grade refined kappa carrageenan
Awards/Certificates	1. Malaysian Ministry of Health: Health Certificate 2009
Additional Information	Linkages: Karagel International Sdn. Bhd. Gross Sales: RM 218,750.00
Contact Institution/Entity Address	Genius Ocean Sdn. Bhd. Genius Ocean Sdn. Bhd., 1st Floor, 4302, Jalan Budi, Off Jalan Kuhara, 91000 Tawau, Sabah.
Phone Number	Office: 089-752 378 H/p: 016-826 9328/ 012-8170300/ 0172773896
e-Mail	gocean@streamyx.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –TECHNOFUND (BIOTECHNOLOGY)

Project Title	Bioenergy (biofuel) Generation by Water (H ₂ O) Disassociation Using Thermal Heat of Biomass
Project Number	TF1007B019
Project Leader and Team Members	Leader: Gan Khai Chung
Field of Research	Biotechnology
Project Summary/ Objectives	This research and development work was intended to upscale the design drawings and construct a Malaysian made novel (innovative) pilot scale system from a laboratory scale system known as the Bio-Waste Recycling System to recycling wet municipal waste using bio- thermal water disassociation technology. The by-products (biogas fuel, clean heat energy and ash) were used in the application to produce bio-organic fertiliser.
Publications/Products/ Outcomes	Product : <ol style="list-style-type: none"> 1. A Biowaste Recycling System (BRS) plant to convert and process organic waste from wet municipal waste to useful end by-products. 2. An economical and rapid mechanized conversion process. 3. An integrated system consisting various processes; bio-thermal water disassociation and drying process of wet municipal waste into renewable energy. 4. A robust and reliable pilot BRS plant with low maintenance. 5. An effective and efficient drying system using organic material (renewable energy) without the need for auxiliary or external fuel (such as diesel, gas, etc.) 6. The recycling processes converting organic waste to useful by-products as an alternative to high cost landfill and incineration. 7. An environmentally friendly, clean, fast and recycling system. 8. A cost effective system to treat and recycle wet organic waste and wet municipal organic waste. 9. Produces useful environmentally friendly bio-products; clean heat, biogas and organic fertiliser.
IP Status	Malaysian Patent filed (PI20094403): Bio-Waste Recycling System



**Contact
Institution/Entity
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COMPENDIUM OF MOSTI FUNDED PROJECTS –TECHNOFUND (BIOTECHNOLOGY)

Project Title	Further Development of Patented Kacip Fatimah (BIOLABISIA) Extract for Use in Women's Health for The Purpose of Preclinical and Clinical Studies
Project Number	TF0707B004
Project Leader and Team Members	Leader: Ho Miao Ching Members: Zarina Nordin, Mohamad Fazlin, Wan Nazaimoon Wan Mohamud and Mashitah Mohd Yusof
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The project was conducted by Pharmaniaga to develop a patented Kacip Fatimah extract as phytomedicine for women. The project was divided into four phases. The first phase involved the commissioning of a market. Concurrently, the product will undergo process optimisation for the extracts. The second phase involved optimisation of the final product formulation and manufacturing of samples intended for pre-clinical and clinical studies in cGMP facility. The third phase was conducting Pre-clinical studies in GLP laboratories to meet international requirements. Subsequently, in the fourth phase, after the successful completion of toxicity studies, clinical trials will be conducted in GCP setting by O&G specialists in Malaysian teaching hospitals to show evidence of Kacip Fatimah effects on post menopause women. Finally, the product will be submitted for registration as a phytomedicine to the local National Pharmaceutical Control Bureau and in other identified market.
Publications/Products/ Outcomes	Product : 1. Kacip Fatimah extract as phytomedicine for women
Contact Institution/Entity Address	Pharmaniaga Berhad. Pharmaniaga Berhad., 7, Lorong Keluli 1B, Kawasan Perindustrian Bukit Raja Selatan, P.O. Box 2030, Pusat Bisnes Bukit Raja Selatan, 40800 Shah Alam, Selangor.
Phone Number e-Mail	Office: 03-3342 9999 fazlin@pharmaniaga.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (BIOTECHNOLOGY)

Project Title	Large-scale Production of Refined and Fractionated Essential Oils
Project Number	TF0106A122
Project Leader and Team Members	Leader: Ahmad Abd Wahab Members: Ibrahim Othman, Wan Zaki Wan Mamat, Nasuha Kasian and Hamzah Abu
Field of Research	Agricultural Sciences
Project Summary/ Objectives	<p>The project was about production of raw material for the production of refined and fractionated essential oils for the flavour, fragrance, aromatherapy and pharmaceutical industries. The project was divided into several components. The first component was to do a staggered planting of selected essential oil plants (200 ha of patchouli and 100 ha cinnamon at Budayatama Corp. Sdn. Bhd.). The second component was to mechanised post harvest bulk handling which includes bulk receiving and weighing, quality grading, drying, shredding and conveying to an automated distiller system. The automated distiller system based in Kuala Linggi distillation plant was designed with improved features such as increase in capacity, better essential oil recovery and reduced fuel cost. The secondary processing system which is the fractional distillation was used to produce essential oils and other valuable fractions for usage in perfumery, flavour, pharmaceutical and chemical industries. The third component of this project also includes waste material handling which convert wastes into useful products such as compost, mulching material and silage. Finally, the last component of this project was to establish Malaysian Standards for essential oil followed by a marketing strategy and quality assurance of the products produced.</p>
Contact Institution/Entity Address	MARDI Malaysia Agricultural Research and Development Institute, P.O. Box 12301, 50774 Kuala Lumpur.
Phone Number	Office: 03 8943 7412/ 03-8941 6624/ 03-8943 7570 H/p: 019 255 7645/ 016 356 4745
e-Mail	aaw@mardi.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –TECHNOFUND (BIOTECHNOLOGY)

Project Title	Establishment of an Accredited Contract Testing Laboratory for Biological Evaluation of Medical Devices, Healthcare, Chemicals and Cosmetic Products
Project Number	TF0106B330
Project Leader and Team Members	Leader: Md Anuar Osman Members: Nor Fadilah Rajab, Saadiah Sulaiman, Salmaan Hussain Hinayat Hussain, Kamarul Ariffin Khalid and Zainuddin Mohd Radzi
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	<p>The aim of the project is to establish an accredited contract testing laboratory for biological evaluation of medical devices, healthcare, chemicals and cosmetics products under "Makmal Bioserasi".</p> <p>Of the eight milestones, five major projects activities have been achieved. These include the Establishment of Organisational, Documentation, and Training on ISO17025 compliance, Establishment of additional Test Scopes, Application of ISO Accreditation, and the Review, Modification and Improvisation of ISO Accreditation process. ISO /IEC 17025 accreditation inspection is undergoing and the laboratory is expected to achieved certification by September 2009. Physical upgrading and construction of pilot facility are completed. However, installations of key requirement in HVAC, ELV, Waste Disposal, Wastewater Treatment, equipment and fittings for GLP compliance are stalled due to a shortfall in funding.</p>
Awards/Certificates	1. MS ISO/IEC 17025 (STR1.2)
Contact Institution/Entity Address	UKM Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number e-Mail	Office: 03-8921 4064/ 03-8921 5202 psupp@pkriscc.cc.ukm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – TECHNOFUND (BIOTECHNOLOGY)

Project Title	Set-up a Pilot-scale Plant for Demonstration/Testing/Scaling-up Purposes on the Downstream Processing Technology for the Production of Maltodextrin (and other related products) Utilising Locally Available Feedstock-sago Starch
Project Number	TF0106B143
Project Leader and Team Members	Leader: Peter Nansian Anak Ngusi Members: Abdul Manan Dos Mohamed, Zainal Abidin Mohd Yusof, Ho Bee, Ivan, Foo Chuan Yong and Lim Wee Loo
Field of Research	Industrial and Environmental Biotechnology
Project Summary/ Objectives	Juara Beetuah Sdn. Bhd., CRAUN Research Sdn. Bhd. and Biotechnology Diversified Industries Sdn. Bhd. were tasked by Sarawak State Government to carry out the R&D on downstream processing technology for the productions of maltodextrin. The project was to improve and enhance the technology/process, and eventually commercialises the findings for the production of maltodextrin in Malaysia. A pilot plant was established to perform the research and trial production. The pilot scale plant set up was the first maltodextrin plant in the world that utilises sago starch, which is a totally indigenous natural feedstock.
Publications/Products/ Outcomes	Product : 1. Pilot plant for production of maltodextrin (and other related products)
Contact Institution/Entity Address	Juara Beetuah Sdn. Bhd. Juara Beetuah Sdn. Bhd., 1st Floor, CG204- CG205, Batu Kawah New Township, Jalan Batu Kawa,, 93250 Kuching, Sarawak.
Phone Number e-Mail	Office: 082-461 757/082-462 757 beetuah@tm.net.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –TECHNOFUND (BIOTECHNOLOGY)

Project Title	Dichlorohydrine Plant (First Prototype) at Lumut Port, Perak, Malaysia
Project Number	TF0408B047
Project Leader and Team Members	Leader: Maurizio Mattia Giuseppe Germani Members: Jerry Phung
Field of Research	Biotechnology and Engineering Sciences
Project Summary/ Objectives	<p>This project involved setting up a state-of-the-art dichlorohydrine plant (prototype) using unprocessed glycerol as alternative resource to fossil based dichlorohydrine chemical. The dichlorohydrine technology employed in this plant was a proven and patented European technology and involved promotion of Malaysian biotechnology industry/economy, human resource and biotechnology enhancement with Malaysian ownership. SN has successfully completed and delivered Malaysia's first prototype dichlorohydrine pilot plan and is operational. Trial production (pilot scale) of dichlorohydrine chemical is completed and the final product was tested to ensure meeting marketable specification. A new IP upgrade was filed and registered under MTIPO20093117. A possibility of a new prototype fabrication of a pre-commercial plant of a 5 mt per day is in the pipeline using the new Malaysian IP (upgraded). Upon successful testing and validation of the glycerol dichlorohydrine chemical in meeting export market, a captive market for glycerol dichlorohydrin is anticipated for the Malaysian industry. The 5 mt/day validation plant is being processed by Malaysian Technology Development Corporation for CRDF application.</p>
Publications/Products/ Outcomes	Products : <ol style="list-style-type: none"> 1. Mobile glycerol dichlorohydrin plant 2. Alternative dichlorohydrin(d) chemical to fossil the chemical
IP Status	Malaysian Patent filed (IPO 20093117). Title "Process for the production of alpha-gamma dichlorohydrine in a fluidized bed reactor with a solid state catalyst" with Dr. Maurizio Germani as the main author with Mr. Jerry Phung as the co-author under Success Nexus Sdn Bhd.



Additional Information	Commercialisation: Commercial dichlorohydrin (DCH) plant using glycerol as main feedstock with a targeted production capacity of 5 mt/day
Contact Institution/Entity Address	Success Nexus Sdn. Bhd. Success Nexus Sdn. Bhd., K-2-9, Jalan PJU 1/43, Aman Suria Damansara, 47301 Petaling Jaya, Selangor.
Phone Number	Office: 03-7804 0226 H/p: 012-334 9248
e-Mail	jphung2003@successbiofuel.com karenyip88@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Market Driven Innovation of TMOF Biopesticide Technology Platform for Public Health and Agriculture in Malaysia
Project Number	TF0308B029
Project Leader and Team Members	Leader: Alan E. Brant Members: Tunku Naquiyuddin Ibni Tuanku Jaafar, Neil P. Ranaweera and Marcus Francis
Field of Research	Medical Biotechnology
Project Summary/ Objectives	The objective of this project was to develop biolarvicide and biorepellent products for Malaria and Dengue control worldwide. The company has successfully commercialised products ready for sale in the international market.
Publications/Products/ Outcomes	Outcomes : Worldwide exclusive license of TMOF platform technology which is protected by 16 U.S patents, 2 Singapore and Malaysia patents and various trademarks. The active ingredient has been registered with the U.S. EPA and exempted from the Malaysian Pesticide Board. End products are registered in many countries worldwide.
Awards/Certificates	1. Biolnno Awards 2010: 1 Gold Medal
Contact Institution/Entity Address	Entogenex Industries Sdn. Bhd. Entogenex Industries Sdn. Bhd., Suite 16-04 & 17-04, Level 16 & 17, GTower, 199 Jalan Tun Razak, 50400 Kuala Lumpur.
Phone Number e-Mail	Office: 03-2166 8116 / 03- 2166 8117 017-3878168 info@entogenex.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Studies on Starch Synthase in Sago Palm (<i>Metroxylon sagu</i> Rottb)
Project Number	05-04-02-SF0004
Project Leader and Team Members	Leader: Zaliha Christine Abdullah Members: Noraini Busri, Mohd Hasnain Md Hussain, Awang Ahmad Sallehin and Nurazalia Mohamad Ali
Field of Research	Agricultural Science
Project Summary/ Objectives	This project aimed to determine suitable methodology for the assay of starch synthase in sago palm pith. Starch synthase from sago palm was isolated and partially characterised. The activity of starch synthase in sago palm at various stages of trunk development was also investigated.
Contact Institution/Entity Address	CRAUN Craun Research Sdn. Bhd., Lot 3147, Blok 14, Jalan Sultan Tengah, 93055 Kuching, Sarawak.
Phone Number e-Mail	Office: 082-446 489 zalihaca@craunresearch.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Determination of Nutritional and Physiological Factors Contributing to the Trunking and Good Growth of Sago on Peat
Project Number	05-04-02-SF0007
Project Leader and Team Members	Leader: Noraini Busri Members: Zaharah Abd Rahman, Khairuddin Abdul Rahim, Camillus Benno and Roland Yong Chiew Ming
Field of Research	Agricultural Sciences
Project Summary/ Objectives	This projects determined the fate of major nutrients from fertiliser and active root zone for sago palms. We discovered that the nutrient (nitrogen, phosphorus, and rubidium) applied was absorbed by the plants within 24 hours. A proper fertiliser placement area was also determined.
Additional Information	Linkages: Pelita, Mukah; Sebakong Sago Plantation, Sarawak.
Contact Institution/Entity Address	CRAUN Craun Research Sdn. Bhd., Lot 3147, Blok 14, Jalan Sultan Tengah, 93055 Kuching, Sarawak.
Phone Number e-Mail	Office: 082-446489 norainib@craunresearch.com.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	A Mathematical Model for Alkaline Delignification and Cellulose Degradation of Oil Palm Empty Fruit Bunch Fibre
Project Number	05-03-10-SF0019
Project Leader and Team Members	Leader: Rushdan Ibrahim Members: Latifah Jasmani, Ainun Zuriyati Mohammad, Sharmiza Adnan and Mahmudin Saleh
Field of Research	Forestry Sciences
Project Summary/ Objectives	The project aimed to develop a kinetic model for alkaline delignification and cellulose delignification based on experimental data. The optimum alkaline pulping parameters for improving pulp yield and quality also determined.
Publications/Products/ Outcomes	Others: 1. Rushdan, I., Latifah, J., Sharmiza, A., Ainun, Z.M.A. and Mahmudin, S. 2008. The Preliminary Study on the Effect of Pulping Parameters on the Pulp Yield and Kappa Number of Oil palm Empty Fruit Bunches. Project Evaluation Meeting. 21–22 Jan 2008. Kuala Lumpur.
Contact Institution/Entity Address	Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia, 52109 Kepong, Selangor.
Phone Number	Office: 03-6279 7314 H/p: 019-3726035
e-Mail	rushdan@frim.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Enhancing the Application of Kerengga for Biological Control of the Mahogany Shoot Borer
Project Number	05-03-10-SF0030
Project Leader and Team Members	Leader: Grace Tabitha Lim Wui Oi Member: Laurence Gordon Kirton
Field of Research	Forestry Sciences
Project Summary/ Objectives	The target of the project to identify a potential 'nurse tree' species that will encourage kerengga populations when interplanted in mahogany plantations. It is also to evaluate the effect of interplanting a kerengga 'nurse tree' on the incidence of damage by the mahogany shoot borer.
Publications/Products/ Outcomes	Journal: 1. Lim, G.T., Kirton, L.G., Salom, S.M., Kok, L.T., Fell, R.D. and Pfeiffer, D.G. 2008. Mahogany shoot borer control in Malaysia and prospects for biocontrol using weaver ants. Journal of Tropical Forest Science 20: 147-155.
Contact Institution/Entity Address Phone Number e-Mail	Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia, 52109 Kepong, Selangor. Office: 03-6279 7110 grace@frim.gov.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Bioaccumulation of Heavy Metals by Timber Species Grown on Tin Tailings
Project Number	05-03-10-SF0038
Project Leader and Team Members	Leader: Ang Lai Hoe Members: Gary William Theseira, Hui Ting Fui and Ho Wai Mun
Field of Research	Forestry Sciences
Project Summary/ Objectives	This project assess the occurrence and distribution of Lead (Pb), Arsenic (As), Cadmium (Cd) and Mercury (Hg) in slime and sand tailings. It also determined the bioaccumulation capacity of some timber species for Pb, As, Cd and Hg in tin tailings.
Publications/Products/ Outcomes	<p>Book:</p> <ol style="list-style-type: none"> Ang, L.H. 2010. An assessment of carbon sequestration and phytoremediation potentials of four tropical timber tree species grown on tin tailings. The International Forestry Review "Forests for the future: Sustaining society and the environment" (pp. 240). Commonwealth Forestry Association. <p>Journal:</p> <ol style="list-style-type: none"> Ang, L.H., Tang, L.K., HO, W.M., Hui, T.F., and Theseira, G.W. 2010. Phytoremediation of Cd and Pb by four timber species grown on an ex-tin tailings in Peninsular Malaysia. World Academy of Science, Engineering and Technology 62: 459-463. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> Ang, L.H., Tang, L.K., Ho, W.M., Hui, T.F., and Theseira, G.W. 2009. Vegetative growth and bioaccumulation of <i>Intsia palembanica</i> and <i>Acacia mangium</i> treated with four levels of Pb under partial shade. Pp. 162-165 in Hee, A.K.W., Yap, C.K., Omar, M.Y., Faridah, Q.Z., Nallapan, M., NurAinlzzati, M.Z., Rosimah, N., SitiKhalijah, D., Muskhazli, M., Yong, C.S.Y., Ahmad, I. and Jambari, A. (Eds.) Proceedings of the Simposium Biologi Malaysia, 17–18 Nov 2009, Bangi, Selangor. Ang, L.H., Tang, L.K., Hui, T.F., Ho, W.M. and Theseira, G.W. 2009. Final report of bioaccumulation of heavy metals by timber species grown on tin tailings. FRIM's Projects Evaluation Monitoring 2009, 13-15 Apr 2009, Kuala Lumpur.

	<ol style="list-style-type: none"> Ang, L.H., Tang, L.K., Hui, T.F., Ho, W.M. and Theiserah G.W. 2008. Bioaccumulation of heavy metals by <i>Acacia mangium</i>, <i>Hopea odorata</i>, <i>Intsia palembanica</i> and <i>Swietenia macrophylla</i> grown on slime tailings, in, Ridzwan (Eds.). Proceedings of ICAST, 13-15 Jun 2008, Pahang. Tang, L.K., Hui, H.T. and Ang, L.H.. 2008. Vegetative growth of <i>Intsia palembanica</i> and <i>Acacia mangium</i> treated with four levels of Cd under partial shade. Proceedings of MSTC, 16-17 Dec 2008, K.Lumpur. Ang, L.H., Tang, L.K., Hui, T.F., Ho, W.M. and Theiserah, W. 2008. Bioaccumulation of heavy metals by <i>Acacia mangium</i>, <i>Hopea odorata</i>, <i>Intsia palembanica</i> and <i>Swietenia macrophylla</i> grown on slime tailings. In P22-26, Nohara (Eds). Highlights of FRIM's MOSTIC Project Evaluation Meeting 2009, 13-15 Apr 2009, Kuala Lumpur. <p>Others:</p> <ol style="list-style-type: none"> Ang LH. 2008. Bioaccumulation of heavy metals by timber species grown on tin tailings. FRIM Annual Report 2007, Kepong.
<p>Contact</p> <p>Institution/Entity</p> <p>Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Forest Research Institute Malaysia (FRIM)</p> <p>Forest Research Institute Malaysia,</p> <p>52109 Kepong,</p> <p>Selangor.</p> <p>Office: 03-6279 7096</p> <p>H/p: 012-3242390</p> <p>anglh@frim.gov.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Final Crop Regimes of Plantation-grown Mahogany Stand for Maximum Volume Production and Financial Evaluation of Each Regimes
Project Number	05-03-10-SF0044
Project Leader and Team Members	Leader: Ahmad Zuhaidi Yahya Member: Amir Saaiffudin Kassim
Field of Research	Forestry Sciences
Project Summary/ Objectives	The project determined the appropriate final stocking density of plantation-grown mahogany for optimal growth and volume increment. It also evaluated the overall growth of mahogany with respect to soil types.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ahmad Zuhaidi Yahya and Hashim, M. N. 2008. The Small-Scale Management of Quality Timber Species- <i>Tectona grandis</i> (teak) Stand in Peninsular Malaysia in Buttoud, G. (Eds). Pre-Conference Proceeding Small Scale Forest Use and Management: Global Policies versus Local Knowledge, International Symposium, 23-27 Jun 2008, Gerardmer, France. 2. Ahmad Zuhaidi Yahya, Amir Saaiffudin Kassim and Hashim Md Nor. 2008. Final Crop Regime of Plantation-Grown Teak for Maximum Volume Production and Financial Evaluation of Each Regime. Pp 110-114 in Norhara, H., Nik Zanaria, N. M., Aminah, H. and Norhayati, N. (Eds.) Highlights of FRIM's MOSTI Project Evaluation Meeting 2007 (IRPA & ScienceFund), 21-22 Jan 2008, Kuala Lumpur. 3. Ahmad Zuhaidi Yahya, Amir Saaiffudin Kassim and Hashim, Md., Nor. Growth and yield of plantation-grown <i>Tectona grandis</i> following thinnings. 2009. Seminar on the highlights of FRIM-MOSTI Project, Forest Research Institute Malaysia, 13-15 Mac 2009, Kuala Lumpur.
Contact Institution/Entity Address	Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia, 52109 Kepong, Selangor.
Phone Number	Office: 03-6279 7093 H/P: 019-2712508
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Rainfall Interception Processes and Water Balance of Young Plantation Catchment
Project Number	05-03-10-SF0045
Project Leader and Team Members	Leader: Siti Aisah Shamsuddin Members: Saiful Iskandar Khalid and Marryanna Lion
Field of Research	Forestry Sciences
Project Summary/ Objectives	This project determined the amount of rainfall, throughfall and stemflow of the young forest plantation trees in a watershed area. It also determined the potential evapotranspiration (ET), water level and discharge of the forestplantation watershed. Modelling of intercepted rainfall processes of young forest plantation has been developed.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Siti Aisah, S. 2008. Rainfall interception processes and water balance of young plantation catchment in H.Norhara, W.M. Nik zanariah, H.Aminah, S.S. How and N.Norhayati (Eds). Highlights of FRIM's MOSTI Project Evaluation Meeting 2007 (IRPA & ScienceFund), 21-22 Jan 2008, Kuala Lumpur. 2. Siti Aisah, S. and Marryanna, L. 2008. Preliminary study on rainfall interception by the young Hopea odorata in a small catchment of Bukit Tarek Experimental Watershed, Peninsular Malaysia. Proceeding of the seminar on Science and Technology, 29-30 Oct 2008, Labuan. 3. Siti Aisah, S., Zulkifli, Y., Marryanna, L. and Saiful Iskandar, K. 2008. Rainfall interception processes by young Hopea odorata. Proceeding on CFFPR: Balancing Economic and Ecological Needs, 27-29 Nov 2007, Kuala Lumpur.
Contact Institution/Entity Address	Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia, 52109 Kepong, Selangor.
Phone Number e-Mail	Office: 03-6279 7261 sitiaishah@frim.gov.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Provenance and Progeny Trial of Rotan Batu (<i>Calamus subinermis</i>) in Sabah
Project Number	05-05-09-SF0002
Project Leader and Team Members	Leader: Chia Fui Ree
Field of Research	Forestry Sciences
Project Summary/ Objectives	This study determined the growth performance of different provenance and progeny of <i>Calamus subinermis</i> on different sites and soil types. Potential provenance and progenies for future breeding purposes were also identified.
Contact Institution/Entity Address	Jabatan Perhutanan Sabah (JPSB) Jabatan Perhutanan Sabah, Peti Surat 1407, 90000 Sandakan, Sabah.
Phone Number e-Mail	Office: 089-537811/ 089-660811 FuiRee.Chia@sabah.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	A Study on Medicinal Ferns and Fern Allies (Pteridophytes) of Sabah
Project Number	05-05-09-SF0005
Project Leader and Team Members	Leader: Anuar Mohammad
Field of Research	Forestry Sciences
Project Summary/ Objectives	The specific objectives of this study were to determine the diversity and medicinal value of ferns and fern allies (Pteridophytes) in Sabah, to build up a database of medicinal ferns and fern allies in Sabah and to identify species, sites and habitats of medicinal ferns and fern allies for in situ conservation.
Contact Institution/Entity Address	Jabatan Perhutanan Sabah (JPSB) Jabatan Perhutanan Sabah, Peti Surat 1407, 90000 Sandakan, Sabah.
Phone Number	Office: 089-535177 H/p: 013-8839095
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Determination of Uncertainties in Pesticide Residue Analysis for Mango and Star Fruit to Comply with ISO/IEC 17025 Standard
Project Number	05-03-08-SF0096
Project Leader and Team Members	Leader: Ngan Chai Keong Members: Khairatul Azmah Mohd and Ma Choon Kwong
Field of Research	Chemical Sciences
Project Summary/ Objectives	<p>The project aimed to determine the uncertainty of pesticide residue concentration in mango and star fruit. The main components of uncertainty which are sampling, sample processing and analysis of mango and star fruit will be quantified in this study.</p> <p>The projects will also fulfill the requirements of ISO/IEC 17025 standard in pesticide residue analysis.</p>
Contact Institution/Entity Address	Institut Penyelidikan & Kemajuan Pertanian Malaysia (MARDI) Institut Penyelidikan & Kemajuan Pertanian Malaysia, Peti Surat 12301, 43400 Serdang, Selangor.
Phone Number e-Mail	Office: 03-8943 7489 ckngan@mardi.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Diagnostic DNA Kits for Fruit Fly Pests (Tephritidae: INSECTA)
Project Number	05-02-10-SF0015
Project Leader and Team Members	Leader: Chua Tock Hing Member: Lim Saw Hoon
Field of Research	Agricultural Sciences
Project Summary/ Objectives	The DNA sequences of selected genes from fruit fly pests of agricultural importance (Tephritidae) which can be used for species identification purposes were successfully determined and identified. Based on the specific DNA sequences, we also designed a diagnostic DNA protocol/kit for identification of these pests especially for the larval stages. This kit will be useful to be used in farms and entry points where quarantine work is done.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Tock H. Chua, Yi Vern Chong and Saw Hoon Lim. 2010. Species determination of Malaysian Bactrocera pests using PCR-RFLP analyses (Diptera: Tephritidae). <i>Pest Management Science</i> 66: 379–384 2. Chua, T.H., Tan, Y.L., Harikrishna, J. and Lim, S.H. 2009. Phylogentic relationships of Malayisan Bactrocera species based on Mitochondrial cytochrome oxidase I sequences and morphological characters (Tephritidae: Diptera). <i>Malayan Nature Journal</i> 61: 34-47. 3. Chua T.H. 2009. Ectopomyia Hancocki, a new species of acanthonevrine fly (Diptera: Tephritidae: Phytalmiinae) from Peninsular Malaysia. <i>The Raffles Bulletin of Zoology</i> 57: 25-27.
Contact Institution/Entity Address	MONASH Malaysia University of Science and Technology, GL 33, Ground Floor, Blok C, Dataran Usahawan, Kelana, 17, Jalan SS 7/26 Kelana Jaya, Selangor.
Phone Number	Office: 03-5514 6098 H/p: 012-602 9046
e-Mail	chua.tock.hing@sci.monash.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	The Studies on Taxonomy and Phylogeny of the Genus <i>Goryphus</i> Holmgren (Hym: Ichneumonidae: Cryptinae) in Sundaland
Project Number	05-01-02-SF0128
Project Leader and Team Members	Leader: Idris Abd. Ghani Members: Ng Yong Foo and Nur Azura Adam
Field of Research	Biological Sciences
Project Summary/ Objectives	This project investigated the characters of adult form of <i>Goryphus</i> spp. from Sundaland, inferred the phylogeny of <i>Goryphus</i> spp. from Sundaland morphologically and relationship between <i>Goryphus</i> and <i>Skeatia</i> using molecular phylogenic analysis
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Universiti Kebangsaan Malaysia, 43600, Bangi, Selangor.
Phone Number	Office: 03-8921 5983 H/p: 019-219 7431
e-Mail	idrisgh@ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Roost Selection and Utilisation by Bats at Selected Sites in Peninsular Malaysia
Project Number	05-01-02-SF0147
Project Leader and Team Members	Leader: Zubaid Akbar Mukhtar Ahmad Members: Wong Chee Ho and Serafina Christine Feltcher
Field of Research	Biological Sciences
Project Summary/ Objectives	This project was undertaken to determine the factors that influenced roost selection by bats. Selected sites were surveyed. When caves with bats were found, the species composition and population sizes were determined. Temperature and humidity measurements were taken at the sites where the bats were roosting. The roosting pattern and behaviour was also observed from dawn to dusk. The results showed that the selected bat species can tolerate a wide range of temperature and humidity variations and this suggests that other factors might be involved in roost selection.
Additional Information	Linkages: Center for Conservation Biology, Boston University, USA.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Universiti Kebangsaan Malaysia, 43600, Bangi, Selangor. Office: 03-8921 3827 zubaid@ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Taxonomic Diversity and Phylogenetic Study of Alysiniinae and Opiinae (Hymenoptera: Braconidae) from Malaysia Based on Molecular and Morphological Analyses
Project Number	05-01-02-SF0194
Project Leader and Team Members	Leader: Idris Abd. Ghani Members: Ng Yong Foo and Nur Azura Adam
Field of Research	Biological Sciences
Project Summary/ Objectives	This project determined taxonomic diversity of Alysiniinae and Opiinae of Malaysia. The target was to develop a zoogeographical distribution map of the Alysiniinae and Opiinae in Malaysia. Dendograms and phylogenetic relationship among Alysiniinae and Opiinae species in Malaysia were constructed based on molecular and morphological analyses.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Universiti Kebangsaan Malaysia, 43600, Bangi, Selangor.
Phone Number	Office: 03-8921 3184 H/p: 019-219 7431
e-Mail	idrisgh@ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of High Quality Cryopreserved Sperm for Assisted Reproductive Technology (ART): An Animal Model
Project Number	05-01-02-SF0443
Project Leader and Team Members	Leader: Siti Fatimah Ibrahim Members: Ismarulyusda Ishak, Nor Fadilah Rajab, Abas Mazni Othman, Ahmad Nazlim Yusoff, Jamaludin Hj Mohamed and Khairul Osman
Field of Research	Agricultural Sciences
Project Summary/ Objectives	The objectives of this project was to determine factors that affect sperm fractionation using electrophoresis - factors like optimum voltage for sperm separation solved. The correlation among sperm fractions using electrophoresis and sperm quality was also determined.
Publications/Products/ Outcomes	Journal: 1. Siti Fatimah Ibrahim, Norzaiti Abd Majid, Khairul Osman, Srijit Das, Mohd Padzil Abd Rahman & Abas Mazni Othman. 2008. A study of the antioxidant property of alpha lipoic acids on the sperm quality. CLINICS Journal Clinics. 63: 545-50
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Universiti Kebangsaan Malaysia, 43600, Bangi, Selangor. Office: 03-4040 5641 timi@medic.ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Generation and Analyses of Expressed Sequence Tags (ESTs) from <i>Sargassum polycystum</i> , a Brown Seaweed
Project Number	05-01-03-SF0188
Project Leader and Team Members	Leader: Phang Siew Moi Member: Ho Chai Ling
Field of Research	Marine Sciences
Project Summary/ Objectives	<p>This study is aimed to generate and analyse 2500 ESTs from <i>S. polycystum</i>. This objective has been achieved by constructing a good cDNA library with a total of 2522 ESTs. A total of 1667 tentative unique genes (TUGs) was compared with non-redundant (nr) peptide database at NCBI using BLASTX algorithm and annotated based on Gene Ontology database. Few interesting genes were found among the ESTs which are involved in the alginate biosynthesis pathway (mannuronan C5-epimerase) and fucose biosynthesis pathways (GDP L-fucose), light harvesting complexes (LHCs), L-xylulose reductase and putative tumor suppressor protein. The EST approach has enabled us to isolate many transcripts from <i>S. polycystum</i>, which is difficult to achieve by using a single gene approach. In addition, the materials and information derived will be useful for future functional genomics research, which may contribute towards better understanding of the biochemistry and molecular biology of <i>S. polycystum</i> and other commercial seaweeds in the future.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Sim M.C., Phang S.M. and Ho C.L. Generation and analysis of expressed sequence tags (ESTs) from a brown seaweed, <i>Sargassum polycystum</i>. 7th Asia Pacific Conference on Algal Biotechnology, 1-4 Dec 2009, New Delhi, India. <p>Products:</p> <ol style="list-style-type: none"> 1. A total of 2522 ESTs of <i>S. polycystum</i> and useful data were generated from this research. 2. Methods/ techniques and process of generation of ESTs of <i>S. polycystum</i> were developed. 3. Genes involved in the biosynthetic of alginate have been identified and isolated.

Additional Information	Linkages: Chairperson, Consortium of Southeast Asian Seaweed Taxonomy (SEASTax) under the Asian-Pacific Phycological Association.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaya (UM) Universiti Malaya, 50603 Kuala Lumpur. Office: 03-79674610/ 4660 H/p: 019-354 6991 phang@um.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Study of Ectoparasites Infestation on Avifauna of Selected Forests in Peninsular Malaysia
Project Number	05-01-03-SF0197
Project Leader and Team Members	Leader: Rosli Ramli
Field of Research	Biological Sciences
Project Summary/ Objectives	All except last objective were achieved. Although the degree of infestation is very low, based on available data, we managed to document ectoparasites diversity, its distribution on host's body, the degree of infestation and postulate evolutionary pattern between ectoparasite and their host. However, due to low infestation rate, this conclusion may be incomprehensive and therefore, future study is recommended.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaya (UM) Universiti Malaya, 50603 Kuala Lumpur. Office: 03-7967 6762 H/p: 013-234 9140 rosliiramli@um.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Pisciponic Technology for a Low Saline Water Environment
Project Number	05-01-04-SF0103
Project Leader and Team Members	Leader: Mohd Salleh Kamarudin Members: Che Roos Saad and Mohd Razi Ismail
Field of Research	Agricultural Sciences
Project Summary/ Objectives	<p>This project was conducted over a 5 year period using a combination of selected commonly cultured freshwater fishes and commercial vegetables commonly grown in hydroponic system. Red Tilapia has been identified as the best fish for the tropical freshwater pisciponic system while Lactuca sativa, Brassica alboglabra, Brassica chinensis and tomato were found to be able to be grown in the system without any supplementation of commercial hydroponic nutrient supplement. Up to 4-5 harvests of leafy vegetables can be made during a single fish crop cycle (4-6 months). The optimal vegetable introduction (planting time to the system) has also been determined. The success of this system has created many interests from the public and print media. The system can be adopted for both domestic and commercial purposes and to upgrade life of isolated rural farmers or settlers in providing protein, fiber and vitamins. A domestic prototype model called i-Kitchen Garden® has been shown during MAHA 2010 Show where the pisciponic system was integrated with a fertigation system. This system can also be further adopted using solar powered pumps and timers for areas where electricity is not available.</p>
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number	Office: 03-8946 4103 H/p: 012-375 0161
e-Mail	msalleh@agri.upm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Microbial Enzymes as Feed Supplement for Poultry
Project Number	05-01-04-SF0133
Project Leader and Team Members	Leader: Norhani Abdullah Member: Sieo Chin Chin
Field of Research	Agricultural Sciences
Project Summary/ Objectives	The rumen is a complex ecosystem consisting of bacteria, protozoa and fungi. The microbes produce various hydrolytic enzymes like cellulases, hemicellulases, esterases and phytases which help in feed degradation. In this project, a new phytase-producing bacterium was isolated and feeding trials with broiler chickens showed the ability of this bacterium to improve growth performance and phytate phosphorous and protein utilisation. Bacterial supplementation in the poultry feed will increase the nutritive value of feed, reduce inorganic phosphorous and phosphorous pollution of the environment. The phytase gene has been cloned and further studies will be conducted to produce the enzyme in a more economical way for the poultry industry.
Publications/Products/ Outcomes	1. Shaari, F., Abdullah, N., Zuhainis, W.S. and Mohd. Noor, A.W. 2010. Enzyme to improve performance of broilers. 31st Annual Conference of Malaysian Society of Animal Production. 6-8 Jun 2010, Kota Bharu.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 6028 norhani@biotech.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification of Diagnostic DNA Microsatellite Markers for Heavy Metal Pollution in the Biomonitoring Agent, the Green-lipped Mussel <i>Perna viridis</i>
Project Number	05-01-04-SF0147
Project Leader and Team Members	Leader: Tan Soon Guan Members: Yap Chee Kong and Ahmad Ismail
Field of Research	Biological Sciences
Project Summary/ Objectives	Our studies on <i>Perna viridis</i> using allozyme markers showed that the heterozygosity levels of the various populations which we analysed were influenced by the magnitudes of the heavy metal contaminants of the environments in which these mussels live. However, since the number of polymorphic level genetic markers in this species is limited, there was necessary to develop single locus codominant microsatellite DNA markers for <i>P. viridis</i> . We used a 5' anchored primer PCR microsatellite enrichment procedure which enabled us to efficiently identify repeat sequences in the mussel's genome. We then sequenced these regions to identify microsatellites and then designed primer pairs for the unique sequences which flanked the repeat sequences. We have successfully developed 20 microsatellite loci for this species which are now ready to be used as molecular genetic tools for various types of in depth investigations of <i>P. viridis</i> populations from Peninsular Malaysia.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. M. Hatta Yusoff, Tan Soon Guan, Yap Chee Kong. 2007. Comparative study on optimization of DNA microsatellite markers in <i>Perna viridis</i> collected between 2002 and 2007. Seminar Sains 2007. 4 Aug 2007, UPM Serdang. 2. Paper entitled ' Identification of DNA microsatellite markers for heavy metal pollution in theqbbiomonitoring agent, the green-lipped mussel <i>Perna viridis</i> . 3rd Colloquium Biology. 12 Dec 2007, Putrajaya.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number	Office: 03-8946 8098 H/p: 013-331 2448
e-Mail	sgtan@biotech.upm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Above Ground Carbon Sequestration in Different Tropical Rainforest Forest Types
Project Number	05-01-04-SF0232
Project Leader and Team Members	Leader: Ahmad Ainuddin Nuruddin Members: Awang Noor Abd. Ghani and Amat Ramsa Yaman
Field of Research	Forestry Sciences
Project Summary/ Objectives	The aim of this study were to develop allometric equations between different aboveground biomass components, to quantify carbon in different types of aboveground biomass components and to estimate carbon sequestration in different forest types
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 Serdang, Selangor.
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e-Mail	ainuddin@forr.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Enhancing Sustainable Forest Management Through Forest Certification
Project Number	05-01-04-SF0233
Project Leader and Team Members	Leader: Rusli Mohd
Field of Research	Forestry Sciences
Project Summary/ Objectives	The project surveys 83 COC certified timber companies in Peninsular Malaysia to understand the impacts of certification on markets, prices and management practices . A structured questionnaire was sent to every company. The results of the study are useful to government policy makers who wish to understand the extent impacts of the policy and to other timber companies in positioning themselves on the issue of COC
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification of Defect Pattern in Selected Urban Trees Species
Project Number	05-01-04-SF0355
Project Leader and Team Members	Leader: Amat Ramsa Yaman Member: Ahmad Ainuddin Nuruddin
Field of Research	Forestry Sciences
Project Summary/ Objectives	The study involved inspection of defect characteristic of trees in their natural habitat that are being used as recreational forest. Causes of defects and their potential hazards to the visitor were assessed in relation to their location at campsites, trails and day user areas. Management guideline was formulated to assist the management in managing trees that have been recognised as hazardous trees.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Method Development for the Molecular Diagnostic of Hepatitis a Virus in Shellfish
Project Number	05-01-04-SF0377
Project Leader and Team Members	Leader: Son Radu Members: Farinazleen Mohamad Ghaza, Tan Chin Ping and Cheah Yoke Kqueen
Field of Research	Biological Sciences
Project Summary/ Objectives	<p>This risk assessment on <i>V. parahaemolyticus</i> in black tiger prawn (<i>Penaeus monodon</i>) was undertaken to respond to the Food Safety and Quality Division, Ministry of Health Malaysia for sound scientific advice to support risk management decisions for the development of guidelines for the control of <i>V. parahaemolyticus</i> in frozen black tiger prawn for the export market.</p> <p>The risk assessment was tailored to Address two specific questions posed by the risk management namely. The objectives of the project are:</p> <ol style="list-style-type: none"> 1. Estimate the risk from the exposure to <i>V. parahaemolyticus</i> due to the consumption of black Tiger prawn 2. Estimate the change in risk likely to occur for the intervention under consideration 3. Reduce the prevalence and concentration of <i>V. parahaemolyticus</i> in frozen black tiger prawn 4. Evaluate the importance of various routes for introduction of pathogenic <i>V. parahaemolyticus</i> into processing stage
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 8361 son@putra.upm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Database on Halal Chocolate and Pastries in Malaysia
Project Number	05-01-04-SF0625
Project Leader and Team Members	Leader: Yaakob Che Man Member: Jamil Bojei
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	<p>Food is a basic part of the existence of humanity. It plays important roles in social, cultural and religious life of most communities. Islam, which is the second largest religion in the world, represents one-fourth of the world population of more than 6 billion people (IFANCA, 1999). Food consumed by Muslims meets the Islamic dietary code and is called halal food. Muslims are always guided by the halal and haram status of the food. They are raised to eat halal, hygienic and safe food.</p> <p>The current world Muslim population is estimated at 2 billion people (Abdul Ghani, 2004 and Che Man and Abdul Latif, 2003). The increasing awareness of Muslims all over the world on their obligation to consume food based on Islam dietary requirement creates greater demand for halal food. The global halal food market traded was more than USD 346.7 billion or RM 1, 317 billion per year (Che Man, 2004). The demand for halal food is ever increasing and expected to continue in the coming years parallel with the increasing Muslim population all over the world.</p> <p>In Malaysia, the demand for halal food comes from the Muslim population of more than 16 million that accounts for almost 65 % of the total population of 25.45 million in the first quarter of 2004 (Department of Statistics Malaysia, 2004). To cater for the need of the population, foods sold in Malaysia are either processed locally or imported from non-Islamic countries like United States, UK, Japan, Germany, France, Japan and China. Some of these imported products have carried the 'Halal Malaysia' logo while many are not, for example, chocolate and pastries. With the recent development that Malaysia could be the Halal Food Hub, she should not only produce food for its own people, but should be able to participate in the world halal food trade mentioned earlier. However, in order to do that Malaysia first needs to establish a comprehensive database on halal food. Research and analysis are required to assess food compliance with labeling laws and to ensure the authenticity</p>

of halal food besides other urgent matters such as product recall during food crisis.

Consumer awareness, perception and attitude towards halal concept needs to be studied. Awareness describes human perception and cognitive reaction to a condition or event. It does not necessarily imply on understanding. Awareness is a relative concept where the person may be partially aware, subconsciously aware or perhaps acutely aware of an event or issues. It may be focused on an internal state, such as a visceral feeling, or on external events or issues by way of sensory perception. Awareness provides the raw material to develop subjective ideas about their experience. In this study, awareness is meant to be the Malaysian food manufacturers' consciousness regarding halal food issues. In psychology and the cognitive sciences, perception is the process of acquiring, interpreting, selecting and organizing sensory information. The methods of studying perception range from essentially biological or physiological approaches and through psychological approaches to the often abstract 'thought – experiments' of mental philosophy. The study of perception refers to psychological processes whereby meaning, past experience, or memory and judgement are involved.

Attitudes are core of our likes and dislikes for certain people, groups, situations, objects and intangible ideas. It is the feeling or affective response that consumer have about object or idea. This concept is closely linked with beliefs and behavior and the study of the relationship among these concepts is called consumer attitude formation. Once attitude is formed, it is stored in memory. In this way consumer use attitudes to help them interact more effectively with their environment (Mowen and Minor, 1999).

Publications/Products/ Outcomes

Proceedings/Conferences/Seminars:

1. Bojei, J., Man Y.C., Abdullah A. N. and Minhad, S. A. 2007. Building Competitive Advantage in the Halal Food Market. 10th ASEAN Food Conference, 21-23 Aug 2007, Petaling Jaya.

Others :

1. Pameran Rekabentuk, Penyelidikan dan Inovasi 2007 (PRPI2007). 27-29 Nov 2007, UPM Serdang.



Awards/Certificates	1. Exhibition of Invention, Research & Innovation 2007: 2 Bronze Medals
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8943 0405 yaakub@food.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	To Develop a Sustainable Practice to Protect and Manage Soil Fertility and Water Conservation for Steep Land Oil Palm
Project Number	05-01-04-SF0632
Project Leader and Team Members	Leader: Christopher Teh Boon Sung Members: Goh Kah Joo and Lulie Joshua Melling
Field of Research	Agricultural Sciences
Project Summary/ Objectives	To determine the effectiveness of empty fruit bunches (EFB), Ecomat (compressed EFB mat) and silt pits to control soil erosion, conserve soil water and increase soil fertility by examining their respective effects, over time, on several soil physical, chemical and microbial properties. To determine, by model simulations, the effect of various silt pit dimensions and positioning on soil water dynamics and conservation
Publications/Products/ Outcomes	<p>Book:</p> <ol style="list-style-type: none"> 1. Teh, C.B.S., Goh, K.J., Seah, T.S. and LAW, C.C. 2008. Changes in soil properties due to different soil and water conservation methods in a non-terraced sloping oil palm plantation. In: Blum, W.E.H., M.H. Gerzabek, M. Vodrazka (Eds.), Soil - Society - Environment, Book of Abstracts, University of Natural Resources and Applied Life Sciences Vienna, (p. 332). EUROSIL 2008, <p>Journal:</p> <ol style="list-style-type: none"> 1. Teh, C.B.S., Goh, K.J. and Kamarudin, K.N. 2010. Physical changes to oil palm Empty Fruit Bunches (EFB) and EFB mat (Ecomat) during their decomposition in the field. <i>Pertanika Journal of Tropical Agriculture</i>. 33: 39-44. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Moradidalini, A., TEH, C.B.S., Husni, A.H., Fauziah, C.I. and Goh, K.J. 2010. Effects of several soil and water conservation practices on soil physical and chemical properties in a sloping land oil palm plantation. In: Baby, S., Singh, P.S., Yi Hang (Eds.), <i>Proceedings of 2010 International Conference on Agricultural and Animal Science (CAAS 2010)</i>, 26-28 Feb 2010, Singapore.



	<ol style="list-style-type: none"> 2. Moradidalini, A., Teh, C.B.S., Ahmad Husni, M.H., CheFauziah, I. and Goh, K.J. 2010. Effects of different soil conservation practices on soil fertility. In: Zaharah, A.R. (Ed.). International Conference on Balanced Nutrient Management for Tropical Agriculture. Malaysian Society of Soil Science, 12-16 Apr 2010, Pahang. 3. Chong, S.Y., Teh, C.B.S. and Goh, K.J. 2009. Soil water content under several soil water conservation methods in an oil palm estate. 20th Malaysian Society of Plant Physiology Conference (MSPPC 2009), 24-26 July 2009, Port Dickson. 4. Moradidalini, A., Teh, C.B.S., Ahmad Husni, M.H., Che Fauziah, I. and Goh, K.J. 2009. Effects of different soil conservation practices on soil chemical properties in a sloping land oil palm plantation. 20th Malaysian Society of Plant Physiology Conference (MSPPC 2009), 24-26 July 2009, Port Dickson. 5. Teh, C.B.S., Goh, K.J. and Kamarudin, K.N. 2009. Physical changes to oil palm empty fruit bunches (EFB) and EFB mat (Ecomat) during their decomposition in the field. In: Malik, Z., Fauziah, C.I., Goh, K.J., Rosazlin, A., Vijayanathan, J., UmiKalsom, M.S. & Hashim, Z. (Eds.) Proceedings of the Soil Science Conference of Malaysia, 13-15 Apr 2009, Sg. Buloh.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 6028 H/p: 012-633 0520 cbsteh@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Optimal Fertiliser Rates and Time of Application for Oil Palm Grown in Tropical Peatland
Project Number	05-01-04-SF0633
Project Leader and Team Members	Leader: Christopher Teh Boon Sung Members: Ahmad Husni Mohd Hani, Goh Kah Joo and Lulie Joshua Melling
Field of Research	Agricultural Sciences
Project Summary/Objectives	To develop a semi-mechanistic (process-based) model to simulate the growth and yield of oil palm. The model includes the effect of the oil palm flowering cycle and water stress.
Publications/Products/Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Teh, C.B.S. and IBA, J. 2010. Accuracy of the Saxton-Rawls method to estimate the soil water characteristics for minerals soils of Malaysia. <i>Pertanika Journal of Tropical Agriculture</i>. 33(2): 297-302. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. IBA, J., Teh, C.B.S., Haniff, M.H., Desa, A. &Selamat, A., 2010. Development of an improved oil palm growth and yield model: Preliminary report. In: Zaharah, A.R. (Ed.). <i>International Conference on Balanced Nutrient Management for Tropical Agriculture</i>. Malaysian Society of Soil Science, 12-16 Apr 2010, Kuantan, Pahang. 2. Teh, C.B.S. 2009. Crop model building and simulation in Microsoft Excel: Introducing BuildIt. <i>International Advanced Technology Congress. ATCi 2009. "Meeting Globalization Challenges Through Advanced Technology"</i>, 3-5 Nov 2009, Kuala Lumpur. 3. Chong, S.Y., Teh, C.B.S. &Goh, K.J. 2009. Soil water content under several soil water conservation methods in an oil palm estate. Paper presented at the 20th Malaysian Society of Plant Physiology Conference (MSPPC 2009), 24-26 Jul 2009, Port Dickson. 4. Jane, I. and Teh, C.B.S. 2009. Estimation accuracy of soil water characteristics using Saxton-Rawls model for several Malaysia soil series. 20th Malaysian Society of Plant Physiology Conference (MSPPC 2009), 24-26 Jul 2009, Port Dickson.



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Genetic Improvement and Propagation of the MPTS and Medicinal Plants
Project Number	05-01-04-SF0652
Project Leader and Team Members	Leader: Nor Aini Ab. Shukor Members: Sapari Mat, Hazandy Abdul Hamid and Mihdzar Abdul Kadir
Field of Research	Forestry Sciences
Project Summary/Objectives	Two important outputs obtained from this study are (i) selected provenances and (ii) propagation technologies. The study comprised 3 components; a nursery trial, a provenance trial in an agroforestry setting and development of propagation techniques involving ten provenances. Isozyme and Random Amplified DNA polymorphism (RAPD) were conducted to determine their genetic variability. They were monitored for growth and physiological characters. In addition, this project has also significantly contributed in expertise development whereby it has trained six undergraduates and a Ph.D student. One master student is currently completing his study. It has also strengthened collaborative works on Shorea and multipurpose indigenous species; locally and internationally among institutions such as Faculty of Forestry, UPM., FRIM, Forestry Department, RCFM (Regional Centre for Forest Management) and ITTO (International Tropical Timber Organisation).
Publications/Products/Outcomes	Others: 1. Growth and Photosynthetic Efficiency of Acacia mangium Wild and Acacia aulococarpa A.Cunn Ex.Benth Multiple Leadered Trees. MSc. Thesis,2008 Universiti Putra Malaysia 2. Acclimatization of Acacia hybrid In Vitro Plantlets. BSc. Thesis,2008 Universiti Putra Malaysia 3. Effect of Cytokinin on Shoot Induction of In Vitro Acacia hybrid. BSc.Thesis,2008. Universiti Putra Malaysia
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Markets for Environmentally Certified Wood Products in Malaysia
Project Number	05-01-04-SF0655
Project Leader and Team Members	Leader: Shukri Mohamed Member: Awang Noor Abd.Ghani
Field of Research	Forestry Sciences
Project Summary/ Objectives	<p>The objectives of this project to determine attitudes/ perceptions of consumers regarding environmental certification of wood products and the relative importance to consumers of environmental certification to other important wood product attributes</p> <p>It also can assess whether consumers would be interested in purchasing environmentally certified wood products and how much, if anything, they would be willing to pay for these wood products.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none">1. Shukri Mohamed and Awang Noor Abd Ghani. 2010. Willingness to pay a price premium for certified wood products among consumers in Malaysia. <i>Pertanika Journal of Tropical Agricultural Science</i> 33:159-165.2. Shukri Mohamed and Muhamad Lukhman Ibrahim. 2007. Preliminary study on willingness to pay for environmentally certified timber products among Malaysian consumers. <i>Journal of Applied Sciences</i> 7:1339 – 1342.3. Shukri Mohamed. 2008. Marketing certified wood products to Malaysian consumers: exploring issues for the local wood-based industry. <i>The Malaysian Forester</i> 71:39 - 42.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 7210 shukri@putra.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of the Restoration Technology of Degraded Forest and Evaluation of Biodiversity
Project Number	05-01-04-SF0749
Project Leader and Team Members	Leader: Mohamad Azani Alias Member: Mohd Zaki Hamzah
Field of Research	Forestry Sciences
Project Summary/ Objectives	General objectives of this study were to identify and elucidate the efficiency of applying sewage sludge in agricultural sector especially in rubber plantation. This project was a joint research with Indah Water Konsortium (IWK) and from the results sewage sludge was a potential material for enhanced oil fertility without causing hazard to the environment. This technique has been applied for forest rehabilitation with a great success in producing more volume of wood.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Habitat Requirements of the Black Giant Squirrel (<i>Ratufa bicolor</i>) and Flying Lemur (<i>Cynopcephalus variegatus</i>) in Penang National Park: Comparing Field Survey, GIS and Remote Sensing Data
Project Number	05-01-05-SF0014
Project Leader and Team Members	Leader: Shahrul Anuar Mohd Sah Member: Shukor Md Nor
Field of Research	Biological Sciences
Project Summary/ Objectives	General objective of this study were to determine the habitat characteristics of the black giant squirrel and flying lemur in the coastal dipterocarp forest of Penang National Park. Its also measured habitat structure and forest structure in the studied forest areas that were occupied or regularly visited by both species. The methods of habitat preservation and habitat conservation of Malaysian totally protected species has been developed by the applications of GIS.
Additional Information	Linkages: Mississippi State University, USA; La Sierra University, USA; Dept. of Wildlife and National Parks, Malaysia; Malaysian Nature Society Spin-off: Nature education trails in Penang National Park
Contact Institution/Entity Address Phone Number e-Mail	Universiti Sains Malaysia (USM) Universiti Sains Malaysia, 11800 USM Minden, Pulau Pinang. Office: 04-653 3524 H/p: 012-550 9913 sanuar@usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Modelling Land Use/Cover Changes and its Impact on Biodiversity
Project Number	05-01-05-SF0026
Project Leader and Team Members	Leader: Narimah Samat Member: Anisah Lee Abdullah
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	The objectives of this project to develop land use/cover model in order to measure historical land cover changes and loss of biodiversity in Langkawi Island. To evaluate the relationship between frequent, temporal and spatial changes of land use/ cover and biodiversity the historical land use data in land use/cover model has been used.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Narimah Samat. 2010. Assessing Land Use Land Cover Changes in Langkawi Island: Towards Sustainable Urban Living, Malaysian Journal of Environmental Management, 11, 48-57. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Narimah Samat, Norhidayah Harun, Anisah Lee Abdullah and Reevathi a/p Silvarraja. 2009. The Application of Geographci Information System in Evaluating Sustainable Tourism Development in Langkawi Island. Proceedings in the 2nd National Seminar on Society, Space and Environment, 2-3 Jun 2009, USM Penang.
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Universiti Sains Malaysia, 11800 USM Minden, Pulau Pinang.
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e-Mail	narimah@usm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Dehydration Process for Heat Sensitive Biological and Agriculture Products Using Microwave Vacuum Technology
Project Number	05-01-06-SF0188
Project Leader and Team Members	Leader: Mohd Rozainee Taib Members: Nor Hisham Hj Khamis, Wan Khairuddin and Ida Idayu Muhamad
Field of Research	Biotechnology
Project Summary/ Objectives	This project successfully developed the microwave vacuum dehydration system. The system was successfully commissioned and tested for dehydration of heat sensitive materials and the comparison of dehydration process with conventional methods has been conducted. Industries which involve with preservation of biological and agricultural products will benefit from the development of microwave vacuum dehydration system. The developed system is easily operated and adapt to customer need.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia 81310 Skudai Johor
Phone Number	Office: 07-553 5578 H/p: 012-307 5320
e-Mail	rozainee@fkkksa.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Microwave-Spray Drying Technology for Production of Heat Sensative Food Products (Mangoes Powder)
Project Number	05-01-06-SF0276
Project Leader and Team Members	Leader: Adnan Ripin Members: Ida Idayu Muhamad, Mohamad Wijayanuddin, Arshad Ahmad and Siti Kholijah Abdul Mudalip
Field of Research	Agricultural Sciences
Project Summary/ Objectives	The objective of this research were to investigate the effect of microwave combined with spray dryer method on quality of pineapple powder and to develop a method by combining microwave with spray drying process. The objectives have been met. The key specific contribution that has emerged involves application of microwave system to enhance the spray drying process in order to produce dried powders of food products. This new process may require only one set of spray drying system that equipped with microwave instead of using two or more drying system.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia 81310 Skudai Johor
Phone Number	Office: 07-553 5569 H/p: 013-721 4493
e-Mail	adnan@fkkksa.utm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Molecular Characterization of Sago Palm (<i>Metroxylon sagu</i>) Germplasm for Breeding of High Yielding Varieties
Project Number	02-04-02-SF0006
Project Leader and Team Members	Leader: Bala Jamel Members: Umi Kalsom Abu Bakar and Noraini Busri
Field of Research	Agricultural Sciences
Project Summary/ Objectives	Genetic variation of sago germplasm for future selection and breeding was studied. Most of the germplasm obtained had narrow genetic variation.
Additional Information	Linkages: Estate PELITA Sdn. Bhd.
Contact Institution/Entity Address	CRAUN Craun Research Sdn. Bhd. Lot 3147, Blok 14, Jalan Sultan Tengah, 93055 Kuching Sarawak.
Phone Number	Office: 082- 44 6489 H/p: 019-829 2108
e-Mail	jbalacraun@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Delayed Floral Gene Constructs of <i>Tectona grandis</i> for Superior Planting Materials
Project Number	02-03-10-SF0002
Project Leader and Team Members	Leader: Norlia Basherudin Members: Norwati Muhammad, Norwati Adnan, Norihan Mohd. Saleh and Mohd. Rosli Haron
Field of Research	Agricultural Sciences
Project Summary/ Objectives	Two genes related to flower development have been isolated, which are CONSTAN and LFY gene. CONSTAN gene has been reported in <i>Arabidopsis</i> as the integrator gene between the circadian clock system and flowering pathway. This gene has potential for further investigation in order to understand the flower development in teak. The LFY gene on the other hand is the gene responsible in transition from vegetative phase to reproductive phase.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Norlia, B., Norwati, A., Mohd Rosli, H., Norwati, M., and Norihan, M.S. 2009. Isolation of CONSTAN-like Gene from Teak (<i>Tectona grandis</i>). Proceeding of the 8th National Congress on Genetics: Role of Genetics in Wealth Creation and Quality of Life. 4-6 Aug 2009, Pahang. Product: LFY and CONSTAN homolog gene from teak (<i>Tectona grandis</i>).
Contact Institution/Entity Address Phone Number e-Mail	Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia (FRIM), 52109 Kepong, Selangor . Office: 03-6279 7148 norlia@frim.gov.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Production of Synthetic Seeds of Acacia Hybrid and Endospermum diadenum for Conservation of Elite Planting Material
Project Number	02-03-10-SF0007
Project Leader and Team Members	Leader: Nor Asmah Hassan Members: Nor Hasnida Hassan, Nashatul Zaimah Noor Azman, Marzalina Mansor and Kodi Isparan Kandasamy
Field of Research	Biotechnology
Project Summary/ Objectives	This project has established a method for Acacia hybrid and Endospermum diadenum synthetic seed production. The culture media for recovery and regeneration of the synthetic seeds has also been produced. It is a new medium term conservation technique with further improvement before being applied to improve the conservation of germplasm collection.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nor Asmah, H., Nor Hasnida, H., Nashatul Zaimah, N.A., Nadiyah Salmi, N. and Hamiliar, H. 2010. Development of Synthetic Seeds for Acacia hybrid. 6th National Seed Symposium, 23-24 Mar, Putrajaya. 2. Nor Asmah, H., Noraliza, A., Nashatul Zaimah, N.A., Nadiyah Salmi, N., Nor Hasnida, H. and Marzalina, M. 2010. Synthetic seed research on selected tropical tree species. International Symposium of Forest & Forestry Product 2010 (ISFFP 2010), 5-7 Oct 2010, Kuala Lumpur. 3. Nor Asmah, H., Nor Hasnida, H., Nashatul Zaimah, N.A., Marzalina, M. and Kodiswaran, I. 2010. Production of synthetic seeds of Acacia hybrid and Endospermum diadenum for conservation of elite planting materials. National Biotechnology Seminar 2010. 24-26 May 2010, Kuala Lumpur. <p>Nor Asmah, H., Nor Hasnida, H., Nashatul Zaimah, N.A., Nadiyah Salmi, N. and Hamiliar, H. 2010. Synthetic seeds of timber species: An alternative for sustainable planting material for commercial plantations. Malaysia Technology Expo 2010 (MTE 2010), 4-6 Feb 2010, Kuala Lumpur.</p>

	5. Nor Asmah, H., Nor Hasnida, H., Nashatul Zaimah, N.A., Nadiah Salmi, N. and Hamiliar, H. 2009. Production of synthetic seeds of Acacia hybrids and Endospermum diadenum for conservation of elite planting materials. Hari Inovasi FRIM 2009, 17 Dec 2009, Kuala Lumpur.
Awards/Certificates	1. Malaysia Technology Expo 2010 (MTE 2010): 1 Bronze Medal 2. Hari Inovasi FRIM 2009: 1 Gold Medal
IP Status	Invention Disclosure (ID): FRIM ID 5/11
Contact Institution/Entity Address	Nor Asmah bt. Hassan Forest Research Institute Malaysia (FRIM) Forestry Biotechnology Division, Forest Research Institute Malaysia (FRIM), 52109 Kepong, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Phytochemical and Biological Evaluation of Piper Muricatum Blume for Standardisation Towards Development of Health Care Product
Project Number	02-03-10-SF0008
Project Leader and Team Members	Leader: Fauziah Abdullah Members: Saiful Azmi Johari Forest, SaidatulHusni Saidi, Ling Sui Kiong, Vimala Subramaniam, Mazura Md. Pisar and Chee Beng Jin
Field of Research	Forestry Sciences
Project Summary/ Objectives	Based on bio-activities result for crude extracts and fractions, bioassay guided isolation was done and focused on anti-microbial activity. Three compounds were isolated. Characteristic chemical fingerprint profiles were developed using HPLC and FTIR with two dimensional correlation spectroscopy as a standard of quality control. To assess the suitability of P. muricatum for development of health care product. Assessment on safety level at cellular level indicated that, the toxic nature of P. muricatum stem and leaves crude extracts against the two cell lines with IC50 value lower than 160ug/ml. First generation formulation for anti-microbe hand wash had been developed.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminar : <ol style="list-style-type: none"> 1. Fauziah, A., Salbiah, M. and Ling, S.K. 2008. Chemical fingerprinting of Piper muricatum Blume by Fourier Transform Infrared spectroscopy with two dimensional correlation IR spectroscopy and High Performance Liquid Chromatography. Medicinal and Aromatic Plant Seminar 2008, 21-22 Oct 2008. Kuala Lumpur. 2. Fauziah, A. and Ling, S. K. 2006. Isolation and Identification of chemical constituents from the fruits of Morinda citrifolia L. Proceeding of Medicinal and Aromatic Plant Seminar 2006. FRIM Annual Report. FRIM: Kuala Lumpur. 3. Saidatul Husni, S., Nor Azah, M.A., Fauziah, A., Mailina, J., Ling, S.K., Ong, B.K, Mastura, M. and Mazura P. 2008. EssentiaTM: speciality plant extracts and essential oils as cosmeceutical and spa ingredients. 1st International Conference on Biotechnology for the Wellness Industry. 5-6 Aug 2008, Kuala Lumpur. 4. Fauziah, A., Ling, S. K., Mazura, M. P., Chee B. J., Saiful Azmi, J., Vimala, S. and Zainon, A. S. 2007. Therapeutic potential of methanol leaf and stem extracts of Piper muricatum Blume. CFFPR 2007, 27-29 Nov 2007,

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

	<p>Kuala Lumpur.</p> <ol style="list-style-type: none"> 5. Fauziah, A., Ling, S. K., Mazura, M. P., Chee, B. J., Saiful Azmi, J. and Vimala, S. 2007. Phytochemical and biological evaluation of <i>Piper muricatum</i> Blume for standardisation towards development of health care product. Bengkel Pemantauan dan Penilaian Projek-projek Penyelidikan R&D Kluster Bioteknologi di bawah Pembiayaan Geran Science Fund MOSTI. 8-11 Dec, 2007. Kuala Lumpur. 6. Saidatul Husni, S., Nor Azah, M.A., Fauziah, A., Mailina, J., Ling, S.K., Ong, B.K, Mastura, M. and Mazura, P. 2008. EssentiaTM: speciality plant extracts and essential oils as cosmeceutical and spa ingredients. 1st International Conference on Biotechnology for the Wellness Industry. 5-6 Aug 2008, Kuala Lumpur. 7. Fauziah, A., Saiful Azmi, J., Chee, B. J., Mazura, M. P., Fadzureena, J., Vimala, S., Ling, S. K. and Mazurah, I. 2008. Therapeutic potential of extracts and fractions from the leaf and stem of <i>Piper muricatum</i> Blume. Highlights of FRIM's MOSTI Projects 2007, 20-22 Jan 2008, Melaka.
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia (FRIM), 52109 Kepong, Selangor. Office: 03-6279 7671 fauziahabdullah@frim.gov.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of DNA Barcode of <i>Neobalanocarpus heimii</i> (Chengal) as a Tool for Forensics and Chain of Custody Certification
Project Number	02-03-10-SF0009
Project Leader and Team Members	Leader: Lee Soon Leong Members: Kevin Ng Kit Siong, Ng Chin Hong, Lee Chai Ting, Norwati Muhammad and Marzalina Mansor
Field of Research	Biotechnology
Project Summary/ Objectives	By using <i>N. heimii</i> as an example, this project assessed the feasibility of using chloroplast DNA (cpDNA) and nuclear short tandem repeat (nSTR) markers as a tool for timber tracking. Thirty natural populations of <i>N. heimii</i> were profiled using four cpDNA and 12 STR markers to develop the DNA profiling databases. Twenty-two haplotypes were identified from 10 significant intraspecific variable sites. Only northern and southern regions of Peninsular Malaysia were distinguishable; this database could only be used to determine the wood lot of unknown origin at the regional level. Overall, the observed type I and II errors of the database showed good concordance with the predicted 5% threshold, which might indicate that the database is useful to reveal provenance and establish conformity of wood lot from northern and southern regions of Peninsular Malaysia. The 30 populations were divided into three genetic clusters within Peninsular Malaysia. Independence tests within and among loci were violated in all the databases due to significant levels of population differentiation and inbreeding. Thus, the effects of population substructure and inbreeding should be incorporated into the calculation of random match probability. The sub-region and Peninsular Malaysia databases were conservative, and these databases should be able to provide evidence for legal action against illegal loggers in Peninsular Malaysia .
Publications/Products/ Outcomes	Book: 1. Lee, S.L., Ng, K.K.S., Tnah, L.H. and Hong, L.T. 2010. Optimum population sizes for effective conservation and management of tropical plant species. In: International Symposium on Forest Genetic Resources: Conservation and sustainable utilization towards climate change mitigation and adaptation, Sim, H.C., Hong, L.T. and Jalonon R. (Eds). FRIM, APAFRI and Bioversity International. (pp. 51-53). Commonwealth Forestry Association: United Kingdom.

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

Journals:

1. Tnah, L.H., Lee, S.L., Ng, K.K.S., Tani, N., Subha, B., and Rofina, Y.O. 2009. Geographical traceability of an important tropical timber (*Neobalanocarpus heimii*) inferred from chloroplast DNA. *Forest Ecology and Management* 258: 1918–1923.
2. Tnah, L.H., Lee, S.L., Ng, K.K.S., Faridah, Q.Z. and Faridah-Hanum, I. 2010. Forensic DNA profiling of tropical timber species in Peninsular Malaysia. *Forest Ecology and Management* 259: 1436–1446.
3. Tnah, L.H., Lee, S.L., Ng, K.K.S., Faridah, Q.Z. and Faridah-Hanum, I. 2010. Highly Variable STR Markers of *Neobalanocarpus heimii* (Dipterocarpaceae) for forensic DNA profiling. *Journal of Tropical Forest Science* 22: 214–226.
4. Tnah, L.H., Lee, S.L., Ng, K.K.S., Tani, N., Subha, B., and Rofina, Y.O. 2011. DNA extraction from dry wood of *Neobalanocarpus heimii* (Dipterocarpaceae) for forensic DNA profiling and timber tracking. *Wood Sciences and Technology* (in press).

Proceedings/Conferences/Seminar :

1. Lee, S.L., Tnah, L.H. and K.K.S. Ng. 2007. DNA fingerprinting databases of *Neobalanocarpus heimii* (Dipterocarpaceae) throughout Malaysia for individual identification. Symposium on Methods to Identify Wood Species and the Origin of Timber of Southeast Asia, 25–26 Sep 2007, Tokyo, Japan.
2. Lee, S.L., Tnah, L.H., K.K.S. Ng and C.T. Lee. 2007. Conservation strategies of chengal (*Neobalanocarpus heimii*) dubbed as the iron wood of Peninsular Malaysia. 2007. Poster at the Conference on Forestry and Forest Products Research 2007 (CFFPR 2007), 27–29 Nov 2007, Kuala Lumpur, Malaysia.
3. Lee, S.L. 2007. Development of DNA barcode of *Neobalanocarpus heimii* (chengal) as a tool for forensics and chain of custody certification. Workshop on Biotechnology R&D Project Monitoring and Evaluation, 7–11 Dec 2007, Kuala Lumpur, Malaysia.

Products:

1. DNA profiling databases of chengal for forensics and timber tracking.
2. Comprehensive conservation strategies of chengal in Peninsular Malaysia.



Awards/Certificates	IUFRO Student Award for Excellent in Forest Sciences (Tnah Lee Hong) 2010.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Biochemical and Biomechanical Pulping of Oil Palm Empty Fruit Bunch and Frond Through Solid-state Fermentation with White-rot Fungus <i>Lentinus sajor-caju</i>
Project Number	02-03-10-SF0010
Project Leader and Team Members	Leader: Rushdan Ibrahim Members: Sharmiza Adnan and Salmiah Ujang,
Field of Research	Forestry Sciences
Project Summary/ Objectives	Project objectives were to determine the effect of biopulping on the amount of chemical utilisation, pulp yield and residue lignin on chemical pulps from oil palm empty fruit bunch and frond; and the effect of biopulping on the amount of energy utilisation, pulp yield and fibre length distribution on mechanical pulps from oil palm empty fruit bunch and frond.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Rushdan, I., Nurul Husna, M.H., Latifah, J., Ainun Zuriyati, M., Sharmiza, A., Salmiah, U. and Mahmudin, S. 2007. The effect of biopulping on pulp property of oil palm empty fruit bunches. 7th National Conference on Oil Palm Tree Utilisation (OPTUC 2007), 13-15 Nov 2007, Kuala Lumpur. 2. Rushdan, I., Nurul Husna, M.H., Latifah, J., Ainun Zuriyati, M., Sharmiza, A., Salmiah, U. and Mahmudin, S. 2008. A preliminary study on the effect of biopulping on pulp property of oil palm empty fruit bunches. Project Evaluation Meeting 2007. 21 – 22 Jan 2008, Melaka. 3. Asmidar, A., Haslizaidi, Z., Jamaluddin, K., Kamisah, A., Mazliana, H., Mazlin, K., Muzamil, M., Norshariza, M.B., Sarina, H., Siti Suhaila, H. and Zainab, O. 2007. Refiner mechanical pulping of oil palm fronds for newsprint, IUFRO All Division 5 Conference. 29 Oct – 2 Nov 2007, Taipei, Taiwan.
Contact Institution/Entity Address	Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia (FRIM), 52109 Kepong Selangor.
Phone Number	Office: 03-6279 7314 H/p: 019-372 6035
e-Mail	rushdan@frim.gov.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Isolation and Characterisation of Genes Encoding for Lignolytic Enzymes from Selected White-rot Fungi with Potential for Biopulping
Project Number	02-03-10-SF0013
Project Leader and Team Members	Leader: Mohd. Rosli Haron Members: Mohd. Farid Ahmad, Norwati Muhammad, Lee Su See, Norwati Adnan and Norlia Basherudin
Field of Research	Forestry Sciences
Project Summary/ Objectives	This project evaluated the efficiency of wood degradation of 10 selected local isolates of white-rot fungi. Five isolates were classified as efficient wood degraders. The presence of enzymatic activities of lignolytic enzymes (lignin peroxidase, manganese peroxidase and laccase) was also tested in all the selected isolates. From these two tests, one selected isolate was used in the isolation of genes encoding for the lignolytic enzymes.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohd Rosli, H., Mohd Farid, A., Lee, S.S., Azril, D.M.D., Norlia, B., Norwati, A. and Norwati, M. 2009. Isolation and characterization of genes encoding for lignolytic enzymes from selected white-rot fungi with potential for biopulping. FRIM Project Evaluation Meeting (IRPA and ScienceFund), 13-15 Apr 2009, Selangor. 2. Mohd Rosli, H., Mohd Farid, A., Lee, S.S., Azril, D.M.D., Norlia, B., Norwati, A. and Norwati, M. 2008. Isolation and characterization of genes encoding for lignolytic enzymes from selected white-rot fungi with potential for biopulping. FRIM Project Evaluation Meeting (IRPA and ScienceFund), 21-22 Jan 2008, Melaka. 3. Mohd Rosli, H., Mohd Farid, A., Lee, S.S., Azril, D.M.Z., Baharudin, K., Norlia, B., Norwati, A. and Norwati, M. 2008. Efficiency of wood degradation of ten selected isolates of white-rot fungi. Highlights of FRIM's MOSTI Projects 2007, 20-22 Jan 2008, Melaka. 4. Mohd Rosli, H., Mohd Farid, A., Lee, S.S., Azril, D.M.D., Norlia, B., Norwati, A. and Norwati, M. 2007. Isolation and characterization of genes encoding for lignolytic enzymes from selected white-rot fungi with potential for biopulping. Workshop on Biotechnology R&D Project Monitoring and Evaluation, 7-11 Dec 2007, Kuala Lumpur.

	5. Mohd Rosli, H., Mohd Farid, A., Lee, S.S., Norwati, M., Norwati, A. and Norlia, B. 2006. Isolation and Characterization of genes encoding for lignolytic enzymes from selected white-rot fungi with potential for biopulping. Project Evaluation Meeting, 18-20 Dec 2006, Pahang.
Contact Institution/Entity Address Phone Number e-Mail	Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia (FRIM), 52109 Kepong, Selangor. Office: 03-6279 7146 H/p: 019-383 2771 mrosli@frim.gov.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Exploratory Studies of Actinomycete Biodiversity of FRIM Forests in Aid of Drug Discovery
Project Number	02-03-10-SF0014
Project Leader and Team Members	Leader: Getha R. Krishnasamy Members: Mohd Ilham Adenan, Lee Su See and Chang Yu Shyun
Field of Research	Biotechnology
Project Summary/ Objectives	<p>A total of 2286 isolates of actinomycetes were isolated from natural forest areas, re-planted forest areas and tin tailings. Morphological, biochemical and genomic characterisation were carried out on the isolates and cryo-cultures are stored in FRIM Actinomycetes Culture Collection (FACC). FACC also stores complete database comprising of information on sampling sites, soil type, isolation details, strain group, morphological characteristics, biochemical typing, gene typing, fermentation details, and bioactivity profiles of the isolates. The FACC genetic resources and database form a platform on which future bioprospecting of tropical soil actinomycetes for useful compounds is built upon. The target group of actinomycetes focussed on isolates belonging to the less exploited Nonomuraea genus. PCR discrimination of Nonomuraea and related genera was carried out using validated genus-specific NOM primers to select them out of the total isolates obtained in this study. A total of 241 NOM-positive isolates were identified. Selected NOM-positive isolates were screened for antimicrobial activity against a panel of test microbes and also screened for AHBA synthase (antibiotics) domains using Multiplex PCR. As a result, 34 hit strains were identified. Chemical profiles of hit extracts will be determined as an initiative towards identifying useful microbial products.</p>
Publications/Products/ Outcomes	Book: 1. Getha, K. 2007. FRIM Actinomycetes Culture Collection (FACC) for sustainable utilization of natural resources and continued innovation through microbes. FRIM 2007 Annual Report, pp.49-50. FRIM: Kuala Lumpur. Proceedings/Conferences/Seminars: 14 1. Getha, K. A., Ilham, M.A., Lee, S.S., Chang, Y.S., Nimura, S. and Hatsu, M. 2008. Exploratory studies of actinomycete biodiversity of FRIM forests in aid of drug discovery. Highlights of FRIM's MOSTI Projects 2007, 20-22 Jan 2008, Melaka.

	<ol style="list-style-type: none"> Getha, K., Lili Sahira H. and Mohd Ilham A. 2008. Diversity of Actinomycetes from Penang National Park and their antitrypanosomal activity. Proceedings of the 30th Symposium of the Malaysian Society for Microbiology, 16-19 August 2008, Kuantan. Getha, K. and Ilham, M.A. 2006. Isolation of soil actinomycetes as potential biocontrol agent for plant diseases. National Seminar & Workshop on Forest Biotechnology, 4-7 Dec 2006, Kuala Lumpur. Getha, K., Mohd Ilham, A., Lee, S.S., Chang, Y.S., Hatsu, M. and Annie, G. 2006. Exploratory studies of actinomycete biodiversity of FRIM forests in aid of drug discovery. Project Evaluation Meeting (PEM), 18-20 Dec 2006, Melaka. Marzalina M., Norwati M., Getha K. and Wan Tarmeze W.A. 2008. Sustainable utilization of Malaysian forest biodiversity towards drug discovery. Computer Aided Drug Design Seminar, 17 Dec 2008, Penang.
Additional Information	<p>Linkages: Research Center for Tropical Diseases, Kitasato University, The Kitasato Institute, Japan; Nimura Genetic Solutions (NGS)</p> <p>Commercialisation: FRIM Actinomycetes Culture Collection and Database (FACC) form a platform on which future bioprospecting of tropical soil actinomycetes for useful compounds is built upon.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia (FRIM), 52109 Kepong Selangor. Office: 03-6279 7652 getha@frim.gov.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Gene-Derived DNA Markers of Shorea Leprosula towards Tree Improvement and Conservation of Dipterocarps
Project Number	02-03-10-SF0017
Project Leader and Team Members	Leader: Kevin Ng Kit Siong Members: Lee Soon Leong, NgChin Hong, Lee Chai Ting, Norwati Muhammad and Norlia Basherudin
Field of Research	Forestry Sciences
Project Summary/ Objectives	This project developed gene-derived simple sequence repeat (SSR) markers associated with wood quality and adaptive traits for Shorea leprosula. Its also developed gene-derived single nucleotide polymorphism (SNP) markers associated with wood quality and adaptative traits for S. leprosula. The applicability of these markers on other dipterocarps towards tree improvement and conservation have been determined.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Ng, K. K. S., Lee, S. L., Tsumura, Y., Ueno, S., Ng, C. H. and Lee, C. T. 2009. Expressed sequence tags-simple sequence repeats isolated from Shorea leprosula and their transferability to 36 species within the Dipterocarpaceae. Molecular Ecology Resources 9: 393-398. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ng, K. K. S., Lee, S. L., Ueno, S., Ng, C. H. and Tsumura, Y. 2007. Analysis of expressed sequence tags and development of microsatellite markers from Shorea leprosula (Dipterocarpaceae). Conference on Forestry and Forest Products Research (CFFPR) 2007, 27-29 Nov 2007, Kuala Lumpur. 2. Ng, K. K. S., Lee, S. L., Tsumura, Y. and Ng, C. H. 2006. Development of EST-SSRs from Shorea leprosula (Dipterocarpaceae): a preliminary result. National Seminar & Workshop on Forest Biotechnology, 4-7 Dec 2006, Kuala Lumpur. 3. Ng, K. K. S. 2007. Development of gene-derived DNA markers of Shorea leprosula towards tree improvement and conservation of dipterocarps. MOSTI R&D Projects Monitoring and Evaluation Workshop for Biotechnology Cluster under Science Fund. 8-11 Dec 2007, Kual Lumpur.

	4. Ng, K. K. S., Lee, S. L., Ueno, S., Ng, C H., Tsumura, Y. and Lee, C. T. 2008. Development of EST-SSRs from <i>Shorea leprosula</i> . Highlights of FRIM's MOSTI Projects 2007, 20-22 Jan 2008, Melaka.
Additional Information	Linkages: Forestry and Forest Products Research Institute (FFPRI), Tsukuba, Japan
Contact Institution/Entity Address Phone Number e-Mail	Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia (FRIM), 52109 Kepong Selangor . Office: 03-6279 7622 H/p: 019-221 9428 kevin@frim.gov.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Evaluating the Effects of Erythroxylum cuneatum Forma Cuneatum kurz (Chinta Mula) in Morphine Addicted Rats
Project Number	02-03-10-SF0021
Project Leader and Team Members	Leader: Mohd Ilham Adenan Members: Norhayati Ismail, Siti Syarifah Mohd Mutali, Lili Sahira Husin, Chang Li Yen, Nurhanan Murni Yuno and Asiah Osman
Field of Research	Chemical Sciences
Project Summary/ Objectives	This project produce standardised extract of Erythroxylum cuneatum forma cuneatum Kurz (Chinta mula). The procedure for preparation of this standardised extract was made proprietary and disclosed as an Invention Disclosure entitled: ECfC 06: A standardised extract of Erythroxylum cuneatum forma cuneatum (Miq.) Kurz (cinta mula) as herbal remedies for addiction therapy, and registered at FRIM Business Affairs Programme (reference number: FRIM ID 0/07).
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Anee-Suryani, S., Mohd Ilham, A., Siti Syarifah, M. M., Nurhanan Murni, Y., Asiah, O., Norhayati, I. and Lili Sahira, H. 2008. Evaluating the effects of Erythroxylum cuneatum forma cuneatum (Miq.) Kurz (chinta mula) in Morphine Addicted Rats. Highlights of FRIM's MOSTI Projects 2007, 20-22 Jan 2008, Melaka. 2. Mohd Ilham, A., Anee-Suryani, S., Siti Syarifah, M. M., Nurhanan Murni, Y., Asiah, O., Norhayati, I. and Lili Sahira, H. 2009. Evaluating the effects of Erythroxylum cuneatum forma cuneatum (Miq.) Kurz (chinta mula) in Morphine Addicted Rats. Highlights of FRIM's MOSTI Projects 2007, 20-22 Jan 2008, Melaka. 3. Anee Suryani, S., Mohd Ilham, A., Jantan, I. and Mohd Hafidz Hadi, A. 2006. Effects of Erythroxylum cuneatum forma cuneatum (Miq.) Kurz on the withdrawal symptoms in morphine dependent rats. 22nd Annual Seminar pf the Malaysian Natural Product Society "Beyond Medicinal Plants" in conjunction with 5th ANRAP Asian Network of Research on Antidiabetic Plants International Seminar "Reality and Challenges in Antidiabetic Research", 8-10 Nov 2006, Kuala Lumpur. 4. Mohd Ilham, A., Anee Suryani, S., Jaya V., Li Yen C., Siti Syarifah M.M., Norhayati, I., Lili Sahira, H. and Noraliza,

	<p>A. 2007. Laporan kemajuan penyelidikan projek penyelidikan Projek e-Science Fund-FRIM: Evaluating the effects of Erythroxylum cuneatum forma cuneatum Kurz (chinta mula) in morphine addicted rats. Workshop on Biotechnology R&D Project Monitoring and Evaluation, 8-11 Dec 2007, Kuala Lumpur.</p> <p>5. Mohd Ilham, A., Anee Suryani, S., Jaya, V. and Li Yen, C., Siti Syarifah, M.M., Norhayati, I., Lili Sahira, H. and Noraliza, A. 2008. Evaluating the effects of Erythroxylum cuneatum forma cuneatum Kurz (chinta mula) in morphine addicted rats. Project Evaluation Meeting (PEM), 20-22 Jan 2008, Melaka.</p> <p>6. Anee-Suryani, S., Mohd Ilhan, A. and Jantan, I. Utilising morphine-dependent rats as a model in addiction therapy research. The 2nd National Conference for Laboratory Animal Science, 11-12 Jun 2008, Putrajaya.</p> <p>7. Anee-Suryani, S., Mohd Ilham, A. and Jantan, I. SDS-PAGE analysis on the serum of morphine dependent rats treated with Erythroxylum cuneatum forma cuneatum (miq.) Kurz. 2nd iCAST 2008, 13-15 Jun 2008, IIUM Kuantan.</p> <p>8. Mohd Ilham .A., Anee Suryani, S., Jaya V., Li Yen C., Siti Syarifah M.M., Norhayati, I., Lili Sahira .H & Noraliza A. 2008. Evaluating the effects of Erythroxylum cuneatum forma cuneatum Kurz (chinta mula) in morphine addicted rats. Project Evaluation Meeting (PEM), 20-22 Jan 2008, Melaka</p>
Additional Information	Linkages: Biotropics (M) Berhad
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Forest Research Institute Malaysia (FRIM) Institut Farmaseutikal dan Nutraseutikal Malaysia, Sains@USM Blok A, No 10 Persiaran Bukit Jambul, 11900 Bukit Jambul Pulau Pinang. Office: 04-653 5652 H/p: 019-239 6961 ilham@ipharm.gov.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Evaluation and Utilisation of Syzygium Species as Natural Preservative for Nutraceutical and/or Cosmeceutical Products
Project Number	02-03-10-SF0024
Project Leader and Team Members	Leader: Ong Boo Kean Members: Saiful Azmi Johari, Norhayati Abdullah, Mary Khoo Gaik Hong, Vimala Subramaniam and Nor Azah Mohamad Ali
Field of Research	Agricultural Sciences
Project Summary/ Objectives	Evaluation of anti-oxidant and anti-microbial properties completed. The chemical analysis for fingerprinting profiles also completed and identification of chemical marker compounds have been achieved. Syzygium spp extracts which showed positive results for antioxidant and antimicrobial test were selected for evaluation of microbial preservation efficacy in product formulation.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Mohd Radzi, A., Ong B.K., Norhayati, A., Mohd Irman Shah, M., Nuziah, H. and Siti Asha A.B. 2008. Penyaringan fitokimia dan analisa HPLC ke atas ekstrak Syzygium aromaticum. Medicinal and Aromatic Plants Seminar 2008, 21-22 Oct 2008, Kuala Lumpur. 2. Ong, B.K., Norhayati, A., Saiful Azmi, J., Rohana, S., Vimala, S., Norul Aiman, Y., Nor Azah, M.A., Khoo, G.H.M. and Mohd Radzi, A. 2008. Evaluation of antimicrobial and antioxidant properties for selected Syzygium species. Medicinal and Aromatic Plants Seminar 2008, 21-22 Oct 2008, Kuala Lumpur. 3. Nor Azah, M.A., Norul Aiman, Y., Abu Said, A., Ong, B.K., Norhayati, A., Saiful Azmi, J., Rohana, S., Vimala, S. and Mohd Radzi, A. 2008. The chemical composition of volatile oil extract of Syzygium aromaticum and their biological activities. MICEOFF, 28-30 Oct 2008, Kuala Lumpur.
Additional Information	Linkages: Che Mah & Sons Sdn Bhd, Pasir Mas, Kelantan

Contact Institution/Entity Address	Forest Research Institute Malaysia (FRIM) Medicinal Plant Programme, Biotechnology Division, Forest Research Institute Malaysia (FRIM), 52109 Kepong Selangor.
Phone Number e-Mail	Office: 03-6279 7370 ongbk@frim.gov.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification of Anti-Inflammatory Compound(s) from <i>Prismatomeris malayana</i> ; a Preliminary Study towards Drug Development and Commercialisation
Project Number	02-03-10-SF0039
Project Leader and Team Members	Leader: Norhayati Abdullah Members: Nor Azah Mohamad Ali, Mary Khoo Gaik Hong, Ong Boo Kean, Khalijah Awang, Zainon Abu Samah, Mazura Md. Pisar and Ling Sui Kiong
Field of Research	Biological Sciences
Project Summary/ Objectives	One active antiinflammatory compound was isolated together with seven other compounds. The chemical structure of only five compounds were identified. The identity of the active compounds (ursolic acid) and the others were confirmed by NMR spectroscopic analysis (^1H , ^{13}C , dept) together with the comparison of the data with literature value. Structure modification on the isolated active compound produced eight analogues. Their stereochemistry were identified. The structure and their bioactivity values were computed using mopac and codessa software to develop the QSAR model.
Publications/Products/ Outcomes	Publications: <ol style="list-style-type: none"> 1. Nor Hayati, A., Ling, S.K., Ong, B.K., Zainon, A.S., Mazura, M.P., Fadzureena, J., Nor Azah, M.A., Khalijah, A. and Mary, K.G.H. 2007. Bioassay guided fractionation and isolation of antiinflamamtory compound from <i>Prismatomeris malayana</i> Ridley. Highlights of FRIM's MOSTI Projects 2007, 20-22 Jan 2008, Melaka. 2. Nor Hayati, A., Mazura, M.P., Ling, S.K., Ong, B.K., Zainon, A. S., Siti Asha And A. B. and Ahmad Shukri, A. 2006. Bioassay guided isolation and fractionation of anti-inflammatory compound from <i>Prismatomeris malayana</i> Ridley. 5th ANRAP International Seminar - MNPS 22nd Annual Seminar 2006, 8-10 Nov 2006, Kuala Lumpur. 3. Nor Hayati, A., Ling, S.K., Mazura, P., Ong, B.K., Fadzureena, J., Chee, B.J., Vimala, S., Mary, K. G. H., Nuziah, H., Zainon, A. S. and Mohd. Faisal I. 2007. Evaluation on the phytochemical and biological properties of <i>Prismatomeris malayan</i>'. 12th Asian Chemical Congress (ACC), 23-25 Aug 2007, Kuala Lumpur.

	<ol style="list-style-type: none"> Nor Hayati, A. 2007. Identification of anti-inflammatory compound(s) from <i>prismatomeris malayana</i>; a preliminary study towards drugs development and commercialisation. Workshop on Biotechnology R&D Project Monitoring and Evaluation, 8-11 Dec 2007, Kuala Lumpur. Nor Hayati, A., Ling, S.K., Khalijah, A. and Mohd. Faisal, I.S. 2008. Effect of extraction parameters on total triterpenoid saponins from <i>Prismatomeris malayana</i>. International Conference on Molecular Chemistry 2008 - Current Trends in Molecular Chemistry. 25-26 Nov 2008, Kuala Lumpur. NorHayati, A., Ling, S.K., and Mazura, M. 2008. Chemical analysis of <i>Prismatomeris malayana</i> and its anti-inflammatory activity. Malaysian Science and Technology Congress 2008, 16-17 Dec 2008, Kuala Lumpur.
Additional Information	1. Pertandingan rekacipta FRIM: 1 Bronze Medal
Contact Institution/Entity Address Phone Number e-Mail	Forest Reseach Institute Malaysia (FRIM) Forest Research Institute Malaysia 52109 Kepong Selangor . Office: 03-6279 7357 norhayatiab@frim.gov.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Utilisation of Phytoextracts and Essential Oils from Malaysian Zingiberaceae and Annonaceae for the Development of Cosmeceutical Products
Project Number	02-03-10-SF0047
Project Leader and Team Members	Leader: Mailina Jamil Members: Nor Azah Mohamad Ali, Mastura Mohtar and Ong Boo Kean
Field of Research	Biological Sciences
Project Summary/ Objectives	The chemical properties and biological profiling of selected species from the Zingiberaceae and Annonaceae family were established. Ten selected species from each family were extracted for their essential oils and methanolic extracts. The samples were tested for antiinflammatory (in vitro and in vivo), antimicrobial and antioxidant. Active extracts and/or essential oils were further use in product pre-formulation. Suitability of phytoextracts and essential oils in preformulated products was examined. Active ingredients were tried to blend with basic product formulation. This result showed the texture, color and odour of the product.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Siti Humeirah, A.G., Nor Azah, M.A., Mastura, M., Mailina, J., Saiful, J.A., Muhajir, H. and Ahmad Abdul Qayyum, M. 2010. Chemical constituents and antimicrobial activity of <i>Goniothalamus macrophyllus</i> (Annonaceae) from Pasoh Forest Reserve, Malaysia. <i>African Journal of Biotechnology</i> 9: 5511-5515. 2. Siti Humeirah, A.G., Nor Azah, M.A., Mailina, J., Muhajir, H. and Puad, A. 2010. Chemical composition of three xylopi leaf essential oils from Pasoh Forest Reserve, Negeri Sembilan, Malaysia. <i>Journal of Tropical Forest Science</i> 22:1-4. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Siti Humeirah, A.G., Nor Azah, M.A., Puad, A., Muhajir, H., Mastura, M., Mailina, J., Abu Said A., Mohd Faridz, Z.P., Nik Yasmin, N. Y. and Ahmad Abdul Qayyum, M. 2008. Chemical constituents and antimicrobial activities of <i>Goniothalamus</i> sp. Seminar on Medicinal & Aromatic Plants (MAPS2008), 21-22 Oct 2008, Kuala Lumpur.

	<ol style="list-style-type: none"> Mailina, J., Nor Azah, M.A., Mazura, P., Siti Humeirah, A.G., Saidatul Husni, S., Nik Yasmin, N.Y., Mohammad Faridz, Z.P. and Ahmad Abdul Qayyum, M. 2008. In vitro anti-inflammatory activity of selected medicinal plants from the family annonaceae. Seminar on Medicinal & Aromatic Plants (MAPS2008), 21-22 Oct 2008, Kuala Lumpur. Mailina, J., Nor Azah, M.A., Saidatul Husni, S., Mastura, M., Mazura, P., Fadzureena, J., Vimala, S., Ong, B.K. and Norulaiman, Y. 2009. Potential incorporation of bioactives from Zingiberaceae phytoextracts in product formulation. 5th International Symposium on The Family Zingiberaceae 6-9 Jul 2009, Yunnan, Peoples Republic of China. Saidatul Husni, S., Nor Azah, M.A., Mailina, J., Mastura, M., Nor Hayati, A., Mazura, P., Zaridah, M.Z., Abd Majid, J., Nik Yasmin, N.Y. and Mohammad Faridz, Z.P. 2009. Tropical plant extracts and essential oils as health and personal care ingredients. Malaysian Natural Product International Seminar, 23-24 Nov 2009, Pahang. Mailina J., Nor Azah M.A., Saidatul Husni S., Abu Said A., Abd. Majid J. and Nik Yasmin N.Y. 2008. Comparison of volatile compounds of ylang ylang flowers by hydrodistillation and solvent extraction technique. 5th Malaysian International Conference on Essential Oils, Fragrance and Flavour Materials (MICEOFF5), 28-30 Oct 2008, Kuala Lumpur.
IP Status	FRIM ID11/09: Natural plants extracts and essential oils from zingiberaceae family for antiinflammation use.
Additional Information	Commercialisation: Bio-Nature Formula Sdn. Bhd.
Contact Institution/Entity Address	Forest Research Institute Malaysia (FRIM) Medicinal Plant Programme, Biotechnology Division, Forest Research Institute Malaysia (FRIM), 52109 Kepong Selangor .
Phone Number e-Mail	Office: 03-6279 7349 mailina@frim.gov.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Mode of Action of Anti-Multi-Drug Resistance Staphylococcus aureus (MRSA) Study of Senna Alata Linn by Using Proteomic Approach
Project Number	02-03-10-SF0048
Project Leader and Team Members	Leader: Marzalina Mansor Members: Mastura Mohtar, Saiful Azmi Johari, Saeid Reza Doust Jalali, Ling Sui Kiong and Noraliza Alias
Field of Research	Biological Sciences
Project Summary/ Objectives	This project was obtained standard crude extract of Senna alata by using ethanol and water extract. The efficiency of the extract by minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC) tests was also determined.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Marzalina, M., Nor Datiakma, M.A., Mastura, M., Saiful Azmi, J., Ling, S.K., Doustjalali, S.R. and Noraliza, A. 2007. Minimal inhibitory concentration (MIC) and minimal bactericidal concentration (MBC) assay technique in detecting inhibitory potential of Senna alata Linn against multi-drug resistance Staphylococcus aureus (MRSA). Highlights of FRIM's MOSTI Projects 2007, 20-22 Jan 2008, Melaka. 2. Nor Datiakma, Mat Amin, Marzalina Mansor. Mastura Mohtar, Saiful Azmi Johari, Saeid Reza Doust Jalali, Ling Sui Kiong, and Noraliza Alias. 2008. Mode of action of anti-multidrug resistance Staphylococcus aureus (MRSA) study of Senna alata by using proteomic approach. Highlights of FRIM's MOSTI Projects 2007, 20-22 Jan 2008, Melaka. 3. Nor Datiakma Mat Amin, Marzalina Mansor. Mastura Mohtar, Saiful Azmi Johari, Saeid Reza Doust Jalali, Ling Sui Kiong and Noraliza Alias. 2007. Mode of action of anti-multidrug resistance Staphylococcus aureus (MRSA) study of Senna alata by using proteomic approach. EScience Fund Projects Monitoring Workshop, 8-11 Oct 2007, Kuala Lumpur. 4. Nor Datiakma Mat Amin, Noraliza Alias, Syed Zahir Iddid Syed Osman Iddid, Hamzah Mohd Salleh, Saeid Reza Doust Jalali, Mastura Mohtar, and Marzalina Mansor. 2007. Inhibitory potential of 4 medicinal plant species on multi-drug resistance Staphylococcus aureus (MRSA). 32nd Annual Conference of Malaysia Society

	<p>for Biochemistry & Molecular Biology, 5-6 Sep 2007, Petaling Jaya.</p> <ol style="list-style-type: none"> Nor Datiakma, M.A., Noraliza, A., Khazaai, H., Hamzah, M.S., Saeid Reza, D.J., Mastura, M., Aruna, M.S. and Marzalina, M. 2006. Determination of anti-Multi drug Resistance Staphylococcus aureus (MRSA) activity on Macaranga gigantea (Rchb.f. & Zoll.) Muell. Arg. 2006. National Seminar & Workshop on Forest Biotechnology, 4-7 Dec 2006, Kepong. Nor Datiakma, M.A., Noraliza, A., Khazaai, H., Hamzah, M.S., Saeid Reza, D.J., Mastura, M., Aruna, M.S. and Marzalina, M. 2006. Anti-Multi-drug resistance Staphylococcus aureus (MRSA) evaluation on herbal extracts. National Seminar & Workshop on Forest Biotechnology, 4-7 Dec 2006, Kepong. Nor Datiakma, M.A., Mastura, M., Noraliza, A., Anee Suryani, S., Mohd. Ilham, A., Doustjalali, S.R. and Marzalina, M. 2008. Preliminary evaluation on anti- multi-drug resistance Staphylococcus aureus (MRSA) activity from inflorescences of Senna alata Linn. Proceedings of the 2nd International Conference on Advancement of Science and Technology (iCAST), 13-15 Jun 2008, Kuantan. Nor Datiakma Mat Amin, Mastura Mohtar, Noraliza Alias, Anee Suryani Sued, Mohd. Ilham Adenan, Saeid Reza Doust Jalali and Marzalina Mansor. 2008. Preliminary evaluation on anti- multi-drug resistance Staphylococcus aureus (MRSA) activity from inflorescences of Senna alata Linn. 2nd International Conference on Advancement of Science and Technology (iCAST), 13-15 Jun 2008, Kuantan.
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia (FRIM), 52109 Kepong Selangor. Office: 03-6279 7129 mzalina@frim.gov.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Proteomic Assessments of Bioactive Constituent from Selected Malaysian Plant Species with Anti-Breast Cancer and Anti-Ovarian Cancer Potentials
Project Number	02-03-10-SF0057
Project Leader and Team Members	Leader: Siti Syarifah Mohd Mutalip Members: Nurhanan Murni Yunos, Mohd Ilham Adenan, Asiah Osman, Mohd Haffiz Jauri and Norhayati Ismail
Field of Research	Natural Sciences, Technologies and Engineering
Project Summary/ Objectives	Five plant samples were collected based on the significant outputs from past relevant researches. The voucher specimens were prepared and deposited in FRIM's herbarium for authentication. The cytotoxicity effect of all the plant leaves were investigated against two breast cancer cell lines (T47D and MCF7), two ovarian cancer cell lines (SKOV3 and CaOV3) and a normal (Vero) cell line. Cerbera odollam exhibited significant cytotoxic effects compared to other plant extracts. The crude methanolic extract of C.odollam was subjected to liquid–liquid fractionation with ethyl acetate, butanol and water. Ethyl acetate fraction exhibited higher cytotoxic effect than methanol, butanol and aqueous fractions. Following bioassay guided isolation; 17BH-neriifolin was isolated as a potential anticancer agent from C. odollam leaf. It showed potent anticancer activity with IC50 values of 17, 21, 28, 32 and 24 nM against MCF7, T47D, SKOV3, CaOV3 and Vero cell lines respectively. One Patent Pending was obtained with MyIPO: PI 2010003141 on the Anti-Cancer Agent for Ovarian Cancer Cell Lines.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Siti Syarifah, M.M., Nurhanan Murni, Y., Muhd Haffiz, J., Mohd Ilham, A., Getha, K., Asiah, O., Norhayati, I., Lili Sahira, H. and Anee Suryani, S. 2011. Potential Anticancer Compound from Cerbera odollam. Journal of Tropical Forest Science 23: 89-96. 2. Nurhanan, M. Y., Asiah, O., Mohd Ilham, M. A., Siti Syarifah, M. M., Norhayati, I. and Lili Sahira, H. 2008. Anti-proliferative activities of 32 Malaysian plant species in breast cancer cell lines. Journal of Tropical Forest Science 20: 77–81. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Siti Syarifah, M.M., Mohd Ilham, A., Asiah, O., Nurhanan, M. Y., Norhayati, I., Lili Sahira, H., Anee Suryani, S. and Zairus Rizal, R. 2008.

	<p>Proteomic assessments of bioactive constituent from selected malaysian plant species with anti- breast cancer and anti-ovarian cancer potentials. Highlights of FRIM's MOSTI Projects 2007, 20-22 Jan 2008, Melaka.</p> <ol style="list-style-type: none"> 2. Siti Syarifah, M.M., Mohd Ilham, A., Muhd Haffiz, J., Getha, K., Norhayati, I., Lili Sahira, H. and Anee Suryani, S. 2009. Cytotoxic properties of Cerbera odollam. Malaysian Natural Products International Seminar 2009 (MNPIS 2009), 23-24 Nov 2009, Pahang. 3. Siti Syarifah, M.M., Mohd Ilham, A., Asiah, O., Nurhanan, M. Y., Norhayati, I., Lili Sahira, H., Anee Suryani, S., Zairus Rizal, R. 2008. Proteomic assessments of bioactive constituent from selected malaysian plant species with anti- breast cancer and anti-ovarian cancer potentials. Highlights of FRIM's MOSTI Projects 2007, 20-22 Jan 2008, Melaka. 4. Siti Syarifah, M.M., Mohd Ilham, A., Muhammad Haffiz, J., Norhayati, I., Lili Sahira, H., Anee Suryani, S., Zairus Rizal, R., Asiah, O., Nurhanan, M. Y. 2008. Identification and characterization of active co-ii as potential lead compound for anti-breast cancer activity. Project Evaluation Meeting (PEM), 21-22 Jul 2008, Kepong. 5. Siti Syarifah M.M., Mohd Ilham A., Asiah O., Nurhanan M. Y., Lili Sahira H., Norhayati I., Zairus Rizal R. 2008. Evaluation of anti-proliferative activities of selected Malaysian plant species for the development of potential anti-breast cancer and anti-ovarian cancer therapeutic agent. 22ND Scientific Meeting of MSPP, 5-6 Apr 2008, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Chemical and Genetic Fingerprints of <i>Phyllagathis rotundifolia</i> and <i>Ptychobela griffithii</i> for Rapid Identification and Discrimination of Raw and Processed Materials and their Finished Products
Project Number	02-03-10-SF0066
Project Leader and Team Members	Leader: Ling Sui Kiong Members: Tan Hooi Poay, Lee Soon Leong, Tnah Lee Hong and Salbiah Man
Field of Research	Chemical Sciences
Project Summary/ Objectives	Although <i>Phyllagathis rotundifolia</i> and <i>P. praetermissa</i> look morphologically similar, but it is difficult to identify them by appearance. For the raw material suppliers, the two species are considered to be of the same species known locally as 'Tapak Sulaiman' or 'Tapak Gajah'. Their chemical and genetic fingerprints were established using 2D IR correlation spectroscopy and chloroplast DNA markers. These fingerprints were then compared and analysed based on the characteristic features for rapid discrimination and identification of the two species. Eleven compounds were identified as hydrolysable tannins and seven as cyanogenic glycosides. The cyanogenic glycosides had been reported as new compound previously by earlier work and could be used as marker for differentiation between the two species. A multi-step IR macro-fingerprinting was able to distinguish the two species based on the unique positions and intensities of auto-peaks and cross-peaks. The FTIR chemical fingerprint was complemented with qualitative HPLC analysis using selected compounds as markers for differentiation of the two species. Genetic fingerprint to discriminate <i>P. rotundifolia</i> , <i>P. praetermissa</i> and <i>P. griffithii</i> was partially achieved using the sequences of three chloroplast regions. These three regions can also be used for intraspecific (population) identification. This combination of macroscopic FTIR and genetic fingerprint techniques promise a fast and accurate approach for species and even population identification of the three <i>Phyllagathis</i> species.
Publications/Products/ Outcomes	Journal: 1. Tan Hooi Poay, Ling Sui Kiong, and Chuah Cheng Hock. 2010. Multi-step infrared macro-fingerprinting on leaves of <i>Phyllagathis praetermissa</i> from different localities in Peninsular Malaysia. <i>Vibrational Spectroscopy</i> 52: 48-53.

Proceedings/Conferences/Seminars:

1. Tan Hooi Poay, Ling Sui Kiong and Chuah Cheng Hock. 2008. Study on *Phyllagathis praetermissa* from two geographical origins using fourier transform infrared spectroscopy and two dimensional correlation infrared spectroscopy, Medicinal and Aromatic Plants Seminar, 21-22 Oct, 2008, Kuala Lumpur.
2. Tan Hooi Poay, Daniel Wong, Ling Sui Kiong, Habsah A. Kadir, and Chuah Cheng Hock. 2010. Neuroprotective activity of galloylated cyanogenic glucosides and hydrolysable tannins from the leaves of *Phyllagathis rotundifolia* (Jack) Blume. Medicinal and Aromatic Plants Seminar, 3-4 Aug 2010, Selangor.
3. Ling Sui Kiong, Tan Hooi Poay, Lee Soon Leong, Tnah Lee Hong, Salbiah Man, Nuraini Abd. Majid and Chuah Cheng Hock. 2010. Development of chemical and genetic fingerprints of *Phyllagathis rotundifolia* and *P. praetermissa* for rapid identification and discrimination of raw and processed materials and their finished products National Biotechnology Seminar, 24-26 May 2010, PWTC, Kuala Lumpur.
4. Tan Hooi Poay, Ling Sui Kiong, and Chuah Cheng Hock. 2009. Differentiation of *Phyllagathis rotundifolia* and *Phyllagathis praetermissa* by multi-steps infrared macro-fingerprinting. 4th Global Summit on Medicinal and Aromatic Plants, 1-5 Dec 2009, Sarawak.
5. Chuah Cheng Hock, Tan Hooi Poay, Ling Sui Kiong, and Cheah Hun Teong. 2009. LC-MS analysis of hydrolysable tannins from the leaves of *Phyllagathis praetermissa*. Asianalysis X, 11-13 Aug 2009, PWTC, Kuala Lumpur.
6. Tan Hooi Poay, Ling Sui Kiong and Chuah Cheng Hock. 2008. Isolation of hydrolysable tannins from *Phyllagathis praetermissa*. International Conference on Molecular Chemistry, 25-26 Nov 2008, Kuala Lumpur.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Investigation of Cry (insect resistant) Protein Expression in Transmed Teak Clone
Project Number	02-03-10-SF0068
Project Leader and Team Members	Leader: Norwati Adnan Members: Norlia Basherudin, Asiah Osman, Norwati Muhammad and Mohd Rosli Haron
Field of Research	Biological Sciences
Project Summary/ Objectives	A study on insect resistant protein expression in transmed teak was carried out. The stability of cry1Ab gene (Insect Resistant) in the genome was analysed and the expression of this gene was studied.
Publications/Products/ Outcomes	<p>Proceeding/Conferences/Seminar:</p> <ol style="list-style-type: none"> 1. Norwati, A., Norlia, B., Norwati, M. and Mohd Rosli, H. 2008. Study relating the stability of cry1Ab gene insertion in teak. 17th Scientific Meeting of Malaysian Society Molecular Biology and Biotechnology, 23-25 Jun 2008, Kuala Lumpur. 2. Norwati, A., Norlia, B., Mohd Rosli, H., Norwati, M., Abdullah, R. and Norihan, M.S. 2009. Research and development of transgenic forest tree at FRIM. Risk Assessment Workshop on Transgenic Trees, 7-9 Dec 2009, Kuala Lumpur. 3. Norwati, A., Norlia, B., Mohd Rosli, H., Norwati, M., Anee Suryani, S. and Asiah, O. 2009. Preliminary study on Bt protein expression in teak (<i>Tectona grandis</i>). Proceedings of the 8th Malaysia Genetic Congress, 4-6 Ogos 2009, Pahang. <p>Others:</p> <ol style="list-style-type: none"> 1. Norwati, A., Norlia, B., Mohd Rosli, H., Norwati, M. and Asiah, O. 2009. Investigation of cry (insect resistant) protein expression in transmed teak clone. FRIM Project Evaluation Meeting (IRPA and SCIENCEFUND). 13-15 Apr 2009. FRIM, Kepong. 2. Norwati, A., Norlia, B., Mohd Rosli, H., Norwati, M. and Asiah, O. 2008. Investigation of cry (insect resistant) protein expression in transmed teak clone. Workshop on Biotechnology R&D Project Monitoring and Evaluation under e-science Fund, MOSTI. 8-10 Jun 2008. Seremban.

	<p>3. Norwati, A., Norlia, B., Mohd Rosli, H., Norwati, M., Anee Suryani, S. and Asiah, O. 2009. Stability analysis of cry1Ab gene in transmed teak (<i>Tectona grandis</i>) clone. Highlights of FRIM's Science Fund (MOSTI/MOA) Projects 2009. 13-15 Apr 2009. Kuala Lumpur.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	In Vitro Production of Acacia Hybrid Polyploids
Project Number	02-03-10-SF0073
Project Leader and Team Members	Leader: Yap Jing Wei Members: Fadhilah Zainudin, Anthony Koutoulis, Maria Madon, Mahani Mansor Clyde, Kodi Isparan Kandasamy and Sun Wan Fong
Field of Research	Agricultural Sciences
Project Summary/ Objectives	This study aimed to produce polyploids of Acacia hybrid using in vitro technique. An in vitro protocol polyploid induction Acacias has been developed successfully. Through this project, a number of putative tetraploids of selected <i>A. mangium</i> , <i>A. auriculim</i> is & Acacia hybrid clones were generated.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Yap Jing Wei, Mahani Mansor Clyde, Kodi Isparan Kandasamy, Maria Madon and Anthony Koutoulis. 2010. In vitro colchicine-mediated polyploid induction in Acacia: the breeding of seedless triploid trees. National Biotechnology Seminar. 24-26 Jun 2010. PWTC KL. 2. Yap Jing Wei, Mahani Mansor Clyde, Kodi Isparan Kandasamy, Maria Madon and Anthony Koutoulis. 2010. In vitro polyploid induction in Acacias: toward the production of seedless triploids. Green Plant Breeding Technologies, 2-5 Feb 2010. Vienna, Austria. 3. Yap Jing Wei, Mahani Mansor Clyde, Kodi Isparan Kandasamy, Maria Madon and Anthony Koutoulis. 2010. Estimation of nuclear genome size identification of F1 Acacia hybrids (<i>A. mangium</i> and <i>A. auriculim</i>is). International Union of Forest Research Institutes, 7-12 Mac 2010, Kuala Lumpur. 4. Yap Jing Wei, Kodi Isparan Kandasamy, Siti Suhaila Abdul Rahman and Sun Wan Fong. 2010. The potential of in vitro polyploidization producing improved planting stocks of selected tropical plant species. International Symposium on Forestry & Forest Products, 5-7 Oct 2010, Kuala Lumpur.
Contact Institution/Entity Address	Forest Research Institute Malaysia (FRIM) Forest Research Institute Malaysia (FRIM), 52109 Kepong, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Investigate the Therapeutic Effect of Recombinant Mouse Cytokines in Murine Breast Cancer Model
Project Number	02-02-09-SF0002
Project Leader and Team Members	Leader: Ammu Kutty Chandrika a/p G.K. Radhakrishnan Members: Vijaya Lechimi Raj, Lekhsan Othman, Kanga Rani a/p S. Selvadurai and Rakesh Naidu a/l Kuppusamy
Field of Research	Agricultural Sciences
Project Summary/ Objectives	The therapeutic effect of recombinant mouse cytokines in murine breast cancer model was investigated. The ability of recombinant cytokines (IFN-gamma, IL-18, IL-15) to inhibit murine breast cancer cell lines was studied and analysed.
Contact Institution/Entity Address	International Medical University (IMU) School of Medicine and Health Sciences International Medical University (IMU), 126, Jalan 19/155B Bukit Jalil, 57000 Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of In Vitro specific Assays Screening of Drug-herb Pharmacokinetic Interactions of Commonly Used Malaysian Herbs.
Project Number	02-02-09-SF0005
Project Leader and Team Members	Leader: Ong Chin Eng Members: Mak Joon Wah, Zakiah Ismail, Badrul Amini Abd Rash and Rusli Ismail
Field of Research	Biological Sciences
Project Summary/ Objectives	This project has successfully developed the in vitro enzyme assays of major human liver microsomal cytochrome P450 (CYP) enzymes. The modulatory effects of extracts and fractions of commonly used Malaysian herbs on CYP activities has also been studied and these extracts and fractions were further analysed. The clinically significant pharmacokinetic interactions between herbal remedies and medicinal drugs has also been predicted.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Human Dendritic-cell-based Myeloid Leukaemia Vaccine.
Project Number	02-02-09-SF0006
Project Leader and Team Members	Leader: Cheong Soon Keng Members: Leong Chooi Fun and Zubaidah Zakaria
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The dendritic-cell-based myeloid leukaemia vaccine (DCMLV) from human monocytes has been generated and evaluated in-vitro. The Murine dendritic cell-based myeloid leukaemia vaccine was successfully generated and its functionality evaluated. This project has successfully established a murine model acute myeloid leukameia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Increasing the Male to Female Ratio in Nile Tilapia (<i>Oreochromis niloticus</i>) by Thermal Treatment and Selective Breeding Sensitivity to the Treatment.
Project Number	02-03-06-SF0001
Project Leader and Team Members	Leader: Azhar Hamzah Members: Raul W Ponzoni and Nguyen Hong Nguyen
Field of Research	Animal Production and Animal Primary Products
Project Summary/ Objectives	The genetic variation in sex ratios in response to thermal treatment in GIFT tilapia was identified. The heat treatment has increased the proportion of males relative to females in some families involved in the project. The high genetic relationship between sex and other important traits such as body weight was recorded. The sexual dimorphism occurred at a very early stage of growth development. There were significant differences ($P < 0.001$) in body weight and length between the sexes i.e. males being heavier and longer than females.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Azhar Hamzah, Nguyen Hong Nguyen, Raul W. Ponzoni, Kamaruzzaman, N. and Khairul Rizal Abu Bakar. 2008. Increasing the male to female ratio in Nile Tilapia (<i>Oreochromis niloticus</i>) by thermal treatment. National Fisheries Symposium. 14-16 Jul 2008. Kuala Terengganu. 2. Abu-Bakar, Khairul, R., Azhar Hamzah, Yee, H.Y., Nguyen, N.H. and Raul W. Ponzoni. 2009. Effect of heat treatment on male to female ratio in the GIFT strain. Asia-Pacific Aquaculture Conference. 3-6 Nov 2009. Kuala Lumpur. 3. Abu-Bakar, K.R., Raul W. Ponzoni, Nguyen, N.H., Husin, N.M., Khaw, H.L., Kamaruzzaman, N., Azhar Hamzah and Yee, H.Y. 2008. Effect of thermal treatment on sex ratio, growth performance and survival in genetically improved farmed tilapia (GIFT strain, <i>Oreochromis niloticus</i>). 8th International Symposium on Tilapia in Aquaculture. 12-14 Oct 2008. Egypt.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of PCR Based Diagnostic Kit for the Detection of Fish Viral Diseases in Cultured Marine Fish
Project Number	02-03-06-SF0002
Project Leader and Team Members	Leader: Azila Abdullah
Field of Research	Agricultural Sciences
Project Summary/ Objectives	A rapid, reliable, cheaper and easy to use PCR based diagnostic kit for detection of important fish viral diseases was developed. This kit is suitable to be used for cultured marine fish.
Contact Institution/Entity Address	Institut Penyelidikan Perikanan (IPP) Institut Penyelidikan Perikanan, Jalan Batu Maung, 11960 Pulau Pinang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification of Fish Protozoan, Cryptocaryon Irritans Resistant Candidate Gene(s) in Sea Bass (<i>Lates calcarifer</i>) Fingerlings
Project Number	02-03-06-SF0003
Project Leader and Team Members	Leader: Kua Beng Chu
Field of Research	Biological Sciences
Project Summary/ Objectives	A total of 8 Differentially Expressed Genes (DEGs) were obtained in control (5) and survived sea bass (3) after a 7-day infection of <i>C. irritans</i> . All DEGs were cloned and sequenced. BLAST analysis revealed that the 3 DEGs encode unknown genes and 5 DEGs had significant match with known genes of other species in the GenBank database. RT-PCR analysis confirmed that the 5 known genes were expressed in gills of survived sea bass after a 7-day infection of <i>C. irritans</i> .
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Kua, B.C. 2008. The internal transcribed spacer (ribosomal DNA) of <i>Cryptocaryon irritans</i> isolated from cultured seabass, <i>Lates calcarifer</i> in Penang waters. <i>Journal of Asian Fisheries Science</i> 21: 285-292. <p>Proceeding/Conferences/Seminar:</p> <ol style="list-style-type: none"> 1. Kua, B.C. and Bhassu, S. 2010. Identification of fish protozoan, <i>Cryptocaryon irritans</i> resistant candidate gene(s) in sea bass (<i>Lates calcarifer</i>) fingerlings. National Biotechnology Seminar. 24 May 2010 PWTC, Kuala Lumpur. 2. Kua, B.C. and Oo, M.G. 2008. Genes differentially expressed in survived sea bass (<i>Lates calcarifer</i>) fish after 7-day infection of <i>C. Irritans</i>. The 7th Symposium of Diseases in Asian Aquaculture (DAA VII). 22-26 Jun 2008. Taipei, Taiwan.
Additional Information	Linkages: Penang Aquaculture Association (PenAqua)
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Rapid Immunoassay Test Kit Nitrofurantoin and Chloramphenicol Antibiotic in Poultry Meat
Project Number	02-03-08-SF0018
Project Leader and Team Members	Leader: Salmah Abdul Aziz Members: Norhafniza Awaludin, Faridah Salam and Wong Hee Kum
Field of Research	Applied Sciences And Technologies
Project Summary/ Objectives	Antibody against nitrofurantoin metabolites (semicarbazide) and chloramphenicol was produced in rabbits. This antibody was characterised using ELISA method and showed that the antibody is specific with minimum titre of 0.01 mg/l.
Publications/Products/ Outcomes	Proceeding/Conferences/Seminar: <ol style="list-style-type: none"> 1. Azima, A., Faujan, A., Salmah, A.A. and Zamri, I. 2008. Characterisation of semicarbazide hapten using thin layer chromatography and fourier transform infra red. 1st Regional Conference on Biosensor and Biodiagnostics (RCBB 2008), 21-22 May 2008, Kuala Lumpur. 2. Azima, A.A., Salmah, M.N., Suzaida, A., Norhafniza, and Zamri, I. 2009. Titer Determination for the Development of Polyclonal Antibody Against Chloramphenicol using Enzyme Link Immunosorbent Assay (ELISA). Proceeding Malaysian Society of Animal Production, 30th Annual Conference, 2-5 Jun 2009, Kota Kinabalu, Sabah.
Additional Information	Linkages: Malaysian Vaccines and Pharmaceuticals Sdn. Bhd.
Contact Institution/Entity Address	Malaysia Agricultural Research & Development Institute (MARDI) Biotechnology Research Centre, Malaysian Agricultural Research & Development Institute, Peti Surat 12301, 50774 Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of DNA Probes for Rapid Detection of Pathogenic E. coli O157:H7 in Foods by Real time PCR
Project Number	02-03-08-SF0019
Project Leader and Team Members	Leader: Suria Mohd Saad Members: Mohd Afendy Abdul Talib, Mariana Nor Shamsud, Raha Abdul Rahim, Lau Han Yih and Zamribin Ishak
Field of Research	Agricultural Sciences
Project Summary/ Objectives	In this project, specific DNA probes for the detection and confirmation of pathogenic E. coli strains O157:H7 for application in food analysis has been established. An assay combining 5 primers in single-tube multiplex PCR was successfully developed simultaneously for rapid detection of diarrheagenic E. coli. Ability to detect trace amount of E. coli O157:H7 DNA representing a highly sensitive method and showing it is capable of performing routine analysis. Besides, a real-time PCR assay for early detection method has also been developed.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Test Strips Kit for the Rapid Detection of Citrus Greening Disease
Project Number	02-03-08-SF0021
Project Leader and Team Members	Leader: Lau Han Yih Members: Tan Chon Seng, Habibuddin Hashim and Adlin Azlina Abdul
Field of Research	Agricultural Sciences
Project Summary/ Objectives	This project has successfully established a method to obtain polyclonal <i>Ca. L. asiaticus</i> -antibody. The expression of partial omp gene (800bp) was carried out using <i>E.coli</i> JM109 (DE3) with expressed protein size of 30kDa. The solubility test and purification of the recombinant protein was carried out. The purified OMP recombinant protein was used for preparing the polyclonal antibodies in 3 BALB/c mice. The antibody was measured using an enzyme linked immunosorbent analysis (ELISA) method and titer was found to be approximately 1: 10,000.
Publications/Products/ Outcomes	<p>Proceeding/Conferences/Seminar:</p> <ol style="list-style-type: none"> 1. Lau, H. Y., Habibuddin, H. and Tan, C. S. 2008. Cloning and sequencing of a full length Outer Membrane Protein (Omp) gene of <i>Candidatus Liberibacter asiaticus</i> causing Citrus Greening Disease. Malaysian Society of Plant Physiology Conference (MSPPC 2008), 18-20 Nov 2008, Penang. 2. Lau, H. Y., Habibuddin, H. and Tan, C. S. 2008. Production of Polyclonal Antibodies against Outer Membrane Protein of <i>Candidatus Liberibacter asiaticus</i> causing Citrus Greening Disease. 10th Symposium of Malaysian Society of Applied Biology, 6-8 Nov 2008, Kuching, Sarawak. 3. Lau, H. Y., Habibuddin, H. and Tan, C. S. 2008. Expression and purification of a partial outer membrane protein of <i>Candidatus Liberibacter asiaticus</i> causing Citrus Greening Disease. 1st Regional Conference on Biosensor and Bidiagnostics 2008, 21-22 May 2008, Kuala Lumpur. 4. Lau, H. Y., Habibuddin, H. and Tan, C. S. 2008. Recombinant Antigen production of Antibody against <i>Candidatus Liberibacter asiaticus</i> that caused Citrus Greening Disease. MARDI Senior Staff Meeting & MARDI Science Technology Exhibition 2008, 11-13 Nov 2008, MAEPS, Serdang.



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Rapid Detection Kit for the Determination of Mercury in Herbal Medicine Products
Project Number	02-03-08-SF0061
Project Leader and Team Members	Leader: Noor Azlina Masdor Members: Jamia Azdina Jamal, Nur Azura Mohd Said, Faridah Salam and Mohd Yunus Abd. Shukor
Field of Research	Forestry Sciences
Project Summary/ Objectives	A rapid detection kit for the determination of mercury in herbal medicinal products was developed. This kit is suitable to determine the presence of mercury in herbal medicinal products.
Publications/Products/ Outcomes	Journals: 1. Shukor, M.Y., Masdor, N., Baharom, N.A., Jamal, J.A., Abdullah, M.P.A., Shamaan, N.A. and Syed, M.A. 2007. An inhibitive determination method for heavy metals using bromelain, a cysteine protease. <i>Applied Biochemistry and Biotechnology</i> 144: 283-291. 2. Shukor, M.Y., Baharom, N.A., Azlan, N., Masdor, N., Abdullah, M.P.A., Shamaan, N.A., Jamal, J.A. and Syed, M. A. 2008. The development of an inhibitive determination method for zinc using a serine protease. <i>Journal of Environment & Biology</i> 30: 17-22.
Additional Information	Linkages: Pharmaniaga Biomedical Sdn Bhd.
Contact Institution/Entity Address	Malaysian Agricultural Research & Development Institute (MARDI) Biotechnology Research Centre, Malaysian Agricultural Research & Development Institute, Peti Surat 12301, 50774 Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Virus Resistant Passion Fruit Varieties by Genetic Engineering: Cloning and Characterization of Passion Fruit Woodiness Virus Genes
Project Number	02-03-08-SF0063
Project Leader and Team Members	Leader: Norliza Abu Bakar Members: Habibuddin Hashim and Tan Chon Seng
Field of Research	Forestry Sciences
Project Summary/ Objectives	The coat protein (CP) and polymerase (Nib) genes of a Malaysian isolate of passion fruit woodiness virus (PWV-S) from PWV-infected passion fruit plant were isolated, cloned and sequenced. The genes were constructed into the plant binary vector pCambia 2301 for transformation purpose. The Nib-CP and Nib genes products were cloned into the pRSET expression plasmid and transformed into E.coli BL21(DE3) expression strain for expression study. The expression level was found to be high as it can be distinguished from the control when analyzed by SDS PAGE. Western detection confirmed the Nib protein was expressed at a low-level. The Nib gene were fused to a maltose binding protein and recombinant protein expression were carried out. The expression level of the protein was much higher when expressed together with the maltose binding protein.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Transgenic Eksotika Papaya Resistant to PRSV: Transformation Using New Sets of Gene Constructs.
Project Number	02-03-08-SF0065
Project Leader and Team Members	Leader: Alizah Zainal Members: Habibuddin Hashim and Tan Chon Seng
Field of Research	Forestry Sciences
Project Summary/ Objectives	60 Putatives transgenic Eksotika Papaya resistant to Papaya Ringspot Virus (PRSV) has been regenerated through Agrobacterium mediated transformation using coat protein and replicase genes. These transgenic plant has yet to be planted and screened in the field under controlled environment.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Genetic Engineering of MT1 Tomato for Fruit Colour Improvement Using Carotenoid Biosynthesis Genes (Ggpps, Psy, Pds, And Zds)
Project Number	02-03-08-SF0075
Project Leader and Team Members	Leader: Wee Chien Yeong Members: Melor Rejab and Tan Chon Seng
Field of Research	Biological Sciences
Project Summary/ Objectives	The ggpps, psy, pds and zds genes were successfully isolated from the local chilli pepper of variety Kulai. The genes fragment were identified with restriction enzymes digestion and subcloned into pPJK vector. The gene cassette with CaMV35S promoter and nos-terminator at 5'-end and 3'-end of all four different genes, respectively was obtained and subcloned into plant expression vector, pCAMBIA1300 and pCAMBIA2300. The constructed plant expression vectors were transformed in to two different strains of Agrobacterium, LBA4404 and EHA105. Transformation of MT1 tomato by using cotyledon leaves and hypocotyls as explants were successfully carried out. The transformed explants were selected on selection media containing kanamycin or hygromycin. Both explants were able to form buds as early as twelve days after transformation on selection media. A total of 13, 9, 21 and 25 putative transformants that were transformed with ggpps, psy, pds and zds genes, respectively were selected and regenerated.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Gene Expression Analysis of Host Pathogen Interaction in Papaya Dieback Disease Using SAGE Technology
Project Number	02-03-08-SF0076
Project Leader and Team Members	Leader: Khairun Hisam Nasir Members: Aminah Mahmud and Umi Kalsom Abu Bakar
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	The gene expression profile of stress and defence genes from infected papaya fruit to <i>Pantoea agglomerans</i> has been generated using SAGE. This profile is important in generation of valuable molecular information.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Expression Profiling of Ripening-Related Genes in Papaya Using cDNA Microarray
Project Number	02-03-08-SF0080
Project Leader and Team Members	Leader: Sew Yun Shin Members: Hayati Ahmad, Umi Kalsom Abu Bakar and Maheswary Vellupillai
Field of Research	Biotechnology
Project Summary/ Objectives	Two cDNA libraries was constructed from Carica papaya var. Eksotika early ripe and ripe papaya fruits. Besides that, cDNA microarrays (DNA chips) from Carica papaya var. Eksotika I and Eksotika II cDNA libraries were also generated. Using the DNA Chips, gene expression pattern of papaya genes particularly ripening-related genes from different stages of fruit was obtained. The microarray data was analysed using bioinformatic software. In addition, numerous genes with their function related to fruit ripening processes such as ethylene biosynthesis, flavour or aroma, secondary metabolisms and defense mechanism were discovered through the generation of papaya ESTs.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Sew, Y.S., Wan, K.F., Johari, S., Lam, P.F. and Abu Bakar, U.K. 2008. Discovery of Genes Associated with Fruit Ripening in arica papaya var. Eksotika I and II - Improvement of Papaya Quality and Shelf Life. MARDI Science and Technology Exhibition, 11-13 November 2008, MAEPS Serdang. 2. Sew, Y.S., Wan, K.F., Sarip, J., Lam, P.F. and Abu Bakar, U.K. 2008. Discovery of genes associated with fruit ripening in Carica papaya var. Eksotika 1 and 2 for improvement of papaya quality and shelf life. MARDI Science and Technology Exhibition 2008, 11-13 November 2008, MAEPS Serdang. 3. Sew, Y.S., Wan, K.F., Sarip, J., Lam, P.F., and Abu Bakar, U.K. 2009. Expressed sequence tags of Carica papaya var. Eksotika 1 and 2. 8th National Genetics Congress, 4-6 August 2009, Awana Genting, Pahang.
Contact Institution/Entity Address	Malaysian Agricultural Research & Development Institute (MARDI) Ketua Pengarah Institut Penyelidikan & Kemajuan Pertanian Malaysia Peti Surat 12301, 50774 Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification of Marker Compounds for Standardisation of Herbal Preparation from Selected <i>Ficus deltoidea</i> (Mas Cotek) Accessions
Project Number	02-03-08-SF0093
Project Leader and Team Members	Leader: Arif Zaidi Jusoh Members: Mohd Nazrul Hisham and Mohd Lip Jabit
Field of Research	Agricultural Sciences
Project Summary/ Objectives	A chemical marker called moretenol has been identified and the stability was evaluated. It was found that the marker was stable and could still be detected after processing. This marker could only be used to standardize <i>F. deltoidea</i> product based on single variety.
Publications/Products/ Outcomes	Others: 1. Arif Zaidi Jusoh, Mohd Lip Jabit, Nazrul Hisham Daud, Wan Mamat Wan Zaki, Normah Ahamad, Sharizan Ahmad and Musa Yaacob, 2008. Chemical Analysis of <i>Ficus Deltoidea</i> Leaves in Developing Guidance for Raw Material Selection. Poster Presentation at Seminar on Food Biotechnology. 25-26 Nov, Bangi.
Contact Institution/Entity Address	Malaysian Agricultural Research & Development Institute (MARDI) Ketua Pengarah Institut Penyelidikan & Kemajuan Pertanian Malaysia, Peti Surat 12301, 50774 Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Sensor Technology for Detection of Ripeness in Watermelon
Project Number	02-03-08-SF0095
Project Leader and Team Members	Leader: Zamri Ishak Members: Abdullah Hassan, Ab. Aziz Ibrahim, Salmah Abdul Aziz, Norhafniza Awaludin and Khairul Anuar Shafie
Field of Research	Biotechnology
Project Summary/ Objectives	Sensor technology was applied in developing a method to detect ripeness in watermelon. Prior to this, the biochemical changes of ripening fruit was studied. The project has successfully established a non-destructive technique in differentiating maturity stages of fruits.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohd Akmal Mhd Yusoff, Khairul Anuar Shafie, Salmah Abdul Aziz, Norhafniza Awaludin, Zamri Ishak, Jang Su Haeng and So Yong Chol. 2008. The application of artificial neural network to determine the relationship between watermelon's hardness and its sugar content. 1st Regional Conferences on Biosensor and Bidiagnostics 2008, 21-22 May 2008, Kuala Lumpur. 2. Zamri Ishak, Khairul Anuar Shafie, Mohd Akmal Mhd Yusoff, Salmah Abdul Aziz, Norhafniza Awaludin, Jang Su Haeng and So Yong Chol. 2008. Piezoelectric Transducer (PZT) Technology based sensor for determination of watermelon ripeness. MARDI Science and Technology Exhibition (MSTE 2008), 11-13 Nov 2008, Serdang. 3. Zamri Ishak, Khairul Anuar Shafie, Salmah Abdul Aziz, Norhafniza Awaluddin, Mohd.Akmal Mhd Yusof, Azima Azmi, Jang Su Haeng, Choe Ung Ho, Sin Ok Chol, Muhammad Zaidi Abu Bakar, and Mohd Nor Mohd Rosmi, 2009. "Piezoelectric Transducer (PZT) Technology Based Sensor for Infield Determination of Watermelon Ripeness". International, Invention, Innovation & Technology Exhibition (ITEX 2009), 15-17 May 2009, Kuala Lumpur Convention Centre (KLCC), Kuala Lumpur.

	<ol style="list-style-type: none"> 4. Mohd.Akmal Mhd Yusoff, Khairul Anuar Shafie, Norhafniza Awaludin, Azima Azmi, Salmah Abdul Aziz, Zamri Ishak, Jang Su Haeng, Choe Ung Ho and Sin Ok Chol. 2009. "Acoustic Based Sensor of Watermelon Ripeness". National Conference on Agricultural and Food Mechanization 2009, 23-25 Jun 2009, Renaissance Hotel, Melaka. 5. Dr.Zamri Ishak, Khairul Anuar Shafie, Azima Azmi, Mohd Akmal Mhd Yusoff, Norhafniza Awaludin, Jang Su Haeng and So Yong Chol. 2009. "Comparison On Effect of Different Variety of Watermelon on MARDI's Watermelon Ripeness Sensor. 20th Malaysian Society of Plant Physiology Conference (MSPPC 2009), 24-26 Jul 2009, Avillion Admiral Cove, Port Dickson.
Additional Information	Linkages: Herbal Products: Manufacturer
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	DNA Fingerprinting of MARDI Papaya Varieties Using Microsatellite Markers
Project Number	02-03-08-SF0108
Project Leader and Team Members	Leader: Hayati Ahmad Member: Tan Chon Seng
Field of Research	Forestry Sciences
Project Summary/ Objectives	Development of DNA fingerprinting using microsatellite markers for MARDI papaya varieties was achieved. This included microsatellite marker design and optimisation of PCR conditions. 16 local and 6 introduced papaya varieties was successfully developed and used for identification and differentiation of MARDI papaya varieties.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Hayati, A., Tan, C.S. and Habibuddin, H. 2007. Microsatellite markers for identification of MARDI papaya varieties. 18th Malaysian Society of Plant Physiology Conference, 21-23 Aug 2007, Le Meridien, Kota Kinabalu, Sabah. 2. Hayati, A., Tan, C.S., Habibuddin, H. and J. Sarip. 2008. DNA fingerprinting of Malaysian papaya varieties. Malaysia Technology Expo 2008, 21-23 Feb 2008, PWTC, Kuala Lumpur. 3. Habibuddin, H., Hayati, A. and C.S. Tan. 2008. The use of molecular markers for plant variety identification and registration. Proceedings of the 5th National Seed Symposium 2008, 11-12 Mac 2008, Putrajaya. 4. Hayati, A., Tan, C.S. and Habibuddin, H. 2007. DNA fingerprinting of MARDI papaya varieties using microsatellite markers. MARDI Science and Technology Exhibition 2007, 2-5 Sep 2007, Persada International Convention Centre, Johor Bahru, Johor.
Additional Information	<ol style="list-style-type: none"> 1. Malaysia Technology Expo 2008: 1 Silver Medal 2. MARDI Science and Technology Exhibition 2007: 1 Bronze Medal
Contact Institution/Entity Address	Malaysian Agricultural Research & Development Institute (MARDI) Ketua Pengarah Institut Penyelidikan & Kemajuan Pertanian Malaysia, Peti Surat 12301, 50774 Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Enhancing Production of Halal Transglutaminase from Physarum polycephalum through Recombinant Technology
Project Number	02-03-08-SF0110
Project Leader and Team Members	Leader: Azlina Mohd Danial Members: Tan Chon Seng and Kamariah Long
Field of Research	Biotechnology
Project Summary/ Objectives	The cDNA gene from Physarum polycephalum has successfully been amplified using PCR technique. A full nucleotide sequence of transglutaminase gene (2574 bp DNA fragment) was obtained and found to show high similarity towards the transglutaminase gene using BlastX and BlastN. However, production of transglutaminase from Physarum polycephalum through cloning in Saccharomyces cerevisiae has yet to be analysed.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Azlina, M.D., Shaiful Adzni, S., Kamariah, L. and Tan, C.S. 2008. gene from Physarum polycephalum. Proceedings 30th Symposium of Malaysian Society for Microbiology, 16-19 Aug 2008, Hyatt Regency Resort, Kuantan, Pahang. 2. Azlina, M.D., Shaiful Adzni, S., Kamariah, L. and Tan, C.S. 2009. Molecular cloning and sequence analysis of transglutaminase gene from Physarum polycephalum. BIT's 2nd Annual World Congress of Industrial Biotechnology, 5-7 Apr 2009, Seoul, South Korea. 3. Azlina, M.D., Shaiful Adzni, S., Kamariah, L. and Tan, C.S. 2009. Bioinformatic analysis of transglutaminase cDNA from Physarum polycephalum. Proceedings International Congress of Malaysian Society for Microbiology, 1-4 Dec 2009, Penang.
Contact Institution/Entity Address	Malaysian Agricultural Research & Development Institute (MARDI) Ketua Pengarah Institut Penyelidikan & Kemajuan Pertanian Malaysia, Peti Surat 12301, 50774 Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Enhancement of Feeding Value of Fodder and Crop Residue Silages for Ruminants Feeding Using Crop-Specific Bacterial Inoculants
Project Number	02-03-08-SF0125
Project Leader and Team Members	Leader: Ghazali Hussin Members: Yusof Hamali Ahmad and Wan Mohtar Wan Yusoff
Field of Research	Forestry Sciences
Project Summary/ Objectives	<p>Evaluation of selected Lactic Acid Bacteria (LAB) isolated from fodder (sorghum) and crops residue (oil palm frond, rice straw and sweet corn stover) was carried out on 20% sugar solution and crop residues/ fodder extract solution. The four microbes isolated are OPF17 <i>Lactobacillus fermentum</i> (from oil palm frond silage), J8 <i>Lactobacillus plantarum</i> (from sweet corn silage), S6 <i>Lactobacillus plantarum</i> (from sorghum silage) and PWB5 <i>Lactobacillus brevis</i> (from rice straw silage).</p> <p>The sorghum silage treated with crop-specific bacterial (CSB) showed that the crude protein content increased, but not significant compared with the control, nevertheless, the crude fat content is significantly higher in silage treated with CSB. The total digestible nutrient (TDN) and metabolizable energy (ME) are also elevated in the silage treated with CSB plus urea and molasses. A similar trend of nutrients content are shown for corn, oil palm frond and rice silage.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ghazali, H. and Wan Mohtar, W.Y. 2010. Enhancement of feeding values of fodder and crop-residue silages for ruminants feeding using crop-specific bacterial inoculants. Seminar Bioteknologi Kebangsaan 2010, 24 May 2010, PWTC, Kuala Lumpur. 2. Ghazali, H., Wan Mohtar, W.Y., Rahim, H. and Khairuddin, A.R. 2010. Selection of potential lactic acid bacteria for whole crop paddy silage in Malaysia. Seminar Padi Kebangsaan 2010. 28-30 Jun 2010. Lumut, Perak. 3. Ghazali, H., Wan Mohtar, W.Y., Fhaisol, M.M, Sasya Feezleen, M.Z. and Ahmad, A. 2010. A new technique for gas production determination from silage fermentation. Prosiding Persidangan Antarabangsa Nutrisi Haiwan 2010. 21-23 Sep 2010. Persada, Johor Bharu.

	<p>4. Ghazali, H and Wan Mohtar, W.Y. 2010. Screening for specific lactic acid bacteria for oil palm silage production. Seminar Persatuan Produksi Haiwan Kebangsaan. 6-8 Jun 2010. Kota Bharu.</p> <p>5. Ghazali, H., Wan Mohtar, W.Y., Mustafa, M. and Sasyafezleen, M.Z. 2010. Production of high density oil palm frond silage in Malaysia. Prosiding Persidangan Antarabangsa Nutrisi Haiwan 2010, 21-23 Sept 2010, Persada, Johor Bharu.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Incorporation and Evaluation on the Effectiveness of High Yielding QTLs from <i>Oryza rufipogon</i> Into Local High Quality Rice
Project Number	02-03-08-SF0130
Project Leader and Team Members	Leader: Asfaliza Ramli Members: Habibuddin Hashim and Zulkifli Ahmad Seman
Field of Research	Biotechnology
Project Summary/ Objectives	<p><i>Oryza rufipogon</i> was crossed with local rice variety i.e. MRQ50, MRQ74 and MRQ80 which differ in yield potential. The progenies from these crosses were selected using microsatellite markers as a tool in a marker-assisted selection (MAS) to introgress two yield related QTLs, the yld1.1 and yld2.1 from <i>Oryza rufipogon</i> into the local varieties. These markers were able to identify progenies carrying the polygenes involved in yield components. Repeated backcrosses were carried out to ensure the progenies derived from each crosses were similar to their respective parents.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Utilisation of Effective Microbes for the Development of Antioxidant-Rich Products: from Dragon Fruit (<i>Hylocereus polyrhizus</i>)
Project Number	02-03-08-SF0187
Project Leader and Team Members	Leader: Hazniza Adnan Members: Zainudin Meon, Sukirah Abdul Rahman and Rosmawati Osman
Field of Research	Forestry Sciences
Project Summary/ Objectives	Local microbial isolates with potential in producing microbial antioxidant compounds were evaluated. A technology for production of inoculum with high antioxidant using dragon fruit has been successfully developed. Through this project, an antioxidant-rich product was produced using dragon fruit as base.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Hazniza Adnan, Azlina Mansor, Rosmawati Osman, Mohd Saiful Nizam Hussin and Musawirah Abdul Ghani. 2008. Effect of fermentation time on some nutritive properties of red dragon fruit (<i>Hylocereus polyrhizus</i>). Proceeding of the Biodiversity and Biotechnology Symposium 2008, 19-21 Nov 2008, Kuching, Sarawak. 2. Azlina Mansor, Rosmawati Osman, Hazniza Adnan, Musawirah Abdul Ghani and Mohd Saiful Nizam Hussin. 2008. The growth and interaction of yeast and lactic acid bacteria in dragon fruit fermentation. Proceeding of the Biodiversity and Biotechnology Symposium 2008, 19-21 Nov 2008, Kuching, Sarawak. 3. Hazniza Adnan, Rosmawati Osman, Mohd Saiful Nizam Hussin and Musawirah Abdul Ghani. 2008. Preliminary study on the nutritional contents in fresh and fermented red dragon fruit (<i>Hylocereus polyrhizus</i>). Proceeding of the Seminar on Food Biotechnology 2008, 25-26 Nov 2008, Bangi, Selangor. 4. Sukirah Abdul Rahman, Rosmawati Osman, Hazniza Adnan, Musawirah Abdul Ghani and Mohd Saiful Nizam Hussin. 2007. Microbial Population of Purple-Red Dragon Fruit (<i>Hylocereus polyrhizus</i>) Fermentation. Proceeding of the 29th Symposium of Malaysian Society of Microbiology 2007, 24-26 Nov 2007, Terengganu.



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Beta-Glucan Production Technology from Indigenous Mushroom
Project Number	02-03-08-SF0188
Project Leader and Team Members	Leader: Aminuddin Hussin Members: Nik Hafizah Nik Uba and Madzlan Kasran
Field of Research	Biotechnology
Project Summary/ Objectives	Potential indigenous mushroom for β -glucan production have been identified. The production of beta-glucan from selected mushroom using submerged fermentation technique was optimized using these potential mushrooms.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Aminuddin, H. and Nor Ajila, S. 2008. Effect of temperature on the growth of <i>Pleurotus sajor-caju</i> and <i>Auricularia polytricha</i> mycelium in submerged culture as food ingredient. Proceeding of the National Food Technology Seminar 2008. 14-15 Oct 2008, Berjaya Times Square Convention Centre, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Computer Aided Medical Image Analysis for Intra-operative Low-field MRI in Neurosurgery
Project Number	02-02-01-SF0052
Project Leader and Team Members	Leader: R. Logeswaran Members: C. Eswaran, Mehrdad Jabbarzadeh Gangeh and Rosli Besar
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This project has successfully developed interactive kits for medical image analysis including full-automatic analysis of brain images, full-GUI based visualisation and manipulation capabilities to aid in images analysis and full-automatic system to assist in quick identification of the brain structures in low-field MR images. In addition, the quality and time-efficiency of analysing intra-operative low-field MR brain images has also been improved.
Publications/Products/ Outcomes	<p>Book:</p> <ol style="list-style-type: none"> 1. Rajasvaran Logeswaran. 2010. 3D Medical Imaging Applications - Reconstruction and Automatic Analysis. In: E.H. Duke and S.R. Aguirre. (Eds). 3D Imaging: Theory, Technology and Applications. (pp. 159-174). New York, USA: NOVA Science. <p>Journals:</p> <ol style="list-style-type: none"> 1. Nur Faiza Ishak, Rajasvaran Logeswaran and Wooi-Haw Tan. 2008. Artifact and Noise Stripping on Low-Field Brain MRI. International Journal of Biology and Biomedical Engineering 2: 59-68. 2. Nur Faiza Ishak, Mehrdad Gangeh, Rajasvaran Logeswaran, Investigation of Enhancement Techniques for Low-Field MRI Brain Images. Biomedical Imaging and Intervention Journal. In press. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ishak, N.F., Gangeh M.J. and R. Logeswaran. 2008. A preliminary study of high-field MRI image enhancement techniques applied to low-field MR brain images. KL International Conference on Biomedical Engineering 2008 (BioMed), 25-28 Jun 2008, Kuala Lumpur. 2. Ishak, N.F., Logeswaran, R. And Tan, W.H. 2008. Pre-processing of low-field brain MRI. 7th WSEAS International Conference on Computational Intelligence, Man-machine Systsems and Cybernetics (CIMMACS '08), 29-31 Dec 2008, Cairo, Egypt.

	3. Ishak, N.F., M.J. and Logeswaran, R. 2008. Comparison of denoising techniques applied on low-field MR brain images. 5th International Conference on Computer Graphics, Imaging and Visualization (CGIV 2008), 25-28 Aug 2008, Penang.
Contact Institution/Entity Address Phone Number e-Mail	Multimedia University (MMU) Multimedia University, Cyberjaya Campus, Jalan Multimedia, 63100 Cyberjaya, Selangor. Tel: 03 - 8312 5000/5018 Office: 03-8312 5396 loges@mmu.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	11- β Hydroxysteroid Dehydrogenase in Diabetes and Metabolic Syndrome: Modifications of its Action on Peroxisome-Proliferator Activated Receptors in Different Tissues of Rats
Project Number	02-02-10-SF0003
Project Leader and Team Members	Leader: Ton So Har Members: Sharifah Noor Akmal and Khalid Abdul Kadir
Field of Research	Biotechnology
Project Summary/ Objectives	This study has successfully developed a protocol for the detection of PPAR γ (Total PPAR γ , PPAR γ 1 and PPAR γ 2) and lipoprotein lipase using real-time PCR. The expression of PPAR γ (Total PPAR γ , PPAR γ 1 and PPAR γ 2) and lipoprotein lipase, 11 β -Hydroxysteroid dehydrogenases (11 β -HSD1) and activities of glucose, insulin and HOMA-IR were determined. Comparison between different routes of administration, dosages and treatment periods of glycyrrhizic acid were conducted. In summary, it was found that glycyrrhizic acid given orally at 100mg/kg for 1 week displayed a better effect towards the studied parameters.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Chia, Y.Y., Ton, S.H. and Khalid B.A.K. 2010. Effects of glycyrrhizic acid on 11 -hydroxysteroid dehydrogenases (11 - HSD1 & 2) activities and HOMA IR in rats at different treatment periods. <i>Expt & Clin Endocrin & Diabetes</i> 118:617-624. 2. Lim, W.Y.A., Chia, Y.Y., Liong, S.Y., Ton, S.H., Khalid B.A.K. and Sharifah Noor A.S.H. 2009. Lipoprotein lipase expression, serum lipid and tissue lipid deposition in orally-administered glycyrrhizic acid-treated rats. <i>Lipids and Health</i> 8:31-40. 3. Chia, Y.Y., Ton, S.H. and Khalid B.A.K. 2009. Peroxisome proliferator-activated receptor gamma (PPAR γ), lipoprotein lipase (LPL), serum lipid and HOMA-IR in rats given glycyrrhizic acid. <i>PPAR Research</i> 2010. 4. Chia, Y.Y., Ton, S.H. and Khalid, B.A.K. 2009. Effects of glycyrrhizic acid on peroxisome proliferator-activated receptor gamma (Total gamma, PPAR gamma 1 and 2) expressions and HOMA-IR in rats. <i>Malaysian Journal of Biochemistry and Molecular Biology</i>. 17: 9-14.

Awards/Certificates	Science and Technology Exhibition (STE) 2002: 1 Gold Medal
Contact Institution/Entity Address	Monash University, Sunway Campus School of Science, Monash University Sunway Campus, Jalan Lagoon Selatan, 46150 Bandar Sunway, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Developing a Molecular Kit in Detecting Legionella pneumophila in Clinical and Environmental Samples and the Study of Oxidative Stress of Legionella spp.
Project Number	02-02-10-SF0004
Project Leader and Team Members	Leader: Yong Foong Yee Members: Ng Kim Yong, Ngeow Yun Fong and Elizabeth Louise Hartland
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	A diagnostic triplex PCR to detect L. pneumophila serogroup 1, 2-14 and other Legionella species were developed and is being filed for patent. In addition, the ferum superoxide dismutase (FeSOD) gene from Malaysian and Australian strains were successfully cloned and expressed.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Yong Foong Yee, The Genetic Diversity of Virulence Genes in Legionella Pneumophila, 24th World Congress of Pathology and Laboratory Medicine, 20-24 Aug 2007, Petaling Jaya.
Contact Institution/Entity Address	Malaysia University of Science and Technology (MUST) Malaysia University of Science and Technology, GL 33, Ground Floor, Blok C, Dataran Usahawan Kelana, 17, Jalan SS 7/26, Kelana Jaya, Selangor.
Phone Number e-Mail	H/p: 012-298 7587 stacey.yong@taylors.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Structural and Functional Analysis of Fibroblast Activating Factor (FAF) from Porphyromonas gingivalis, a Causative Agent Destructive Periodontal Diseases
Project Number	02-02-10-SF0006
Project Leader and Team Members	Leader: Song Keang Peng Member: Alistair Lax
Field of Research	Biotechnology
Project Summary/ Objectives	The Fibroblast Activating Factor (FAF) gene from Porphyromonas gingivalis was cloned and expressed. Besides that, the functional analysis of FAF was carried out using MTT assay.
Contact Institution/Entity Address	Monash School of Science, Monash University, Sunway Campus Jalan Lagoon Selatan 46150 Bandar Sunway Selangor
Phone Number	Office: 03-5514 6094 H/p: 016-208 9086
e-Mail	song.keang.peng@sci.monash.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Isolation and Characterisation of Bioactive Chemical Compounds of Several Species of Etlingera (Zingiberaceae) for the Development of Nutraceutical and Cosmeceutical Products
Project Number	02-02-10-SF0012
Project Leader and Team Members	Leader: Lim Yau Yan Members: Eric Chan Wei Chiang, Mary Khoo Gaik Hong, Ling Sui Kiong, Goh Joo Kheng and Mohammed Omar
Field of Research	Forestry Sciences
Project Summary/ Objectives	The bioactivity (antioxidant, tyrosinase inhibition, antibacterial and cytotoxic) of several Etlingera species was studied. The major chemical constituents of species with high bioactive properties was isolated and characterised. Through this project, protocols producing food (herbal tea) and cosmetic (skin whitener) product from species with high bioactive properties was also developed.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Chan, E.W.C., Lim, Y.Y., Wong, L.F., Lianto, F.S., Wong, S.K., Lim, K.K., Joe, C.E. and Lim, T.Y. 2008. Antioxidant and tyrosinase inhibition properties of leaves and rhizomes of ginger species. Food Chemistry 109: 477-483. 2. Chan, E.W.C., Lim, Y.Y., Wong, S.K., Lim, K.K., Tan, S.P., Lianto, F.S. and Yong, M.Y. 2009. Effects of different drying methods on the antioxidant properties of leaves and tea of ginger species. Food Chemistry 113: 166-172. 3. Chan, E.W.C., Lim, Y.Y., Ling, S.K., Tan, S.P., Lim, K.K. and Khoo, M.G.H. 2009. Caffeoylquinic acids from leaves of Etlingera species. LWT-Food Science and Technology 42: 1026-1030. 4. Chan, E.W.C., Lim, Y.Y. and Nor Azah M.A. 2010. Composition and antibacterial activity of essential oils from leaves of Etlingera species (Zingiberaceae). International Journal for the Advancement of Science and Arts 1: 1-12. 5. Chan, E.W.C. and Lim, Y.Y. 2009. Bioactivities and chemical constituents of leaves of some Etlingera species in Peninsular Malaysia. 5th International Symposium on the Family Zingiberaceae 6-9 Jul 2009, Xishuangbanna, Yunnan, China.

	<p>Products:</p> <ol style="list-style-type: none"> 1. Standardized extract of chlorogenic acid from <i>E. elatior</i> leaves. 2. Fractionated extract with high tyrosinase inhibition activity (skin-whitening activity).
Awards/Certificates	<ol style="list-style-type: none"> 1. Science and Technology Exhibition (STE) 2002: 1 Gold Medal
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>MONASH School of Science Monash University, Sunway Campus Jalan Lagoon Selatan, 46150 Bandar Sunway, Selangor. Office: 03-5514 6103 lim.yau.yan@sci.monash.edu.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Optimisation of Brine Fermentation under Malaysian Climate
Project Number	02-02-10-SF0013
Project Leader and Team Members	Leader: Wu Ta Yeong Members: Xiao Dong Chen, Aminuddin Hussin, Kan Mun Seng, Siow Lee Fong, Than Cheok Fah, Ian Prince, Mohammed Omar and Nik Hafizah Nik Ubaidillah
Field of Research	Natural Sciences, Technologies and Engineering
Project Summary/ Objectives	The effect of salt content, pH and temperature on the growth of <i>Pediococcus halophilus</i> and <i>Zygosaccharomyces rouxii</i> was studied and optimised. The impact of heat transfer and aeration and/or agitation on the current design of brine/moromi fermenter was investigated. The findings was targeted for 10% time saving on brine fermentation by using optimised fermenter design. As a result, yield was enhanced and product quality was improved too.
Publications/Products/ Outcomes	Journal: 1. Wu, T.Y., Kan, M.S., Siow, L.F. and Palniandy, L.K. 2010. Effect of temperature on moromi fermentation of soy sauce with intermittent aeration. <i>African Journal of Biotechnology</i> 9: 702-706. Proceedings/Conferences/Seminars: 1. Palniandy, L.K., Wu, T.Y., Kan, M.S., Siow, L.F., Than, C.F. and Ooi, Y.W. 2009. Effect of temperature on traditional moromi fermentation with applied aeration. 3rd International Conference on Chemical & Bioprocess Engineering, 12-14 Aug 2009, Sabah.
Contact Institution/Entity Address Phone Number e-Mail	Monash University Sunway campus School of Engineering, Jalan Lagoon Selatan, Bandar Sunway, 46150 Selangor. Office: 03-5514 6258 H/p: 012-698 9137 wu.ta.yeong@eng.monash.edu.my / tayeong@hotmail.\com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Computational Fluid Dynamics Modelling of the Shear Stresses and Oxygen Transfer in a Spinner-Flask Bioreactor for Tissue Engineering
Project Number	02-02-10-SF0014
Project Leader and Team Members	Leader: Tan Boon Thong Members: Masitah Hasan, Mark Thompson, Liow Yoon Soon and Ngoh Gek Cheng
Field of Research	Biotechnology
Project Summary/ Objectives	This project managed to simulate the flow field in a partially submerged disc and aerial disc bioreactor. Oxygen transport and oxygen consumption model was also implemented.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Liow, Y.S.K., Tan, B.T., Thouas, G.A. and Thompson, M.C. 2009. CFD Modelling of the steady-state momentum and oxygen transport in a bioreactor that is driven by an aerial rotating disk. Modern Physics Letters B 23: 121-12. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Thouas, G.A., Thompson, M.C., Contreras, K.G., Liow, K.Y.S. and Tan, K.B.T. 2008. Improved oxygen diffusion and mechanical aggregation of tumour colonies in a novel stirred minibioreactor. Proceedings of the 30th Annual International IEEE Engineering in Medicine and Biology Society Conference. 20-24 Aug 2008. Vancouver, Canada. 2. 3. Liow, Y.S.K., Thouas, G., Tan, B.T., Thompson, M.C. and Hourigan, K. 2008. Modeling the transport of momentum and oxygen in an aerial disk driven bioreactor used for animal tissue or cell culture. The 13th International Conference on Medical Bioengineering, 3-6 Dec 2008, Singapore.
Contact Institution/Entity Address	Malaysia University of Science and Technology (MUST) Malaysia University of Science and Technology, GL 33, Ground Floor, Blok C, Dataran Usahawan Kelana, 17, Jalan SS 7/26, Kelana Jaya, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Isolation of Anti-Snake Venom Tannins from <i>Mimosa pudica</i> L. and Investigations of their Efficacy and Safety
Project Number	02-02-10-SF0033
Project Leader and Team Members	Leader: Jaya Vejayan Members: Halijah Ibrahim, Iekhsan Othman, Stephen Periathamby Ambu and Khalijah Awang
Field of Research	Biological Sciences
Project Summary/ Objectives	The anti-snake venom efficacy of tannin isolated from <i>Mimosa pudica</i> L. in mice was evaluated and its attachment towards the venom proteins by expressional proteomics techniques was investigated. The proteins responding to the treatment were identified and characterised. The safety of tannin isolate were assessed in mice by histopathological and biochemical techniques.
Contact Institution/Entity Address	Malaysia University of Science and Technology (MUST) Malaysia University of Science and Technology, GL 33, Ground Floor, Blok C, Dataran Usahawan Kelana, 17, Jalan SS 7/26, Kelana Jaya, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Optical Sensor for Determination of Ammonia in Wastewater Leachate and Agriculture Industries
Project Number	02-03-02-SF0002
Project Leader and Team Members	Leader: Jaafar Abdullah Members: Musa Ahmad, Hamidah Sidek, Samsulida Abd. Rahman and Nur Ellina Azmi and Lee Yook Heng
Field of Research	Chemical Sciences
Project Summary/ Objectives	<p>An optical biosensor based on glutamate dehydrogenase (GLDH) immobilised in a chitosan film for the determination of ammonium in water samples is described. The biosensor film was deposited on a glass slide via a spin coating method. The ammonium was measured based on β-nicotinamide adenine dinucleotide (NADH) oxidation in the presence of α-ketoglutaric acid at the wavelength of 340 nm. A linear response of the biosensor was obtained in the ammonium concentration range of 5–500 μM with the detection limit of 5 μM. The reproducibility of the biosensor was good with an observed RSD of 5.9% ($n = 8$). The biosensor was found to be stable for at least one month when stored dry at 4 oC.</p> <p>A simple and rapid optical biosensor for the semi-quantitative detection of ammonium was developed by immobilisation of glutamate dehydrogenase (GLDH) and diaphorase (Dph) in chitosan film coated on a glass slide employing thiazolyl blue tetrazolium bromide (MTT) as a color indicator. The developed biosensor displays a purple color formation of formazan attributed to the unreacted NADH in the reaction system in the presence of ammonium. The color intensity was found to decrease proportionally with the increase of ammonium concentrations after 10 min exposure. The linearity of the biosensor towards ammonium was in the range of 20–70 μM ($R^2 = 0.9955$) with detection limit of 11 μM. A good agreement ($R^2 = 0.9984$) with indothymol method was obtained in the measurement of fish pond water samples.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Nur Ellina Azmi, Musa Ahmad, Jaafar Abdullah, Hamidah Sidek, Lee Yook Heng and Nadarajah Karupiah. 2009. Biosensor based on glutamate dehydrogenase immobilized in chitosan for the determination of ammonium in water samples. Analytical Biochemistry 388: 28-32.



	<p>2. Nur Ellina Azmi, Jaafar Abdullah, Musa Ahmad, Lee Yook Heng, Hamidah Sidek and Samsulida Abd Rahman, 2011, Bioanalisis berasaskan Sistem Glutamat Dehidrogenase-Diaporase untuk Pengesanan Ammonium, Sains Malaysiana. In press.</p> <p>Proceedings/Conferences/Seminars:</p> <p>1. Nur Ellina Azmi, Musa Ahmad, Jaafar Abdullah, Hamidah Sidek, Lee Yook Heng and Nadarajah Karuppiyah. 2008. Spectrophotometric based biosensor derived on immobilized glutamate dehydrogenase for determination of ammonium in water samples. Seminar Kimia Analisis Malaysia ke-21. 25-27 Nov 2008, Universiti Malaysia Sabah, Kota Kinabalu.</p> <p>2. Nur Ellina Azmi, Jaafar Abdullah, Musa Ahmad, Hamidah Sidek and Nadarajah Karuppiyah. 2008. Biosensor base on glutamate dehydrogenase immobilized in chitosan for ammonium detection. 1st Regional Conference on Biosensor and Biodiagnostics 2008, 21-22 May 2008, Kuala Lumpur.</p> <p>3. Nur Ellina Azmi, Musa Ahmad, Jaafar Abdullah, Hamidah Sidek and Lee Yook Heng. 2009. Biosensor based on glutamate dehydrogenase-diaphorase immobilized in chitosan for ammonium determination. 10th Asian Conference on Analytical Sciences 2009 (AsiaAnalysis X), 11-13 Aug 2009, PWTC, Kuala Lumpur.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>SIRIM SIRIM Berhad No. 1, Persiaran Dato' Menteri, Seksyen 2, Peti Surat 7035, Shah Alam, Selangor. Office: 03-5544 6965 H/p: 013-235 1017 jaafar@sirim.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Synthesis and Bioassay of Peptides and Peptidomimetics for Cosmetic Use
Project Number	02-03-02-SF0005
Project Leader and Team Members	Leader: Lim Chuan Gee Members: Noorsaadah A Rahman, Theanmalar Masilamani, Uma Devi M. Palanisamy, Shireen Shaharina Mohd Shamaun, Yap Say Moi, Thaminvaani Manaharan and Ling Lai Teng
Field of Research	Chemical Sciences
Project Summary/ Objectives	The project has successfully synthesised a library of peptides for cosmetic use. The antioxidant and antiwrinkle efficacy was also studied.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Shireen Shaharina Mohd Shamaun, Theanmalar Masilamani, Yap Say Moi, Thamilvaani Manaharan, Hamidah Burham, Hamidah Sidek and Lim Chuan Gee. 2010. Synthesis and Bioassay of Peptides and Peptidomimetics for Cosmetic Use. National Biotechnology Seminar, 24-26 May 2010, Kuala Lumpur.
Contact Institution/Entity Address	SIRIM SIRIM Berhad No. 1, Persiaran Dato' Menteri, Seksyen 2, Peti Surat 7035, Shah Alam, Selangor.
Phone Number e-Mail	Office: 05-544 6975 chuan.gee_lim@sirim.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Encapsulated Technology for Ammonia Degradation Microbes
Project Number	02-03-02-SF0011
Project Leader and Team Members	Leader: Hasnah Mohd Zin Members: Mohd Nazri Ahmad, Isnazunita Ismail and Chen Sau Soon
Field of Research	Environmental Sciences
Project Summary/ Objectives	This project has successfully produced an encapsulated microbial concoction of indigenous microorganisms for removal of ammoniacal pollutant in water and wastewater. Study on mode of application of this encapsulated concoction was also carried out.
Contact Institution/Entity Address	SIRIM SIRIM Berhad, No. 1, Persiaran Dato' Menteri, Seksyen 2, Peti Surat 7035, Shah Alam, Selangor.
Phone Number	Office: 03 - 5544 6568
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Coenzyme Q10 from Microbial Strains
Project Number	02-03-02-SF0018
Project Leader and Team Members	Leader: Neelam Shahab Members: Mazita Mohd Diah, Puziah Hashim, T. Letchumi Thannimal and Uma Devi M. Palanisamy
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	An efficient microbial producers of CoQ10, <i>Streptomyces</i> was identified from the repository of strains at SIRIM Berhad. Optimisation of CoQ10 production and extraction using shake flask was carried out. Purification and quantification of CoQ10 was also established.
Contact Institution/Entity Address	SIRIM SIRIM Berhad No. 1, Persiaran Dato' Menteri, Seksyen 2, Peti Surat 7035, Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Weight Loss Aid for Nutraceutical Applications from <i>Tamarindus indica</i> L., <i>Garcinia xanthochymus</i> hook. F. and <i>Hibiscus sabdariffa</i>
Project Number	02-03-02-SF0020
Project Leader and Team Members	Leader: Puziah Hashim Members: Nor Hadiani Ismail, Sarifah Rejab, Uma Devi M. Palanisamy, Noor Rain binti Abdullah, Habibah Zainal Abidin and Theanmalar Masilamani
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	Extraction of <i>Tamarindus Indica</i> L., <i>Garcinia xanthochymus</i> hook. F. and <i>Hibiscus sabdariffa</i> crude extract was achieved. The bioactivities of these crude which include inhibition of adipogenesis & lipase inhibition biochemical assay, in vivo anti-inflammatory, in vivo anti nociceptive and in vivo anti pyrexia of these crude extract were identified. The constituents from the crude extract were identified and characterised. In vitro method for testing of weight loss aid was developed and the efficacy of weight loss aid product using animal model was established.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Pusat Pengurusan Penyelidikan, Universiti Putra Malaysia, 43400 Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Bioactive Compound from Fermented Rice Products Using <i>Saccharomycopsis fibuligera</i> Skin Care Applications.
Project Number	02-03-02-SF0062
Project Leader and Team Members	Leader: Hamidah Sidek Members: Mohd Helme Mohd Helan, Suzaini Badrudin, Yap Say Moi, Syed Osthman, Rozanida Abdul Rahman, Ahmad Hazri Ab Rashid, Noorullhamezon Mohd Noor, Zanariah Ujang and Nurul Izza Nordin
Field of Research	Biotechnology
Project Summary/ Objectives	Black glutinous rice ferment filtrate was found to be a good antioxidant and able to inhibit melanin formation. Study on the semi purified fractions of this filtrate showed wide range of biological activities including antioxidant, Fe chelating, collagen and elastin synthesis suggesting its potential as cosmeceutical agent.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Norfaeza Zainudin, Nurul Hammizah Hamidon, Noorullhamezon Mohd Noor and Hamidah Sidek. 2008. Biological activities of black glutinous ferment filtrates from solid state fermentation using <i>Saccharomycopsis fibuligera</i> . Symposium Kimia Analisis Malaysia Ke-21, 25-27 Nov 2008, Kota Kinabalu, Sabah.
Contact Institution/Entity Address	SIRIM SIRIM Berhad, No. 1, Persiaran Dato' Menteri, Seksyen 2, Peti Surat 7035, Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Bioconversion of Rice Bran into High Value Added Myo-inositol Phosphate Intermediates with Anticancer Properties
Project Number	02-01-08-SF0004
Project Leader and Team Members	Leader: Hamzah Mohd Salleh Members: Abdul Manaf Ali, Ahmad Faris Ismail and Hamzah Mohd Salleh
Field of Research	Agricultural Sciences
Project Summary/ Objectives	Both wild-type and recombinant phytate degrading enzymes were used to dephosphorylate rice bran phytate such as ASUIA 279, ASUIA 271, ASUIA 30, PhyFAUIA1, and Mycobacterium smegmatis. Crude enzymatic rice-bran phytate hydrolysate was clarified by centrifugation and then subjected to a strong anion-exchange column chromatography, resulting to partially purified products. Preliminary result showed about 50% inhibition of MCF-7 cell line (a breast cancer cell line) had been observed for partially purified myo-inositol phosphates generated by ASUIA 279 at 16 hour incubation time.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Farouk, A.A., Puad, N.I.M., Ismail, S.M., Salleh, H.M., Ismail, A.F., Greiner, R. 2007. Alginate bioreactors for the production myo-inositol phosphates intermediates from rice bran using PhyFAUIA1 Bacterial Phytases. International Conference on Biotechnology Engineering 2007 (ICBioE '07), 8-10 May 2007, Kuala Lumpur.
Contact Institution/Entity Address	Universiti Islam Antarabangsa Malaysia (UIAM) Jalan Gombak, 53100 Gombak, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Improve Product Quantity of Aromatase Inhibitor from <i>Nicotiana tabacum</i> by Metabolic Engineering Techniques
Project Number	02-01-08-SF0011
Project Leader and Team Members	Leader: Azura Amid Member: Huzwah Khaza'ai
Field of Research	Agricultural Sciences
Project Summary/ Objectives	The amount of aromatase inhibitor from <i>N. tabacum</i> has been successfully enhanced through metabolic engineering techniques. It was achieved by blocking the sub-nicotine pathway in order to increase the amount of nicotine. This has been confirmed by real-time PCR analysis.
Contact Institution/Entity Address	Universiti Islam Antarabangsa Malaysia (UIAM) Jalan Gombak, 53100 Gombak, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Molecular Cloning, Sequencing, Purification and Characterisation of Stem Bromelain from Ananas comosus
Project Number	02-01-08-SF0012
Project Leader and Team Members	Leader: Azura Amid Member: Faridah Yusof
Field of Research	Agricultural Sciences
Project Summary/ Objectives	The fragment encodes for bromelain from pineapple stem was cloned and sequenced. The sequence was characterised and the gene was expressed in the expression vector. The expressed bromelain was purified and analysed. This expressed recombinant bromelain has the potential to be commercialised.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Islam Antarabangsa Malaysia (UIAM) Jalan Gombak, 53100 Gombak, Selangor. Office: 03-2056 4429 azuraamid@iiu.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Enzymatic Devulcanisation of Waste Rubber Products in Preparation to be Recycled into Virgin Rubber Batch
Project Number	02-01-08-SF0018
Project Leader and Team Members	Leader: Faridah Yusof Member: Azura Amid
Field of Research	Biotechnology
Project Summary/ Objectives	The efficiency of <i>Thiobasillus ferrooxidans</i> in devulcanisation of rubber products was evaluated and optimised. The efficiency in terms of chemical and morphological changes of the devulcanised rubber products was investigated. The mechanical strength of rubber products after recycling into virgin rubber was analysed.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Ainie Asyikin Ahmad, Faridah Yusof, Ahmad Nazree Abdul Rahim, Khater Sharifa Shahari@Ansari and Anumsima Ahmad Barkat. 2008. Optimization of Conditions for Devulcanization of Rubber Waste by <i>Thiobacillus ferrooxidans</i> . Science, Technology and Social Science National Seminar (STSS 2008), 3-4 Jun 2008, Kuantan, Pahang.
Contact Institution/Entity Address	Universiti Islam Antarabangsa Malaysia (UIAM) Jalan Gombak, 53100 Gombak, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Bioprotein Production from Agricultural Waste and Cheaper Carbon Source: Fulfilling the Hope of Millions
Project Number	02-01-08-SF0031
Project Leader and Team Members	Leader: Parveen Jamal Members: Md Zahangir Alam, Mohameed Ismail Abdul and Hamzah Mohd Salleh
Field of Research	Biotechnology
Project Summary/ Objectives	This project involved the production of bioprotein from agriculture waste and cheaper carbon source. New strains have been selected and suitable substrate was identified for maximum bioprotein production. The optimum media compositions and process factors for maximum production of quality bioprotein have been determined. A process using 5 litres fermentor has been established. This project has also developed a 35L bioreactor and has successfully established a procedure for scaling up the production of bioprotein.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Jamal, P., Alam, M.Z. and Tompong, M.F. 2009. "Optimization of Media Composition for the Production of Bioprotein from Pineapple Skin by Liquid State Bioconversion". International Conference on Chemical & Bio Process Engineering, 12-15 Aug 2009, Sabah. 2. Wahiey Bt. Md Yusoff. 2006. Potential Fungal Strain for Bioprotein Production Using Pineapple Waste. International Conference on Agricultural Wastes, 21-23 Mar 2006, Putrajaya. 3. Parveen Jamal, Md. Zahangir Alam and Nurul Umi Bt. Saleh. 2006. Screening of Potential Strain to Produce Bioprotein from Cheaper Carbon Source. 1st International Conference on Natural Resources Engineering & Technology 2006, 24-25 Jul 2006, Putrajaya. 4. Jamal, P., Alam, M.Z. and Rahman, N.A. 2007. Development of Microbial Process for Bioprotein Production from Pineapple waste. International Conference on Biotechnology Engineering 2007, 8-10 May 2007, Kuala Lumpur. 5. Tompong, M.F., Parveen Jamal and Zahangir Alam, M. 2008. Screening of New Potential Carbon Source for Bioprotein Production. International Conference on Advancement in Science and Technology 2008 (iCAST 08), 13-14 Jun 2008, Kuantan.

Awards/Certificates	<ol style="list-style-type: none"> 1. Malaysia Technology Expo 2009 (MTE) 2009: 1 Bronze Medal 2. Kuliyah (Faculty) of Engineering Research and Innovative Exhibition (KERIE) 2009: 1 Bronze Medal 3. 17th International Invention, Innovation Industrial Design & Technology Exhibition (ITEX) 2008: 1 Bronze Medal 4. International Trade Fair: Ideas-Inventions-New Products, IENA 2007: 1 Gold Medal 5. Malaysia Technology Expo 2007 (MTE) 2007: 1 Bronze Medal 6. Seoul International Invention Fair (SIIF) 2006: 1 Silver Medal 7. Kuliyah (Faculty) of Engineering Research and Innovative Exhibition (KERIE) 2006: 1 Silver Medal
IP Status	Malaysian Patent filed (PI2010006217); Bioprotein Production From Selected Malaysian Agricultural Waste Using Developed Process Conditions and Potential Strain
Contact Institution/Entity Address Phone Number e-Mail	Universiti Islam Antarabangsa Malaysia (UIAM) Jalan Gombak, 53100 Gombak, Selangor. Office: 03-6196 4558 jparveen@iiu.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Production of Citric Acid from Oil Palm Empty Fruit Bunches by Solid State Bioconversion Using Local <i>Aspergillus niger</i>
Project Number	02-01-08-SF0050
Project Leader and Team Members	Leader: Md Zahangir Alam Members: Abdullah-Al-Mamun, Mohameed Ismail Abdul and Parveen Jamal
Field of Research	Biotechnology
Project Summary/ Objectives	A solid state bioconversion (SSB) process was used for the production of citric acid from oil palm empty fruit bunches (EFB) as a renewable resource by employing the filamentous fungi <i>Aspergillus niger</i> isolated from local sources. The project has successfully identified the potential strains for maximum yield of citric acid production as well as established the media composition and conditions for optimum yield. A rotary drum horizontal bioreactor was designed and fabricated for citric acid production by SSB with developed conditions. The operating parameters of the designed bioreactor i.e. mixing and aeration effects has been optimised. These findings will provide an alternative environmental biotechnological approach by SSB for future research in solid waste management through value added products.
Publications/Products/ Outcomes	Journals : <ol style="list-style-type: none"> 1. Md. Niamul Bari, Md. Zahangir Alam, Suleyman A Muyibi, Parveen Jamal, Abdullah-Al-Mamun. 2009. Improvement of production of citric acid from oil palm empty fruit bunches: Optimization of media by statistical experimental designs. <i>Bioresource Technology</i> 100: 3113-3120. 2. Md. Zahangir Alam, Md. Niamul Bari, Suleyman A Muyibi, Parveen Jamal, Abdullah-Al-Mamun. 2010. Solid State Bioconversion of Oil Palm Empty Fruit Bunches for Production of Citric Acid by Wild <i>Aspergillus Niger</i>. <i>Food Biotechnology</i> 24: 19-36. 3. Md. Niamul Bari, Md. Zahangir Alam, Suleyman A Muyibi, Parveen Jamal, Abdullah-Al-Mamun. Statistical optimization of process parameters for the production of citric acid from oil palm empty fruit bunches. <i>African Journal of Biotechnology</i> 9: 554-563.

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

Proceedings/Conferences/Seminars:

1. Md. Zahangir Alam, Md. Niamul Bari, Suleyman A. Muyibi, Parveen Jamal, Abdullah Al-Mamun. 2008. Comparison of Fungal Single and Mixed Cultures for Production of Citric Acid Using Empty Fruit Bunches by Solid State Bioconversion. International Conference on Advancement in Science and Technology 2008. (ICAST 2008), 11-14 Jun 2008, Kuantan.
2. Alam, M.Z., Bari, N.M., Muyibi, S.A., Jamal, P. and Mamun, A.A. 2008. Production of Citric Acid by Local Isolates *Aspergillus niger* through Solid State Bioconversion of Oil Palm Empty Fruit Bunches. 58th Canadian Chemical Engineering Conference, 19-22 Oct 2008, Canada.
3. Md. Niamul Bari, Md. Zahangir Alam, Suleyman A. Muyibi, Parveen Jamal, Abdullah-Al-Mamun, Md. Shah Samiur Rashid. 2008. Effect of Pretreatment on Production of Citric Acid from Oil Palm Empty Fruit Bunches as New Substrate by Wild *Aspergillus niger*. 22st Symposium of Malaysian Chemical Engineers (SOMChE2008) 2-3 Dec 2008, Kuala Lumpur.
4. Md. Niamul Bari, Md. Zahangir Alam, Suleyman A. Muyibi, Parveen Jamal, Abdullah-Al-Mamun. 2008. Statistical optimization of medium constituents for the production of citric acid from empty fruit bunches using response surface methodology. International Conference on Environment 2008 (ICENV2008), 15-17 Dec 2008, Penang.
5. Md. Zahangir Alam, Md. Niamul Bari, Suleyman A. Muyibi, Parveen Jamal and Abdullah-Al-Mamun. 2009. Optimization of process parameters for the production of citric acid from oil palm empty fruit bunches by solid state bioconversion. International Conference on Chemical Engineering 2008 (ICChE2008), 31 Dec 2008-1 Jan 2009, Bangladesh.

Awards/Certificates

1. BioMalaysia 2009: 1 Gold Medal
2. Kulliyah of Engineering Research and Innovative Exhibition (KERIE 2009): 1 Gold Medal
3. Malaysia Technology Expo 2009: 1 Silver Medal
4. PECIPTA 2009: 1 Bronze Medal
5. 19th International Invention, Innovation Industrial Design & Technology Exhibition (ITEX 2008): 1 Bronze Medal



	6. Brussels Eureka: Innova Energy 2007: 1 Silver Medal 7. Kuliyah of Engineering Research and Innovative Exhibition (KERIE 2007): 1 Bronze Medal
IP Status	Malaysia Patent filed (PI 20094849): Method for producing citric acid from oil palm empty fruit bunches using <i>Aspergillus niger</i>
Contact Institution/Entity Address Phone Number e-Mail	Universiti Islam Antarabangsa Malaysia (UIAM) Jalan Gombak, 53100 Gombak, Selangor. Office: 03-6196 4571 / 4440 H/p: 010-364 9040 zahangir@iium.edu.my / zahangir@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Enzymatic Reaction of Betulinic Acid with Acid Chloride: Synthesis of Anti-Cancer Compound
Project Number	02-01-01-SF0048
Project Leader and Team Members	Leader: Yamin Yasin Member: Faujan H Ahmad
Field of Research	Biotechnology
Project Summary/ Objectives	This project studied the synthesis of anti-cancer compound using enzymatic reaction of betulinic acid with acid chloride. The study has successfully developed two processes to synthesise two betulinic acid derivatives using enzyme as catalyst. The optimization for synthesis of both compounds using conventional method with different reaction parameters and response surface methodology was established. The biological activity of one of the compounds formed from the reaction between betulinic acid and benzoyl chloride has also been studied.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Yamin Yasin, 2008. Response surface methodology as a tool to study the lipase-catalyzed synthesis of betulinic acid ester. Journal of chemical technology & Biotechnology 83: 694-698. 2. Yamin Yasin. 2010. Cytotoxic activity of betulinic acid derivatives synthesized using enzyme. Journal of Chemistry and Chemical Engineering 4: 17-23. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Yamin Yasin. 2008. Optimization of the enzyme-catalyzed synthesis of betulinic acid derivatives and their biological activities. 14th International Congress on Catalysis, 13-18 Jul 2008, Seoul, South Korea.
Contact Institution/Entity Address	Universiti Teknologi Mara (UiTM) Institut Pengurusan Penyelidikan (RMI), Universiti Teknologi Mara, 40150 Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Natural Dyes from Waste Plants
Project Number	02-01-01-SF0060
Project Leader and Team Members	Leader: Wan Yunus Wan Ahmad Members: Rosmawati Abdul Halim, Jamil Salleh, Siti Marsinah Tumin, Ong Keat Khim, Siti Salwa Jamaldin, Rohaya Ahmad, Habibah Abdul Jabbar, Norashikin Saim, Mohd Rozi Ahmad, Muhammad Ismail Ab Kadir and Mohd Azlin Mohd Nor
Field of Research	Biotechnology
Project Summary/ Objectives	This project utilises waste plants for the production of natural dyes in liquid and powder form to be used on textile products.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Wan Ahmad, W.Y., Mohd Nor, M.A., Ab Kadir, M.I. and Ahmad, M.R. 2010. Nano Natural Dyes. International Conference on the Advancement of Materials and Nanotechnology II (ICAMN II 2010). 29 Nov-1 Dec 2010. Kuala Lumpur. 2. Wan Yunus Wan Ahmad, Norashikin Saim, Mohd Azlin Mohd Nor, Muhammad Ismail Ab Kadir and Mohd Rozi Ahmad. 2009. Extraction of Natural Dyes from Melastoma Malabathricum L. and Dicranopteris Plants. Regional Academic Conference 2009 (REGCON 2009). 16-17 Dec 2009. Penang.
Awards/Certificates	1. Invention, Innovation and Design 2010 :1 Silver Medal 2. Biolnno Awards 2010: 1 Bronze Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	New Nanotechnological Application: Wet-grinding as a Process to Produce Nanodrugs and Improve Drug Bioavailability
Project Number	02-01-01-SF0067
Project Leader and Team Members	Leader: Abu Bakar Abdul Majeed Members: Ngah Ramzi Hamzah and Munawwar Zubaid
Field of Research	Biotechnology
Project Summary/ Objectives	This project was carried out to study the wet-grinding process production of nanodrugs and improvement of drug bioavailability for nanotechnological applications. Through this project the improved biopharmaceutical properties of poor-water soluble compounds have been identified. It has also successfully produced nanodrugs from poorly-water soluble compounds and the best operating conditions for the production of nanodrugs by means of wet-grinding using a Nanomill. In vitro studies for characterisation and in vivo studies using rats as selected animal models to test the oral bioavailability of the resulting nanodrugs were also conducted.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	The Development of Non-destructive Testing Techniques Transdermal Drug Delivery System Characterisation
Project Number	02-01-01-SF0070
Project Leader and Team Members	Leader: Mohd Nasir Taib Member: Wong Tin Wui
Field of Research	Biotechnology
Project Summary/ Objectives	The objectives of the project was to design, set-up and apply Non-destructive Testing (NDT) techniques in the characterisation of films intended for Transdermal Drug Delivery system.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Normaizira Hamidi, Mohd Nasir Taib and Wong Tin Wui. 2008. Analysis of nifedipine content in transdermal drug delivery system using non-destructive visible spectrophotometry technique. The Malaysian Journal of Analytical Sciences 12: 348 – 351. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nor Khaizan Anuar, Mohd Nasir Taib, Wong Tin Wui and Deepak K. Ghodgaonkar. 2008. Characterization of pharmaceutical film using microwave non-destructive testing technique 4th international colloquium on signal processing and its application, 7-9 Mac 2008, Kuala Lumpur. 2. Aznida Alias, Mohd Nasir Taib, Wong Tin Wui, Noor Khaizan Anuar and Nooritawati Md Tahir. 2009. Predicting drug contents of hydroxypropylmethylcellulose films using artificial neural network. 5th International Colloquium on Signal Processing & Its Applications (CSPA), 6-8 Mac 2009, Kuala Lumpur.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Mara (UiTM) Institut Pengurusan Penyelidikan (RMI), Universiti Teknologi Mara, 40150 Shah Alam, Selangor. Office: 03-5543 5027 dr.nasir@ieee.org

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	The Development of Feather and Eggshell Composites as Potential New Cost Effective and Energy Efficient Material
Project Number	02-01-01-SF0086
Project Leader and Team Members	Leader: Mohd Hanafiah Abidin Members: Samirah Abdul Rahman, Sha'ari Abdullah, Azni, Yakub Md. Taib and Ahmad Zafir Romli
Field of Research	Biological Sciences
Project Summary/ Objectives	Chicken feather and eggshells composites are new potential cost effective and energy efficient materials. This project has successfully characterised the mechanical properties of these two composites which includes the tensile strength, 3-point bending strength (elasticity), drop weight impact response and water absorption property, as well as the thermal properties such as the k-value and actual performance of the composites. The potential energy efficient composite material has also been developed by carrying out various studies right from the starting of receiving the raw bio-waste. The studies include optimisation of output with minimised cleaning stage, sample fabrication with minimum power consumption and finally, development of the end product with the ability as thermal insulation material and capable to be modified for semi-structural applications.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Ahmad Zafir Romli, Mohd Hanafiah Abidin and Hazizan Md. Akil. 2008. Moisture Absorption/ Desorption Characteristic of Chicken Feather to be used as Filler in Epoxy Matrix, Conference on Scientific & Social Research, 14-15 Mac 2009, Melaka. 2. Mohd Hariz Kamarudin, Ahmad Zafir Romli and Mohd Hanafiah Abidin. 2008. The Effect of Chicken Eggshell Particulates on Water Absorption Behavior and Density of Unsaturated Polyester. Conference on Scientific & Social Research, 14-15 Mac 2009, Melaka. 3. Rassimi Abdul Ghani, Mohd Hanafiah Abidin and Ahmad Zafir Romli. 2008. The Performance of Chicken Eggshells as Particulate Filler in Epoxy. Conference on Scientific & Social Research, 14-15 Mac 2009, Melaka. 4. Ahmad Zafir Romli, Mohd Hanafiah Abidin and Hazizan Md Akil. 2007. The Compatibility of using Keratin Fibre from Chicken Feather as Filler for Polymers Based on the Mechanical Test. National Symposium on Polymeric Materials, 27-28 Nov 2007, Kuala Lumpur.



	5. Ahmad Zafir Romli, Mohd Hanafiah Abidin and Hazizan Md Akil. 2009. The Tensile Behavior of Epoxy/ Feather Bio-Composites. Malaysia Polymer International Conference, 21-22 Oct 2009, Putrajaya.
Contact Institution/Entity Address	Universiti Teknologi Mara (UiTM) Institut Pengurusan Penyelidikan (RMI), Universiti Teknologi Mara, 40150 Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Assessment of Local Endophytes as Producers of Antimicrobial Substances
Project Number	02-01-01-SF0101
Project Leader and Team Members	Leader: Ernie Eileen Rizlan Ross Member: Ishak Zubir
Field of Research	Biotechnology
Project Summary/ Objectives	The project aimed to isolate endophytic bacteria and fungi from the local medicinal, agricultural and commodity plants which exhibit antimicrobial properties. The antimicrobial capabilities of these endophytes in inhibiting plant as well as animal pathogens was assessed. The morphological and biochemical studies of the potential endophytes were carried out. Molecular analysis was also performed to identify the strains through 16S rDNA sequencing and construction of gene library.
Contact Institution/Entity Address	Universiti Teknologi Mara (UiTM) Institut Pengurusan Penyelidikan (RMI), Universiti Teknologi Mara, 40150 Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Assessment of Marine Microorganisms with Potentiality in Industrial Processes
Project Number	02-01-01-SF0102
Project Leader and Team Members	Leader: Ernie Eileen Rizlan Ross Members: Wan Razarinah and Rafidah Rasol
Field of Research	Agricultural Sciences
Project Summary/ Objectives	Project objectives were to screen for microorganisms capable of producing antimicrobial substances, and also those capable of oil bioremediation, producing industrially important enzymes and sun screen.
Contact Institution/Entity Address	UiTM Universiti Teknologi MARA Institut Pengurusan Penyelidikan (RMI) Universiti Teknologi Mara, 40450 Shah Alam, Selangor.
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e-Mail	ernie974@salam.uitm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	An Anticholinesterase Agent from Malaysia Lycopodiaceae
Project Number	02-01-01-SF0105
Project Leader and Team Members	Leader: Choo Chee Yan Member: Abdul Latiff Mohamad
Field of Research	Biological Sciences
Project Summary/ Objectives	Inventory and voucher specimens of Lycopodiaceae species found in Peninsular Malaysia are kept at UKM Herbarium. One new species <i>H.cf.piniifolia</i> was found. Lycopodiella and Lycopodium genus does not contain Huperzine A (the main anticholinesterase agent). Huperzia phlegmaria (common species) and <i>H. carinata</i> (rare species) yielded high huperzine A and anticholinesterase activity. Both the species yielded huperzine A higher than <i>H. serrata</i> (the traditional Chinese herb where huperzine A was first isolated). Since huperzine A has completed its Phase II clinical trial and awaiting phase III clinical trial in the USA, demand for huperzine as pure drug will increase among Alzheimer's patients. Though the synthesis of huperzine A has been reported, the price of the drug may still be high. Thus, repackaging and selling as preventive or complementary medicine will still be viable.
Publications/Products/ Outcomes	Journals: 1. Razali Jaman and A. Latiff. 2007. Pteridophyte diversity of Taman Rimba Kenong, In: Azahar Mude et al. (Eds) Taman Rimba Kenong, Pahang: Pengurusan, persekitaran fizikal dan kepelbagaian biologi. Siri Kepelbagaian Biologi Hutan 8: 96-101. 2. Choo, C. Y., Hazrina H, NorShahidah S, Latiff, A. and Razali J. 2009. Distribution of Huperzine A in Malaysia Lycopodiaceae, <i>Planta Med</i> 75 : 1075.
Contact Institution/Entity Address	Universiti Teknologi Mara (UiTM) Faculty of Pharmacy, Universiti Teknologi MARA, Puncak Alam Campus, 42300 Bandar Puncak Alam Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Novel Application of Centella asiatica Extract for Regeneration of the Human Periodontal Ligament Fibroblasts
Project Number	02-01-01-SF0109
Project Leader and Team Members	Leader: Mohamed Ibrahim Abu Hassan Member: Rohana Ahmad, Abu Bakar Abdul Majeed, Khor Goot Heah, Luay Thanoon Younis and Hasnah Begum
Field of Research	Biotechnology
Project Summary/ Objectives	Project objectives were to identify the bioactive component(s) in Centella asiatica extracts by using LC-MS and determine also evaluate the action of the extract of Centella asiatica in enhancing the regeneration of the human periodontal fibroblasts which produce the fibers anchoring the teeth to the bony socket. This can yield highly beneficial clinical applications for repairing and/or regenerating periodontal tissues around the teeth and aid in preventing the mobility and loss of teeth due to the gingival (gum) problems.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Probiotic Fermented Milk as a Dietary Antioxidant Source and Antiproliferative Agent
Project Number	02-01-01-SF0123
Project Leader and Team Members	Leader: Kalavathy Ramasamy Members: Lim Siong Meng and Aishah Adam
Field of Research	Biological Sciences
Project Summary/ Objectives	A probiotic (known as “Profermax”) was developed. This is a unique formulation of friendly gut flora isolated from local fermented food products. These multistrain probiotic, identified through genetic analysis contains carefully selected acid and bile tolerant probiotic cultures that are able to survive the harsh environment of the gut and reach the intestines alive. The probiotic cultures are able to remain attached to the intestinal epithelial cells for sufficient time and at the same time eliminate pathogens by producing antagonistic organic acids that improve the intestinal microbial balance, promoting intestinal health. Profermax™ is supported by in vitro and animal studies documenting its safety. Laboratory findings of Profermax™ showed additional therapeutic properties making it a good anticancer and antioxidant agent. The anticancer effect was demonstrated by the inhibition of colorectal cancer cell lines whereas the antioxidative effect was evident through its potent DPPH radical scavenging and ferrous chelating activities. Further comparison of Profermax™ with a commercial probiotic strain yielded better results. Profermax™ is highly marketable because of the increasing global health awareness, resulting in the demand for new functional food ingredients with health claims. Profermax™ can therefore be safely incorporated into food for a healthier you in a more cost effective manner.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Ramasamy, Kalavathy, Siong Meng, Lim, Abdullah, Abdul Rahman, Nor Zaihana Chin Chin, Sieo, Norhani, Abdullah and Yin Wan, Ho. 2008. Cytotoxicity and Cholesterol-reducing Ability of Lactic Acid Bacteria (LAB). Symposium on Diet, Nutrition and Immunity, 16-17 April 2008, Singapore.



	<ol style="list-style-type: none"> 2. Abdul Rahman, N. Z., Kalavathy, R., Sieo, C. C., Abdullah, N. and Y. W. Ho. 2007. Effect of lactic acid bacteria on cancer and normal cell proliferation. 2nd International Conference on East-West Perspectives on Functional Foods, 5-7 Nov 2007, Kuala Lumpur. 3. Kalavathy, R., Fakri, E. F., Lim, S. M., Mizaton, H. H. and Adam, A. 2009. Antioxidant Properties of Soymilk Fermented with <i>Pediococcus pentosaceus</i> and Contribution of Phenolic Compounds to the Antioxidant Capacity. Symposium on Plant Polyphenols: Nutrition, Health and Innovations, 22-23th Jun 2009, Singapore. 4. Lim, S.M., Ramasamy, K., Abdul Rahman, N.Z., Sieo, C.C., Abdullah, N. and Ho, Y.W. 2008. Cytotoxic selectivity and antimicrobial activity of lactic acid bacteria (LAB). Symposium on Diet, Nutrition and Immunity, 16-17 Apr 2008, Singapore. 5. Ramasamy, K., Lim, S.M., Abdullah, N., Abdul Rahman, N.Z., Sieo, C.C., Abdullah, N. and Ho, Y.W. 2008. Cytotoxicity and cholesterol-reducing ability of lactic acid bacteria (LAB). Symposium on Diet, Nutrition and Immunity, 16-17 Apr 2008, Singapore, 6. Fakri, E. F., Kalavathy, R., Lim, S. M., Mizaton, H. H. and Adam, A. 2009. Correlation between the polyphenol content and the antioxidant activity of soymilk fermented with <i>Lactobacillus plantarum</i> strain L5. Symposium on Plant Polyphenols: Nutrition, Health and Innovations, 22-23 Jun 2009, Kuala Lumpur. 7. Fakri, E. F., Kalavathy, R., Lim, S. M., Mizaton, H. H. and Adam, A. 2009. DPPH free radical-scavenging ability of soymilk fermented with <i>Lactobacillus casei</i> strain Shirota. Chemoprevention and Translational Research" (SFRR), 9-12 Jul 2009, Langkawi.
Awards/Certificates	<ol style="list-style-type: none"> 1. "Profermex" at the Invention, Innovation and Design, UiTM 2010: 1 Gold Medal.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Mara (UiTM) Universiti Teknologi MARA Institut Pengurusan Penyelidikan (RMI) Universiti Teknologi Mara, 40450 Shah Alam, Selangor. Office: 03-5544 2787 H/p: 012-699 4755 kalav922@salam.uitm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification and Purification of Specific Antigenic Protein of Haemophilus influenzae type B
Project Number	02-01-01-SF0141
Project Leader and Team Members	Leader: Zaini Mohd Zain Members: Ramlan Mohamed, Mohammad Nazmul and Hasan Maziz
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The protein specific for the Haemophilus influenzae type b has been identified and was successfully purified. This protein could be a potential candidate as antigen for the development of ELISA-based assays for detection of antibodies against H. influenzae type B.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Nurul Ashikin Mohamed Rawi and Zaini Mohd Zain 2010. Isolation of Haemophilus influenzae type b capsular polysaccharide using ultrafiltration membrane. Proceedings of the 2010 National Postgraduate Seminar (NAPAS 10'), 6-7 Jul 2010, Shah Alam. 2. Nurul Ashikin Mohamed Rawi and Zaini Mohd Zain 2010. Comparison of two capsular polysaccharide proteins for development of Haemophilus influenzae type B ELISA. 5th International Peptide Symposium, 4-9 Dec 2010, Kyoto, Japan.
Contact Institution/Entity Address	Universiti Teknologi MARA (UiTM) Universiti Teknologi MARA Institut Pengurusan Penyelidikan (RMI) Universiti Teknologi MARA, 40450 Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Rapid Mutational Screening and Characterisation of Low Density Lipoprotein Receptor and Apolipoprotein B100 Gene Mutations in Patients with Familial Hypercholesterolaemia in Malaysia
Project Number	02-01-01-SF0149
Project Leader and Team Members	Leader: Hapizah Mohd Nawawi Members: Marymol Koshy, Ambigga Devi d/o S.Krishn, Hamed Oemar, Mohd Shah Mahmood, Mansharan Kaur, Tengku Saifudin, Mohamed Saifulaman Mohamed and Gabriele Anisah Froemming
Field of Research	Agricultural Sciences
Project Summary/ Objectives	This project evaluated different diagnostic criteria for FH identification in predicting mutation status. A rapid mutational screening technique for low density lipoprotein receptor (LDLR) gene among patients with FH in Malaysia and their family Members also be developed and the gene mutations and genetic polymorphisms in the LDLR gene among patients with FH compared to ethnic-match healthy controls also be characterised.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Rafezah Razali, Nur Suhana Hamzan, Suhaila Muid, Tuhairah Hasrah Rahman, Anis Safura Ramli, Ambigga Devi, Tengku Saifudin Tengku Ismail, Hapizah Nawawi. 2009. Characterisation of low density lipoprotein receptor gene mutation in patients with familial hypercholesterolemia. Third Australian Atherosclerosis Society (AAS), 13-16 Oct 2009, Melbourne, Australia. 2. Rafezah Razali, Suhaila Muid, Gabriele Anisah Froemming, Hapizah Nawawi. 2008. Low density lipoprotein receptor gene mutation in patients with familial hypercholesterolemia. Research Workshop Faculty of Medicine, 24-25 Jul 2008, Shah Alam.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Antitumour Effect of Synthetic Stilbenes Against Breast, Lung and Colon Cancer Cell Lines
Project Number	02-01-01-SF0158
Project Leader and Team Members	Leader: Ibtisam Abdul Wahab Members: Kalavathy Ramasamy and Lim Siong Meng
Field of Research	Agricultural Sciences
Project Summary/ Objectives	The potential of synthetic stilbenoid compounds as antitumour agents against breast, lung and colon cancer cell lines was determined.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Jalani, K.J., Md Nasir, M.F., Buniyamin, I. Abdul Wahab, I., Ramasamy, K., Siong Meng, L. and Weber, J.F.F. 2009. Microwave-assisted synthesis of stilbenes and their anticancer activity. Conference on Scientific & Social Research (CSSR08'09), 14- 15 March 2009, Melaka. 2. Jalani, K.J., Buniyamin, Abdul Wahab, I., Siong Meng, L., Ramasamy, K. and Weber, J.F.F. 2009. Selectivity of synthetic stilbenes against human breast cancer cell lines. 23rd Scientific Meeting of the Malaysian Society of Pharmacology & Physiology (MSPP), 12-13 May 2009, Kuala Lumpur. 3. Jalani, K., Buniyamin, I., Ramasamy, K., Lim, S. M., Abdul Wahab, I. and Weber, J. F. F. 2009. Anticancer activity of the synthetic 3,5-dimethoxy-12-acetoxystilbene against human breast cancer cell line. National Symposium in Organic Synthesis 2009 (NaSOS), 14-15 Jun 2009, Kuala Trengganu. 4. Jalani, K., Buniyamin, I., Abdul Wahab, I., Ramasamy, K., Siong Meng, L. and Weber, J.F.F. 2009. The screening of unnatural stilbenes against human breast cancer cell lines. The 1st Annual Health Conference, Faculty of Medicine & Health Sciences, USIM, 20-21 Nov 2009, Kuala Lumpur. 5. Jalani, K.J., Md Nasir, M.F., Buniyamin, I. Abdul Wahab, I., Ramasamy, K., Siong Meng, L. and Weber, J.F.F. 2009. Acetylation of benzaldehydes. Proceedings of the 17th Islamic Academy of Sciences (IAS) Conference 2009, 14-17 Dec 2009, Shah Alam.



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Assessment of Volumetric Changes in Alveolar Ridge Profile under and in Opposition to Implant-Retained Dentures
Project Number	02-01-01-SF0170
Project Leader and Team Members	Leader: Rohana Ahmad Members: Sharifah Tahirah, Norhasnida Nordin, Norsiah Yunus and Mohamed Ibrahim Abu Hassan
Field of Research	Biotechnology
Project Summary/ Objectives	This project evaluated volumetric and density changes of the posterior mandibular bone when restored with implant-retained complete overdentures opposing maxillary complete dentures. Bone volume and density changes were assessed using CBCT and Mimics program after a treatment period of 12 months.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. R. Ahmad, M.I. Abu-Hassan, Q. Li and M.V. Swain. 2010. Quantifying mandibular bone remodelling underneath implant-retained overdenture. International Association of Dental Research (IADR) Meeting, ANZ Division, 26-29 September. Sydney, Australia. 2. R. Ahmad, M.I. Abu-Hassan, Q. Li and M.V. Swain. 2010. In-vivo Method of Measuring Bone Loss CBCT and Mimics. 88th IADR Meeting, 14-17 July, Barcelona, Spain.
Awards/Certificates	1. 7th. Invention, Innovation and Design (IID) 2010, Universiti Teknologi MARA: 1 Bronze medal
Additional Information	Linkages: With the School of Mechanical Engineering, Sydney.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Inhibitory Effects of Xanthone Derivatives from Selected Garcinia Species on Low-Density Lipoprotein Peroxidation and Platelet-Mediated Thrombosis
Project Number	02-01-02-SF0012
Project Leader and Team Members	Leader: Ibrahim Jantan Members: Jamia Azdina Jamal, Khozirah Shaari and Juriyati Jalil
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	<p>This project aimed to study the inhibitory effect of xanthone derivatives from selected Garcinia species on low-density lipoprotein peroxidation and platelet-mediated thrombosis. Xanthone derivatives were isolated and identified prior to determining the effects on low-density lipoprotein oxidation. The action mechanism of these derivatives with respect to platelet-mediated antithrombotic effects were evaluated before identifying the lead structures with protective effects on cardiovascular disease via structure-activity analysis. Through this project, several compounds with significant inhibitory effects against platelet aggregation and low density lipoprotein peroxidation have been isolated from Garcinia species. The mechanisms of antiplatelet aggregation of the compounds have also been determined besides identifying the structures of the compounds and establishing the structure-activity relationships. Scaling up production of this cardioprotection herbal product will be carried out and a negotiation is in progress with Natural Wellness Sdn. Bhd.</p>
Publications/Products/ Outcomes	<p>Journals :</p> <ol style="list-style-type: none">1. Ibrahim J., Yusyla-Harlina M.Y., Juriyati J., Shahnaz M., Muhammad-Sum I. 2009. Antiplatelet aggregation activity of compounds isolated from Guttiferae species in human whole blood. <i>Pharmaceutical Biology</i> 47:1090-1095.2. Ibrahim J., Yusyla-Harlina M.Y., Shajarahtunnur J., Hasnah S., Norazah B. 2010. Effect of prenylated flavonoids and chalcones isolated from Artocarpus species on platelet aggregation in human whole blood. <i>Journal of Natural Medicines</i> 4: 365-369.

	<ol style="list-style-type: none"> 3. Bushra Abdulkarim Moharam, Ibrahim J., Fasihuddin A. 2010. Antiplatelet aggregation and Platelet Activating Factor (PAF) receptor antagonistic activities of the essential oils of five Goniothalamus species. <i>Molecules</i> 15: 5124-5138. 4. Bushra Abdulkarim Moharam, Ibrahim J., Juriyati J. and Khozirah S. 2010. Inhibitory effects of phylligenin and quebrachitol isolated from <i>Mitrephora vulpina</i> on PAF receptor binding and platelet aggregation. <i>Molecules</i> 15: 7840-7848.
Awards/Certificates	<ol style="list-style-type: none"> 1. MEDSU Medical Faculty Srinakharinwirot University) Honorable Award, Thailand 2010.
Additional Information	Linkages: Liverpool John Moore University; Natural Wellness Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Anti-Inflammatory and Oestrogenic Effects of Resorcinol Derivatives from <i>Labisia pumila</i> var. <i>alata</i> (Myrsinaceae)
Project Number	02-01-02-SF0015
Project Leader and Team Members	Leader: Jamia Azdina Jamal Members: Ibrahim Jantan, Juriyati J., Johnson S. and Khozirah S.
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	<p>Previous studies on <i>Labisia pumila</i> var. <i>alata</i> (Fam: Myrsinaceae) revealed that the ethanol extract showed weak oestrogenic effect on yeast cells carrying recombinant human oestrogen receptor (hER) gene and human endometrial cancer (Ishikawa) cells in vitro. The methanol extract of <i>L. pumila</i> (200 mg/mL) was also found to inhibit platelet-activating factor (PAF) receptor binding (58%) as compared to pinolide (85% inhibitor; IC_{50} 2.56 x 10⁻⁷ M). Thus, the study was aimed to investigate the oestrogenic and anti-inflammatory properties of crude water extracts and fractions of hexane, dichloromethane and methanol of the purple-leafed and green-leafed <i>Labisia pumila</i> var. <i>alata</i>. These extracts and fractions were subjected to MCF7 cell proliferative and PAF receptor binding inhibitor assays to determine oestrogenicity and PAF receptor binding inhibition respectively. In the MCF7 cell proliferative assay, only the aqueous extracts of purple-leafed <i>L. pumila</i> var. <i>alata</i> leaves (10⁻¹⁰ g/mL; 128.7±6.3% and 10⁻⁸ g/mL; 131.0±2.9%) were found to significantly (ANOVA, $p < 0.05$) modulate proliferation of MCF7 cells as compared to 17β-estradiol (137.1±1.2%). On the other hand, the aqueous extracts of green-leafed <i>L. pumila</i> var. <i>alata</i> leaves (IC_{50} 4.79±3.33 μg/mL) showed the most significant (ANOVA, $p < 0.05$) PAF receptor binding inhibitory effects based on cedrol (18.2 μg/mL; 3.33±1.92 μg/mL), followed by dichloromethane fraction of <i>L. pumila</i> var. <i>alata</i> (green-leafed) leaves (4.97±1.56 μg/mL) and <i>L. pumila</i> var. <i>alata</i> (purple-leafed) root extract (5.32±2.32 μg/mL), leaf hexane fraction (5.44±1.84 μg/mL) and root dichloromethane fraction (5.80±3.96 μg/mL). However, the organic fractions of <i>L. pumila</i> var. <i>alata</i> (purple-leafed and green-leafed) were not active in modulating MCF7 cell proliferation and only some fractions had moderate PAF receptor binding inhibitory effects.</p>

Publications/Products/ Outcomes

Proceedings/Conferences / Seminars:

1. Jamia Azdina Jamal. (2010). Integrative Approach to the Development of Malaysian Herbal Standards and Monographs. International Conference On Natural Products, 10-12 Dec, Pulau Pinang.
2. Jamia Azdina Jamal. 2010. Pharmacognostical Evaluation of Malaysian *Labisia pumila* (Blume) Mez var. *alata* (Myrsinaceae). 1st UKM-MU Joint Scientific Conference, 13 Oct, Bangi.
3. Noorlela Ramli, Juriyati Jalil, Ibrahim Jantan, Shahnaz Murad & Jamia Azdina Jamal. 2010. Anti-inflammatory and oestrogenic effects of extracts from selected species of Myrsinaceae. 1st UKM-MU Joint Scientific Conference, 12-13 Oct, Bangi.
4. Jamia Azdina Jamal, Noorlela Ramli, Johnson Stanslas, Juriyati Jalil, Ibrahim Jantan, Shahnaz Murad, Hazni Falina Mohamad & Khairana Husain. 2010. Oestrogenic and platelet-activating factor receptor binding inhibitory effects of selected Malaysian Myrsinaceae species. National Biotechnology Seminar, 24-26 May, Kuala Lumpur.
5. Noorlela Ramli, Johnson Stanslas & Jamia Azdina Jamal. 2009. Estrogenic effect of *Labisia pumila* var. *alata* extracts in vitro. 23rd Malaysian Society of Pharmacology & Physiology Scientific Meeting, 12-13 May, Kuala Lumpur.

Books:

1. Noorlela Ramli, Jamia Azdina Jamal, Juriyati Jalil, Ibrahim Jantan, Shahnaz Murad, Noraziah Nordin, Nor Diana Shaari and Hazni Falina Mohamad. (2008). Platelet-activating factor (PAF) inhibiton effect of *Labisia pumila* var. *alata* extract. (pp. 87-89) In Sumbangan Sains Kesihatan Ke Arah Kesejahteraan Sejagat : Fakulti Sains Kesihatan Bersekutu.

Awards/Certificates

1. 1st UKM-MU Joint Scientific Conference, 2010: Best Poster Award (Pharmacology Category)

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Anti-Inflammatory Effects of Flavonoid Derivatives from Annonaceae Species on the Biosynthesis of Thromboxane B2 (TXB2) and Prostaglandin E2 (PGE2) in Plasma
Project Number	02-01-02-SF0016
Project Leader and Team Members	Leader: Juriyati Jalil Members: Jalifah Latip, Rasadah Mat Ali, Shahnaz Murad, Jamia Azdina Jamal and Ibrahim Jantan
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This project aimed to study the anti-inflammatory effects of flavonoid derivatives from Annonaceae species on the biosynthesis of thromboxane B2 (TXB2) and prostaglandin E2 (PGE2) in plasma. The flavonoid derivatives were isolated from Annonaceae species and identified via bioassay-guided isolation using chromatographic and spectroscopic techniques. This project had successfully isolated and identified several compounds. The inhibitory effects of the isolates and other types of compounds including alkaloids, stilbenes as well as triterpenes, on the biosynthesis of thromboxane B2 and prostaglandin E2 have been studied and some, identified. Besides, the 50% inhibition concentration (IC50) of the bioactive compounds have been determined. Lead structures with anti-inflammatory activity have also been identified by structure-activity relationship (SAR) study.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Expression of Replicative Senescence-Associated Genes in Human Dermal Fibroblasts Treated with Gamma-Tocotrienol
Project Number	02-01-02-SF0027
Project Leader and Team Members	Leader: Suzana Makpol Members: Yasmin Anum Mohd Yusof, Chua Kien Hui and Wan Zurinah Wan Ngah
Field of Research	Biotechnology
Project Summary/ Objectives	<p>This project was carried out to study the expression of replicative senescence-associated genes in human dermal fibroblasts treated with gamma-tocotrienol. To achieve this, the baseline changes at senescence were determined by examining cell morphological changes, determining cell growth rate, determining senescent-associated beta-galactosidase (SA-B-gal) activity and senescent associated pERK (SA-pERK); and determining the expression of cell cycle regulatory proteins, extracellular matrix and inflammatory proteins. Besides the novel senescent-specific genes was explored by oligonucleotide or cDNA microarray. The induction or repression of replicative senescence-associated genes were further investigated. Apart from that, the molecular mechanism of gamma-tocotrienol in preventing cellular aging was elucidated by determining cell growth rate, measuring PD times and cell cycle profiles, determining SA-B-gal activity and SA-pERK, determining the expression of cell cycle regulatory proteins, extracellular matrix and Inflammatory proteins; determining the expression of senescence-associated genes; and validating the induction or repression of replicative senescence-associated genes with gamma-tocotrienol treatment. The findings from this study elucidate the molecular mechanism of gamma-tocotrienol in preventing cellular aging. Gamma-tocotrienol was found to affect the expression of senescence-associated genes and cell cycle regulation, therefore this new findings will boost the prospect for commercialisation of gamma-tocotrienol as an anti aging compound that can also prevent degenerative diseases.</p>
Publications/Products/ Outcomes	Journals : 1. Azalina Zainuddin, Kien Hui Chua, Norhazira Abdul Rahim, Suzana Makpol. 2010. Effects of experimental treatment on GAPDH mRNA expression as a housekeeping gene in human diploid fibroblasts. BMC Molecular Biology 11: 59.



	<ol style="list-style-type: none"> 2. Suzana Makpol, Azalina Zainuddin, Norhazira Abdul Rahim, Yasmin Anum Mohd Yusof, Wan Zurinah Wan Ngah. 2010. Alpha-tocopherol modulates hydrogen peroxide-induced DNA damage and telomere shortening of human skin fibroblasts derived from differently aged individuals. <i>Planta Medica</i> 76: 869-875. 3. Suzana Makpol, Nadia Yaacob, Azalina Zainuddin, Yasmin Anum Mohd Yusof, Wan Zurinah Wan Ngah. 2009. <i>Chlorella vulgaris</i> modulates hydrogen peroxide-induced DNA damage and telomere shortening of human fibroblasts derived from different aged individuals. <i>African Journal of Traditional, Complementary and Alternative Medicines</i> 6: 560-572. <p>Proceedings/Conferences/Seminar :</p> <ol style="list-style-type: none"> 1. Azalina Zainuddin, Chua Kien Hui, Wan Zurinah Wan Ngah, Suzana Makpol. 2010. Analysis of differentially expressed genes in cellular ageing of human diploid fibroblasts. 6th Malaysia, Indonesia, Brunei Medical Sciences Conference, 21-23 July. Bandar Seri Begawan, Brunei Darussalam. 2. Azalina Zainuddin, Chua Kien Hui, Yasmin Anum Mohd Yusof, Gapor Md. Top, Wan Zurinah Wan Ngah, Suzana Makpol. 2009. Modulation of senescence-associated genes expression by α-tocotrienol in cellular ageing. 34th Annual Conference of Malaysian Society for Biochemistry and Molecular Biology & 3rd Asian Biochemistry Conference, 7-8 Oct, Kuala Lumpur. 3. Azalina Zainuddin, Suzana Makpol, Chua Kien Hui, Yasmin Anum Mohd Yusof, Gapor Md. Top, Wan Zurinah Wan Ngah. 2009. Modulation of extracellular matrix genes expression by α-tocotrienol in cellular ageing. 7th COSTAM/SFRR (Asia/ Malaysia) International Workshop 2009 and 4th Biennial Meeting of SFRR Asia, 9-12 Jul, Langkawi.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Comparative Genomics for Conservation and Improvement of Nephelium and Citrus Species
Project Number	02-01-02-SF0063
Project Leader and Team Members	Leader: Mahani Mansor Clyde Members: Johari Sarip, Choong Chee Yen, Normah Mohd. Noor, Narimah Md Kairudin and Salma Idris
Field of Research	Biotechnology
Project Summary/ Objectives	This project was carried out for conservation and improvement of Nephelium and Citrus species through comparative genomics. The genome size of selected Nephelium and Citrus species and the chromosome number of Nephelium lappaceum (rambutan) and Nephelium ramboutan-ake (pulasan) were determined. Genetic diversity of rambutan and pulasan in the germplasm collections maintained by MARDI was investigated using RAPD, ISSR and SSR techniques and the estimation of genetic diversity in these species were obtained. For Citrus, genetic diversity was studied in C. suhuiensis (limau madu) and Fortunella polyandra. Genetic relatedness of accessions was examined based on the calculated genetic distances. The phylogenetic relationships of Nephelium species were studied using chloroplast and nuclear DNA sequences. Cryopreservation and regeneration protocols were optimised for Citrus species and N. lappaceum.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	The Clinical Value of Human Mamaglobin (hMAM) in Breast Cancer
Project Number	02-01-02-SF0122
Project Leader and Team Members	Leader: Ismarulyusda Ishak Members: Nurismah Md Isa, Khairul Osman, Noordin Yunus, Fawwaz Shakir Al-Joudi, Farida Zuraina, Siti Fatimah Ibrahim and Wan Zurinah Wan Ngah
Field of Research	Biotechnology
Project Summary/ Objectives	This study was carried out to determine the clinical value of human mamaglobin (hMAM) in breast cancer. This was achieved by studying the correlation between hMAM marker and clinicopathological findings. The quantitated hMAM was also correlated against clinical evaluation.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminar : <ol style="list-style-type: none"> 1. Ismarulyusda I, Norhazilah M, Al-Joudi FS, Fahmi AK & Nurismah MI. 2008. The correlations of the socio-demographic factors of breast cancer with cancer grading in Hospital Universiti Kebangsaan Malaysia. Symposium Sains Kesihatan Kebangsaan Ke 7, 17-19 Jun, Kuala Lumpur. 2. Al-Joudi FS, Fahmi AK, Ismarulyusda I, Khairol O, Norhazilah M, Siti Fatimah MI, Zulkefli NA, & Nurismah MI. 2008. Investigating the expression of human mammaglobin in breast cancer tissue in Malaysia: A preliminary report. Symposium Sains Kesihatan Kebangsaan Ke 7, 17-19 Jun, Kuala Lumpur. 3. Fahmi AK, Al-Joudi FS, Iskandar ZA, Ismarulyusda I, Khairol O, Norhazilah M. 2009. Investigating the expression of human mammaglobin in breast cancer tissue: The Malaysian Experiences. The second KHIBC MENA (King Hussein Institute for Biotechnology and Cancer Middle East and North Africa) Cancer Research Conference, Oct 2-3, Amman, Jordan.
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TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Fine Chemicals and Novel Derivatives of Chitin from Crustacean Shells
Project Number	02-01-02-SF0125
Project Leader and Team Members	Leader: Md. Pauzi Abdullah Members: Jumat Salimon and Mat Zakaria
Field of Research	Biotechnology
Project Summary/ Objectives	This study aimed to find an alternative and more economical pathways for the preparation of fine chemicals and novel derivatives of chitin from crustacean shells. The potential applications of these alternatives were also explored. From the studies done, various chitosan derivatives were synthesised namely carboxymethyl chitosan–Fe ₃ O ₄ nanoparticles, lauryl carboxymethylchitosan, lauryl chitosan, lauryl succinyl chitosan and dodecenyl succinyl chitosan. The derivatives were characterized using FTIR, NMR, XRD, magnetometer and TEM analysis. Some of the derivatives were used, for example, to remove manganese in drinking water (carboxymethyl chitosan–Fe ₃ O ₄ nanoparticles), to remove oil or petroleum-based compounds from water (lauryl carboxymethylchitosan, lauryl chitosan, lauryl succinyl chitosan and dodecenyl succinyl chitosan).
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Determination of Rate Limiting Enzyme in Lipid Biosynthesis of <i>Cunninghamella</i> sp. 2A1
Project Number	02-01-02-SF0138
Project Leader and Team Members	Leader: Aidil Abdul Hamid Members: Wan Mohtar Wan Yusoff, Othman Omar, Sahidan Senafi and Abdul Jalil Abdul Kadir
Field of Research	Biological sciences
Project Summary/ Objectives	<p>This project aimed for determination of rate limiting enzyme in lipid biosynthesis of <i>Cunninghamella</i> sp. 2a1. The enzymatic parameters of the enzymes were characterised besides establishing factors that control the rate limiting enzymes. From the studies conducted, rate limiting enzyme responsible in limiting lipid biosynthesis was identified as malic enzyme. This enzyme occurs in at least 6 isoforms (1-6), where results indicated isoform 4 and 5 as the probable regulators. Properties of malic enzyme in relation to effects of metal ions were further investigated. This enzyme was found to be totally dependent on Mg ions for its activity. Reinstatement of its specific activity was also achieved by reintroducing ammonium ions in the culture medium. Activities of isoform 4 and 5 were shown to correspond in parallel to lipid accumulation pattern thus suggesting their possible roles in lipid biosynthesis regulation in this fungus.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Modulation of Disease Resistance in Rice Through Mitogen Activated Protein Kinase
Project Number	02-01-02-SF0139
Project Leader and Team Members	Leader: Kalaivani Nadarajah Members: Abdullah Md Zain and Ismanizan Ismail
Field of Research	Biotechnology
Project Summary/ Objectives	The aim of this study was to modulate disease resistance in rice through mitogen activated protein kinase. This was accomplished by first isolating and sequence-analysing MAP kinase from <i>Oryza sativa japonica</i> and <i>Oryza rufipogon</i> . The transformation constructs were generated and the rice was transformed. Finally, the putative transformants generated were analysed. However, the lines that were generated need further studies before they can be considered for the market as either having biotic or abiotic resistance. This is not ideal and currently, the study is in the midst of seeing how to combine these traits in new lines.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Signaling Pathways During Pathogenesis of <i>Colletotrichum gloeosporioides</i>
Project Number	02-01-02-SF0141
Project Leader and Team Members	Leader: Abdul Munir Abdul Murad Members: Zeti Azura Mohamed Hussein and Farah Diba Abu Bakar
Field of Research	Chemical sciences
Project Summary/ Objectives	The main objective is to study the signaling pathways during pathogenesis of <i>Colletotrichum gloeosporioides</i> . Mutant of CgPKA gene encoding for protein kinase A catalytic sub-unit and CgMAF1 gene encoding for MAP kinase were developed and characterised. Activation of both CgMAF1 and CgPKAC from <i>Colletotrichum gloeosporioides</i> genome were successfully achieved. The deletion of these genes resulted in mutants that are not virulent. In addition, the capabilities of mutants to undergo conidia appressoria morphogenesis were also affected. However, this research is fundamental in nature. CgMAF1 was identified as a potential target for antifungal drug. Further work needs to be performed to design or identify suitable inhibitor for the protein.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	A High Throughput System for Activation Tagging in Transformed Hairy Roots
Project Number	02-01-02-SF0143
Project Leader and Team Members	Leader: Ismanizan Ismail Member: Zamri Zainal
Field of Research	Environmental Sciences
Project Summary/ Objectives	<p>This project aimed to develop a high throughput system for activation tagging in transformed hairy roots. It was commenced by transforming and generating transgenic hairy root lines with promoter trap vector. The root transformation was developed using <i>Agrobacterium rhizogenes</i> A4 carrying the promoterless vector pRF120. The transformants were then screened and analysed for putative expression of selectable marker gene. The unknown genomic DNA flanking t-DNA for root-specific regulatory sequences were isolated and characterised. Transgenic lines that expressed GUS reporter gene which suggested the insertion of the t-DNA adjacent to the root cell regulatory sequences were obtained. The quantitative assay of GUS had also been obtained. Besides, molecular analysis, southern hybridisation on the integration and RT-PCR for expression analysis on the positive transgenic lines were carried out. In the identification and isolation of the putative regulatory sequences, genome walking approach was taken. Bioinformatic analysis was carried out on this putative promoter and several important motives which linked to certain functions were identified.</p>
Publications/Products/ Outcomes	<p>Publications :</p> <ol style="list-style-type: none"> 1. Safarina Ahmad, Ismanizan Ismail, NurulFarhana Zakaria and Zamri Zainal. 2009. Pengaktifan gen pelapor di dalam tumbuhan transgenik tomato melalui kaedah agro-infiltrasi vektor penandaan tanpa promoter. <i>Sains Malaysiana</i> 38: 921-928. 2. Chan Kok Fei, Siti Izera Ismail, Dinesh A/L Natorajan, Zamri Zainal and Ismanizan Ismail. 2009. Identification of a short 5' putative regulatory sequences from transgenic hairy root of tomato-regulating specific expression pattern. <i>Plant Omics Journal</i> 2: 206-213.



	<p>3. Ismanizan Ismail, Siti Izera Ismail, Zamri Zainal. 2008. T-DNA insertional mutagenesis and promoter trapping in <i>Lycopersicon esculentum</i>. <i>Journal of Biotechnology</i> 136: S229.</p> <p>Proceedings/Conferences/Seminar : :</p> <ol style="list-style-type: none"> 1. Dinesh Natorajan, Ismanizan Ismail and Zamri Zainal. 2007. Kaedah sokongan untuk membantu penandaan promoter berperantaraan T-DNA demi pemencilan jujukan promoter genom tumbuhan. Prosiding Kolokium Siswazah ke-7 FST, 26 Jun 2007, UKM, Bangi. 2. Ismanizan Ismail, Siti Izera ismail and Zamri Zainal. 2007. Promoter Trapping in <i>Lycopersicon esculentum</i> by a T-DNA insertional mutagenesis. <i>Proceedings of the 9th Symposium of the Malaysia Applied biology</i>, 30-31 May 2007, Penang. 3. Siti Izera Ismail, Ismanizan Ismail dan Zamri Zainal. 2008. Mutagenesis penyelidikan T-DNA menggunakan taupan gen gus bagi pemencilan promoter novel spesifik tomato Kolokium Siswazah ke-8, FST-UKM, 1-2 Jul 2008, UKM, Bangi. 4. Ismanizan Ismail, Dinesh Natorajan and Zamri Zainal. 2007. Alternative methods for aiding T-DNA tagging for promoter isolation in plants. <i>Proceedings of the 9th Symposium of Malaysia Applied Biology</i>, 30-31 May 2007, Penang
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM) School of BioSciences and Biotechnology , Faculty of Science and Technology Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor. Office: 03-8921 3297 maniz@pkrisc.cc.ukm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Application of RNAi Technology for Functional Analysis of a Novel Ripening-Related Gene
Project Number	02-01-02-SF0145
Project Leader and Team Members	Leader: Zamri Zainal Member: Ismanizan Ismail
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	This project aims to apply RNAi technology for functional analysis of a novel ripening-related gene. To achieve this, functions of a novel ripening-related cDNA clone designated as CUKM15 were predicted. The hpRNA (hairpin loop RNA) constructs of CUKM15 sequence were generated. Finally, the transgenic plants harbouring hpRNA were analysed. The RNAi technology used in this project was successfully applied to other project, which is related to controlling tomato fruit ripening. The RNAi technology employed in this project will be applied to delay tomato MC11 from excessive ripening. This could enhance the tomato marketability.
Awards/Certificates	1. Biolnno Award at BIOMALAYSIA 2009: Bronze medal
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of BioSciences and Biotechnology , Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Functional Analysis of Capsanthin Capsorubin Synthase Promoter
Project Number	02-01-02-SF0146
Project Leader and Team Members	Leader: Zamri Zainal Member: Ismanizan Ismail
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	This project was conducted to analyse the function of capsanthin capsorubin synthase promoter. A genomic library for chilies were constructed with roughly 4000 recombinant phage, and the library was further used for screening. Sequencing and in silico results unable to demonstrate that the sequence was indeed that of CCS promoter gene. Through genome walking technique, several DNA fragments of different sizes were successfully cloned into the pGEMT vector. However, expected homologies via in silico study were not discovered.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Nipah Virus Transcriptional Mechanism: Study of L Protein Functional Domains and Promoter Sequence
Project Number	02-01-02-SF0148
Project Leader and Team Members	Leader: Amir Rabu
Field of Research	Biotechnology
Project Summary/ Objectives	Study on Nipah virus transcriptional mechanism was carried out by studying the functional domains and promoter sequence of L protein. A site-directed mutagenesis were performed in the conserved domains of L gene and in the genomic promoter of Nipah virus. A deletion was constructed in the L gene and the effect of deletion and point mutations of L protein and promoter sequence on Nipah virus transcription were determined.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of BioSciences and Biotechnology, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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e-Mail	amirrabu@gmail.com/amirrabu@ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Stem Cells: Chemotaxis Activity in Human Progenitor Osteoblast Cells
Project Number	02-01-02-SF0156
Project Leader and Team Members	Leader: Shahrul Hisham Zainal Ariffin Member: Endom Ismail, Rohaya Megat Abdul and Sahidan Senafi
Field of Research	Biotechnology
Project Summary/ Objectives	A study on chemotaxis activity in human progenitor osteoblast cells was carried out. In this study, the human progenitor cell culture conditions were established. The cells were differentiated into osteoblastic cells in which results were proven via biochemical, morphological and molecular assay. The ability of treated hydroxyapatite (HA) containing osteoblast differentiating agent to differentiate into mature osteoblastic cells was determined. Chemotaxis assay was established using Stromal Cell Derived Factor-1 alpha (SDF-1a) as a positive chemoattractant. The activity on hydroxyapatite (HA) containing differentiating agent has been also successfully determined. Stem cells isolated from this project can be used as a potential source for adult stem cells for further treatments.
Publications/Products/ Outcomes	<p>Journals :</p> <ol style="list-style-type: none"> 1. Nurul Atikah, A., Shahrul Hisham, Z.A., Rohaya, M.A.W., Muhamad, A.R. and Sahidan, S. 2011. Effect of β-glycerophosphate on suspension mononucleus cell from human peripheral blood). Sains Malaysiana 40:613-621. 2. Siti Afeefah, M.Y., Rohaya, M.A.W., Sahidan, S., Zaidah, Z.A., Mohamad Abdul Razak and Shahrul Hisham, Z.A. (2011). Proliferation and biochemical analyses of osteoblast/osteoclast differentiation from human mononucleated cells. Sains Malaysiana. 40: 305-309. 3. Shahrul Hisham, Z.A., Intan Zarina, Z.A., Muhammad Dain, Y., Rohaya, M.A.W. (2010). Differentiation analyses of adult suspension mononucleated peripheral blood cell of Mus musculus. Cell Communication and Signalling. 8:1-7. <p>Proceedings/Conferences/Seminar :</p> <ol style="list-style-type: none"> 1. Siti Afeefah M.Y., Shahrul Hisham Z.A. and Rohaya M.A.W. 2009. Proliferation and differentiation of human mononucleated cells into osteoblast and osteoclast cells. The second UKM-UI Joint Seminar, 22-23 Jun, Selangor.

	<ol style="list-style-type: none"> 2. Shahrul Hisham, Z.A., Intan Zarina Zainol Abidin, Rohaya Megat Abdul Wahab and Sahidan Senafi. 2009. Multipotent stem cells from mice peripheral blood mononucleated cells. The Regulatory Networks in Stem Cells, 11-13 Feb, Singapore. 3. Intan Zarina, Z.A., Shahrul Hisham, Z.A., Rohaya, M.A.W., Sahidan, S. and Zaidah, Z.A. 2008. Osteoblast and osteoclast differentiation from mus musculus perihelal blood progenitor cells. 2nd USM Penang International Postgraduate Convention. Health & Medical Sciences Conference. 18-20 Jun, Penang. 4. Shahrul Hisham, Z.A., Intan Zarina, Z.A., Rohaya, M.A.W. and Zaidah, Z.A. 2007. Osteoteoblas and osteoclast development of mononucleated cells from mice peripheral blood. 7th National Congress on Genetics. 5-7 May, Kelantan.
Additional Information	<p>Linkages: Department of Anatomy, Faculty of Science, University of Mahidol, Thailand; National University of Ribat, Khartoum, Sudan under Bridging Civilization Programme, ATMA, UKM.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM) School of BioSciences and Biotechnology , Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.</p> <p>Office: 03-8921 3245 / 4361 H/p: 019-261 8170 hisham@ukm.my/shahroy8@gmail.com</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	High Density Mammalian Cell Cultivation System for Recombinant Protein Production
Project Number	02-01-02-SF0168
Project Leader and Team Members	Leader: Nurina Anuar Member: Jamaliah Md Jahim, Sheila Nathan and Ismail Ahmad
Field of Research	Biotechnology
Project Summary/ Objectives	This project aimed to develop high density mammalian cell cultivation system for recombinant protein production. The important parameters for cultivation of selected commercial mammalian expression system for the production of recombinant protein were successfully achieved. Identification and optimisation of suitable high density culture system of mammalian cell for the production of the recombinant protein were determined. Recombinant CHO cells which express beta galactosidase enzyme has been successfully developed. Parameters for cultivation of stable recombinant cells has also been achieved.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Chemical and Process Engineering, Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Catalytic Biochemical Production of Biogas and Chemicals from Agrowastes
Project Number	02-01-02-SF0170
Project Leader and Team Members	Leader: Rakmi Abd Rahman Members: Noorhisham Tan Kofli, Abdul Amir H. Kadhu and Abu Bakar Mohamad
Field of Research	Biotechnology
Project Summary/ Objectives	This project aimed to develop complete treatment of agrowastes to produce biogas and chemicals with low system cost and high system efficiency. This results in the production of lactic acid and biogas from palm oil mill effluent (POME).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) 43600 UKM Bangi, Selangor. Office: 03-8921 6402 H/p: 012-206 3354 rakmi@vlsi.eng.ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Bio-Solar Hydrogen Production System Using Mixed-Culture of Photosynthetic Bacterium and Solvent Producing Strain
Project Number	02-01-02-SF0176
Project Leader and Team Members	Leader: Mohd Sahaid Kalil Member: Abdul Amir H. Kadhum, Kamaruzzaman Sopian and Noorhisham Tan Kofli
Field of Research	Biotechnology
Project Summary/ Objectives	This project aimed to develop a bio-solar hydrogen production system using mixed-culture of photosynthetic bacterium and solvent producing strain. The most suitable condition for the production of hydrogen by <i>Clostridium</i> sp. and <i>Rhodobacter</i> sp. was identified. Then, a mixed-culture of <i>Clostridium</i> sp. and <i>Rhodobacter</i> sp. for maximum production of hydrogen were established.
Additional Information	Linkages: Faculty of Agriculture, Kyushu University, Japan
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Chemical and Process Engineering, Faculty of Engineering and Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number e-Mail	Office: 03-8921 6419 sahaid@vlsi.eng.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification of Chemical Components of <i>Hornstedtia scyphifera</i> (zingiberaceae) with Anti-Inflammatory and/or Neuroprotective Effects
Project Number	02-01-02-SF0181
Project Leader and Team Members	Leader: Md. Ikram Mohd Said Members: Laily Din and Jalifah Latip
Field of Research	Biotechnology
Project Summary/ Objectives	This study aimed to identify chemical components of <i>Hornstedtia cyphifera</i> with anti-inflammatory and/or neuroprotective effects. Extract of <i>Hornstedtia scyphifera</i> leaves and rhizomes of different polarity was fractionated and the anti-inflammatory and neuroprotective activity of each fraction were then determined. The structure of the bioactive compounds were isolated spectroscopically and identified.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Chemical Science and Food Technology, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	A Biosensor-Flow Injection Analysis System Utilising Acrylic Nanospheres for the Determination of Proteins and Food Additives
Project Number	02-01-02-SF0189
Project Leader and Team Members	Leader: Lee Yook Heng Members: Sheila Nathan, Bahrudin Saad, Wan Aida Wan Mustapa and Musa Ahmad
Field of Research	Biotechnology
Project Summary/ Objectives	This study aimed to establish a biosensor-flow injection analysis system utilising acrylic nanospheres for the determination of proteins and food additives. From the study conducted, acrylic nanospheres for enzyme immobilisation and application in biosensor devices were successfully established. Besides that, biosensors were constructed for the successful determinations of formaldehyde, monosodium glutamate and aspartame. The acrylic nanospheres and the biosensors are in the process of being patented.
Awards/Certificates	1. MTE, 2006: Silver medal 2. ITEX, 2007: Bronze medal
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Chemical Science and Food Technology, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number e-Mail	Office: 03-8921 3356 yhl1000@pkrisc.cc.ukm.my / leeyookheng@yahoo.co.uk

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Molecular Characterisation of Putative M1 Gene Required for Sperm-Egg fusion During Fertilisation
Project Number	02-01-02-SF0190
Project Leader and Team Members	Leader: Mahanem Mat Noor Members: Hasidah Mohd Sidek and Sabrina
Field of Research	Biotechnology
Project Summary/ Objectives	This project aimed to identify and characterise putative M1 gene required for sperm-egg fusion during fertilisation in hamster. The M1 gene were then expressed in yeast expression vector. This study has successfully identified and characterised the M1 gene.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) 43600 UKM Bangi, Selangor. Office: 03-8927 5193 mahanem@pkisc.cc.ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Isolation, Structure Determination and Bioactivity of the Chemical Constituents of Malaysian Vatica and Shorea
Project Number	02-01-02-SF0197
Project Leader and Team Members	Leader: Jalifah Latip Members: Nor Fadilah Rajab, Laily Din and Md. Ikram Mohd Said
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	This project aimed to isolate as well as determine the structure and bioactivity of the chemical constituents of Malaysian Vatica and Shorea. The chemical components from selected Vatica sp. and Shorea sp. of Malaysia were isolated. The bioactivity of the crude extracts and isolated compounds were also successfully determined. In addition, one bioactive compound (chemopreventive) was identified (including mechanism of action) namely Vaticox. Vaticox was used as chemical marker for bioactivity of other crude extracts. For commercialisation, Vaticox can be used for standardisation of bioactive crude extracts. However, further study is needed for this purpose.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminar : <ol style="list-style-type: none"> 1. Jalifah, L., Aisyah Salihah, K. and NorFadilah, R. 2009. Hepatoprotective activity of Malaysian Vatica pauciflora. Proceedings of Joint Seminar on Chemistry ITB-UKM, 9-11 Jun, ITB:Bandung. 2. Aisyah Salihah K., Jalifah, L. and Yana, M.S., 2009. oligostilbenoids of Vatica pauciflora. Proceedings of Joint Seminar on Chemistry ITB-UKM, 9-11 Jun, ITB:Bandung.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) 43600 UKM Bangi, Selangor. Office: 03-8921 3975 H/p: 019-226 0393 jali@pkrisc.cc.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Functional Analysis of Appressoria Specific Genes Targeted for the Control of the Fungal Plant Pathogen <i>Colletotrichum gloeosporioides</i>
Project Number	02-01-02-SF0200
Project Leader and Team Members	Leader: Farah Diba Abu Bakar Members: Zeti Azura Mohamed Hussein and Abdul Munir Abdul Murad
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This project is dedicated to study the functional analysis of appressoria specific genes targeted for the control of the fungal plant pathogen <i>Colletotrichum gloeosporioides</i> . The two appressoria specific genes were characterised by gene sequence, protein sequence, and functional sequence using bioinformatics. Gene disrupted mutants of both targets, CAS1 and CAS2 were obtained whereby several mutants were isolated and analysed. The virulence, morphogenesis patterns such as appressoria formation, germ tube formation (bipolar vs unipolar germination) and sporulation as well as expression patterns (northern blots and morphogenesis patterns) were determined.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of BioSciences and Biotechnology , Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Species-Specific DNA Probes for the Detection of Some Toxic Marine Dinoflagellates
Project Number	02-01-02-SF0203
Project Leader and Team Members	Leader: Gires Usup Members: Asmat Ahmad and Siti Aishah Abdullah
Field of Research	Biotechnology
Project Summary/ Objectives	This project aimed to develop species-specific DNA probes for the detection of some toxic marine dinoflagellates species found in Malaysian waters (<i>Pyrodinium bahamense</i> , <i>Alexandrium affine</i> , <i>Alexandrium leei</i> , <i>Alexandrium minutum</i> , <i>Alexandrium peruvianum</i> , <i>Alexandrium tamarense</i> , <i>Alexandrium tamiyavanichii</i> and <i>Alexandrium taylori</i>). The performance of the probes were then evaluated through laboratory and field trials. From the studies conducted, species-specific DNA probes for the detection of toxic marine dinoflagellate species were successfully developed and produced. The performances of the probes were also evaluated via laboratory and field trials. At present, there are no plans to commercialise the results. However, the probes will be supplied at nominal costs to the Department of Fisheries, Malaysia should the efficiency of the probes in their monitoring programme were to be tested.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Residual Study of Litsea elliptica Blume as Botanical Pesticide Against Dengue and Dengue Haemorrhagic Fever Vectors and Its Safety Assessment
Project Number	02-01-02-SF0205
Project Leader and Team Members	Leader: Hidayatul Fathi Othman Members: Siti Balkis Budin, Nor Fadilah Rajab and Sallehudin Sulaiman
Field of Research	Material Sciences
Project Summary/ Objectives	This project aimed to study the residues of Litsea elliptica Blume as botanical pesticide against dengue and dengue haemorrhagic fever vectors as well as its safety assessments. The residual effects of L Litsea elliptica Blume were assessed in the laboratory and in the field whereas the safety assessment of L.elliptica were conducted via toxicology study. The study conducted had successfully assessed the residual capacity of the essential oil from L.elliptica. The safety assessments as botanical pesticide were also performed. However, further research on the prototype of aerosol cans containing L.elliptica essential oil collected from different habitats is needed for evaluation against mosquitoes.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Siti B Budin, Izatus-Shima Taib, Siti Balkis Budin, PhD, Siti N Maseran, Jamaludin Mohamed, Santhana R Louis, Srijit Das, Salehudin Sulaiman, Nor F Rajab, Hidayatulfathi Othman. 2009. Toxic effects of Litsea elliptica blume essential oil on the red blood cells of Sprague-Dawley rats. Journal of Zhejiang University. 10:813-819. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Izatus Shima Taib, Siti Balkis Budin, Seri Maseran Siti Nor Ain, Jamaludin Mohamed, Santhana Raj Louis, Srijit Das, Sulaiman Sallehudin, Nor Fadilah Rajab, Othman Hidayatulfathi. 2008. Oral toxicity of Litsea elliptica (Blume) essential oil. Symposium Sains Kesihatan Kebangsaan Ke-7, 18-19 Jun, Kuala Lumpur.



	<ol style="list-style-type: none"> 3. Noramiwati Rashid & Hidayatulfathi Othman. 2009. The repellent activity of <i>Litsea elliptica</i> Blume (Lauraceae) essential oil against <i>A.egypti</i>. Linn. 45th Annual Scientific Seminar, Malaysian Society of Parasitology and Tropical Medicine, 18-19 Mac, Kuala Lumpur. 2. Izzatus Shima Taib, Hidayatulfathi Othman, Siti Nor Ain Seri Masran, Jamaludin Mohamed, Santhana R.L and Siti Balkis Budin. 2007. The effect of <i>Litsea elliptica</i> essential oil towards red blood cell morphology and membrane fragility of Sprague Dawley rats. 6th ASEAN Microscopy Conference 10-12 Dec, Pahang.
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM) Department of Biomedical Science, Faculty of Allied Health Sciences Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur. Office: 03-9289 7267 hida@medic.ukm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	New Thermoseparating Aqueous Two-phase Extraction System for Efficient Enzymes Recovery
Project Number	02-01-02-SF0208
Project Leader and Team Members	Leader: Jamaliah Md Jahim Members: Abdul Wahab Mohammad, Osman Hassan and Nurina Anuar
Field of Research	Biological Sciences
Project Summary/ Objectives	<p>This project was dedicated to develop a new thermoseparating aqueous two-phase extraction system for efficient enzyme recovery. First, a suitable recycled copolymer and detergent polymer based on cloud point temperature and the activity of the targeted enzymes were developed. Then, the thermoseparating aqueous two-phase systems (ATPS) based on the partition coefficient of the enzymes from fermentation broth were characterised. The copolymer recovery and recycling in terms of the performance of enzyme activity from the developed thermoseparation ATPS system were studied. A suitable recycled copolymer and detergent polymer based on cloud point temperature and the activity of targeted enzymes were achieved. The thermoseparating ATPS based on the partition coefficient of the enzymes from fermentation broth was also characterised. As for the copolymer recovery and copolymer recycling studies, the performance of enzymes activity from the developed thermoseparation ATPS system is still in progress. The technique of extracting proteins specifically enzymes from fermentation broth using ATPS systems has been planned for patent filing. This will cover the establishment of system characterisation protocols of the suitable studied polymer that had been carried out in this works.</p>
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Continuous Solvent Production in an Oscillatory Flow Bioreactor
Project Number	02-01-02-SF0219
Project Leader and Team Members	Leader: Mohd Sobri Takriff Members: Abdul Wahab Mohammad, Mohd Sahaid Kalil and Abdul Amir H. Kadhum
Field of Research	Biotechnology
Project Summary/ Objectives	<p>This project aimed to produce solvent continuously in an oscillatory flow bioreactor. A continuous oscillatory flow bioreactor complete with instrumentations and auxiliary support systems were designed and fabricated. The techniques and optimum operating conditions for continuous sterilisation of fermentation media were determined. Finally, solvent from industrial effluent in a continuous oscillatory flow bioreactor was produced. After extensive studies, a continuous oscillatory flow bioreactor complete with instrumentations and auxiliary support systems was successfully designed and fabricated. The techniques and operating conditions for continuous sterilisation of fermentation media were also determined. As for the production of solvent from industrial effluent in a continuous oscillatory flow bioreactor, only preliminary research work was carried out.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Siti Jamilah Hanim Mohd Yusof, Mohd Sobri Takriff, Abdul Amir Hassan Kadhum, Abdul Wahab Mohammad and Jamaliah Jahim. 2010. The effect of initial butyric acid addition on ABE fermentation by <i>C. acetobutylicum</i> NCIMB 619. <i>Journal of Applied Sciences</i> 10:2709-2712. 2. M.S. Takriff, N. Masngut, A. A. H. Kadhum, M. S. Kalil and A. W. Mohammad. 2009. Solvent fermentation from palm oil mill effluent using <i>C. Acetobutylicum</i> in oscillatory flow bioreactor. <i>Sains Malaysiana</i>. 38:191-196. 3. M.S. Takriff, S.J.H. Yusof, A.W. Mohamad, J. Md Jahim and A.A.H. Khadum. 2008. Recovery Of Acetone-Butanol-Ethanol From Fermentation Broth By Liquid-Liquid Extraction. <i>Journal of Biotechnology</i> 136S:S478. 4. Nasratun Masngut, Mohd Sobri Takriff, Abdul Wahab Mohammad, Mohd Sahaid Kalil, and Abdul Amir Hassan Kadhum. 2007. Performance of oscillatory flow reactor and stirred tank reactor in solvent fermentation from palm oil mill effluent. <i>Jurnal Teknologi</i> 47:45-54.

Proceedings/Conference/Seminar :

1. Siti Jamilah Hanim Mohd Yusof, Mohd Sobri Takriff, Abdul Amir Hassan Kadhun, Abdul Wahab Mohammad and Jamaliah Jahim. 2009. The effect of initial butyric acid addition on ABE fermentation by *C. acetobutylicum* NCIMB 619. The 3rd International conference on chemical and bioprocess engineering, 24 Aug, Sabah.
2. Siti Jamilah Hanim Mohd Yusof, Mohd Sobri Takriff, Abdul Amir Hassan Kadhun, Jamaliah Md Jahim and Abdul Wahab Mohammad, 2008, Product recovery of ABE fermentation by liquid-liquid extraction. The 15th Regional Symposium on Chemical Engineering 2-3 Dec, Kuala Lumpur.
3. Siti Jamilah Hanim Mohd Yusof, Mohd Sobri Takriff, Abdul Amir Hassan Kadhun, Jamaliah Jahim and Abdul Wahab Mohammad. 2008. Recovery of acetone-butanol-ethanol from model solution by liquid-liquid extraction. The 2nd International Conference on Advancement in Science and Technology (iCAST) 13-15th Jun, Pahang.
4. Mohd Sobri Takriff, Mohd Azim Abu Bakar. 2007. Mass transfer in multiphase oscillatory flow in a baffled tube, The 3rd Asian Particle Technology Symposium, 3rd-5th Sept, China.
5. Mohd Sobri Takriff, Siti Jamilah Hanim Mohd Yusof, Abdul Amir Hassan Kadhun, Jamaliah Jahim and Abdul Wahab Mohammad. 2008. Recovery of acetone-butanol-ethanol from fermentation broth by liquid-liquid extraction. 13th International Biotechnology Symposium & Exhibition (IBS-2008) 12-17 Oct, China.
6. Nasratun Masngut, Mohd Sobri Takriff, Abdul Wahab Mohammad, Mohd Sahaid Kalil. 2007. Solvent Production In Oscillatory Flow Reactor. The 14th Regional Symposium on Chemical Engineering, 4-5 Dec, Indonesia.
7. M.S. Takriff and W.S.W. Yussof. 2008. Multiphase mixing in oscillatory flow in baffled tube. The 2nd Asian Conference on Mixing, 7-9 Oct, Japan.

Graduate students:

2 MSc students graduated

Products:

1. Oscillatory flow bioreactor prototype



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Pulp Molecular and GCF Enzymological Profiles of Straight-Wire Appliances During Orthodontics Treatment
Project Number	02-01-02-SF0245
Project Leader and Team Members	Leader: Rohaya Megat Abdul Wahab Members: Shahrul Hisham Zainal and Ahmad Tarmidi Sailan
Field of Research	Biotechnology
Project Summary/ Objectives	This project aimed to study pulp molecular and GCF enzymological profiles of straight wire appliances during orthodontics treatment. The GCF enzyme profiles during orthodontics treatment were characterised and the gene profiles in pulp tissues during tooth movements were determined prior to determination of potential biomarkers in assisting orthodontics treatment. Studies find that canine movement were faster in 150g force group as compared to 100g force group. The genes profile in pulp tissues during orthodontic treatment were determined using GeneFishing method. Genes which were differentially expressed before and after treatment consist of housekeeping genes, and several genes which are involved in extracellular matrix. Apart from that, some potential biomarkers have been determined to assist orthodontic treatment. The potential biomarkers are RPLP1, PRPF8, HSPG2 and LAMB2. These potential biomarkers could provide detailed insights into molecular events during orthodontic tooth movement.
Publications/Products/ Outcomes	Journals: 1. Rohaya, MAW, Shahrul Hisham, ZA, Nur'Aiziera, S., Nik Marzuki, S., Sahidan, S. and Zaidah, ZA. 2007. Preliminary study of acid phosphatase in saliva during teeth movement. Malays. Applied Biology 36: 79-81. 2. Asma, AAA, Rohaya, MAW, Shahrul Hisham, ZA. Crevicular Alkaline Phosphatase Activity During Orthodontic Tooth Movement: Canine Retraction Stage. Journal of Medical Sciences. 8: 228-233.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of a Domestic Wastewater Treatment System with a Reed Bed for Environment Sensitive Areas
Project Number	02-01-02-SF0262
Project Leader and Team Members	Leader: Siti Rozaimah Sheikh Abdullah Members: Mustafa Omar, Fatimah Suja', Mushrifah Idris, Siti Kartom Kamarudin and Mohammad Shuhaimi Othman
Field of Research	Biotechnology
Project Summary/ Objectives	This project was carried out to develop a domestic wastewater treatment system with a reed bed for environment sensitive areas using activated sludge process. The sewage treatment system performance were studied and optimised so that the effluents comply with Standard A of Environmental Quality Act. Studies conducted manage to fully develop a sewage treatment system to treat domestic wastewater in an environment sensitive area using activated sludge process with a reed bed while the study and optimisation of the sewage treatment system performance is nearly complete. This reed bed system will be applied in Pusat Latihan Kem Negara (PLKN), Tasik Chini under ECER Project.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Molecular Elucidation of Solanum torvum as a Potential Therapeutics on Oxidative Related Condition
Project Number	02-01-02-SF0271
Project Leader and Team Members	Leader: Nor Fadilah Rajab Members: Muhajir Hamid, Jalifah Latip, Ahmad Rohi Ghazali, Paden Morat and Salmaan Hussain Inaya
Field of Research	Agricultural Sciences
Project Summary/ Objectives	<p>This study aimed to molecularly elucidate Solanum torvum as a potential therapeutic on oxidative related condition. To begin with, the total antioxidant capacity and effectiveness of Solanum torvum extract on oxidative damage were analysed and determined. Then, the underlying mechanisms involved in the antioxidative effects S.torvum extract were identified and investigated. Finally, the potential regulatory components that influenced the antioxidative effects of S. torvum extract as therapeutics on oxidative related condition were determined. As the study came to an end, the total antioxidant capacity and effectiveness of S.torvum extract on oxidative damage was fully analysed and determined. Apart from that, the underlying mechanism involved in the oxidative effect on the extract was successfully identified and investigated. The potential regulatory components that influence the oxidative effects of the extract as a therapeutics on oxidative related conditions was also fully determined. At the moment, there are plans to collaborate with potential company on the research finding to be a part of marketing health product produced from the plant species.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Biotechnology of Mass Culture of Microalgae <i>Chlorella vulgaris</i> and the Determination of Nutrient and Antioxidant Components
Project Number	02-01-02-SF0274
Project Leader and Team Members	Leader: Yasmin Anum Mohd Yusof Members: NoorAini Abd Hamid, Asmah Rahmat, Wan Zurinah Wan Ngah and Suzana Makpol
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The present invention provides an improved biomass culture method for the production of nutritionally high grade quality of microalgae <i>Chlorella vulgaris</i> (CV). This was made possible with the invention of a custom made large pond measuring 1.3m in radius and 0.3m in depth, which amounts to 1000L in volume of cultured algae. The media was constantly mixed by a paddle-wheel to prevent sedimentation of the algae and to ensure that all algal cells were equally exposed to the light and nutrient (Fig 1). By varying the composition of media (Bold Basal Media), duration of illumination (12-24h lighting) and amount of carbon dioxide (1-10%) we obtained a maximum grade of CV, of superior nutritional values with high content of protein, carbohydrate, essential fatty acids, flavanoids, vitamins (B-complex, ascorbic acid, vitamin E), and minerals (potassium, sodium, magnesium, iron, and calcium). The bioactive component isolated is a 75kD protein exhibiting anti proliferative and apoptosis effect in liver cancer cell lines, HepG2.
Publications/Products/ Outcomes	Journals: 7 1. NorAshikeen, M., Suhaniza, S., Suhana, M.S., Junaidah, H.B, Mariati, AR, Wan Zurina, WN and Yasmin Anum MY. 2009. <i>Chlorella vulgaris</i> exhibited antioxidant and antitumour effects against liver cancer in vivo and in vitro studies. <i>Sains Malaysiana</i> . 38: 773-784. 2. Suzana Makpol, Nadia Yaacob, Azalina Zainuddin, Yasmin Anum Mohd Yusof, Wan Zurinah Wan Ngah. 2009. <i>Chlorella vulgaris</i> modulates hydrogen peroxide-induced DNA damage and telomere shortening of human fibroblasts derived from different aged individuals. <i>African Journal of Traditional, Complementary and Alternative Medicine</i> . 6: 560-572.

3. Aizzat, O, Yap, S.W., Sopia, H., Madiha, M.M., Hazreen, M, Shailah, A., Wan Junizam, W.Y., Nur Syaidah, A., Srijit Das, Musalmah, M., Yasmin Anum, M.Y. 2010. Modulation of oxidative stress by *Chlorella vulgaris* in streptozotocin (STZ) induced diabetic Sprague-Dawley rats. *Advances in Medical Sciences*. DOI: 10.2478/v10039-010-0046-z
4. Yasmin Anum Mohd Yusof, Suhana Md. Saad, Suzana Makpol, Nor Aripin Shamaan, Wan Zurinah Wan Ngah. 2010. Hot water extract of *Chlorella vulgaris* induced DNA damage and apoptosis. *CLINICS* 65:1-7.
5. Zailan, N. Abdul Rashid, A.H., Das, S., Abdul Mokti, N.A., Hassan Basri, J. Lin, T.S., Wan Ngah, W.Z., Mohd Yusof. Y.A. 2010. Comparison of *Chlorella vulgaris* dressing and sodium alginate dressing: an experimental study in rats. *Clinica Terapeutica*. 161:515-521.

Proceedings/Conferences/Seminars: 8

1. Suhaniza Sulaiman, Wan Zurinah Wan Ngah, Nor Aripin Shamaan dan Yasmin Anum Mohd Yusof. 2005. Effect of *Chlorella vulgaris* on the Antioxidant Status of the Liver Cancer Induced Rats, Poster presentation at 30th Annual Conference of the Malaysian Society for Biochemistry and Molecular Biology, 6-7 Sep, Kuala Lumpur.
2. Suhana Md Saad, Yasmin Anum Mohd Yusof, Wan Zurinah Wan Ngah, Asmah Rahmat dan Nor Aripin Shamaan. 2005. Effects of Hot Water Extract *Chlorella vulgaris* Locally grown and from Japan on DNA damage and Apoptotic Rate of Liver Cancer Cell Line, HepG2. Poster presentation at 30th Annual Conference of the Malaysian Society for Biochemistry and Molecular Biology, 6-7 Sep, Kuala Lumpur.
3. Suhaniza Sulaiman, Wan Zurinah Wan Ngah, Nor Aripin Shamaan dan Yasmin Anum Mohd Yusof. 2005. Chemopreventive effect of *Chlorella vulgaris* on Liver Cancer Induced Rats. *Buku Abstrak Diet and Optimum Health*. 18 - 21 May, Linus Pauling Institute, Portland, Oregon, USA. (poster)
4. Nor Ashikeen Mukti, Mariati Abdul Rahman, Yasmin Anum Mohd Yusof. Partial purification of glycoprotein from a local strain of *Chlorella vulgaris*. Poster presentation at 32nd Annual Conference of the Malaysian Society for Biochemistry & Molecular Biology (MSBMB), 5 - 6 Sep, Kuala Lumpur.



	<p>5. Nor Ashikeen Mukti, Junaida @ Maimunah Hassan Basari, Wan Zurinah Wan Ngah, *Asmah Rahmat and Yasmin Anum Mohd Yusof . Hot water extract of <i>Chlorella vulgaris</i> is more potent than its culture supernatant in inhibiting liver cancer cells HepG2. Poster presentation at 7th COSTAM/SFRR (ASIA/MALAYSIA)/MPOB International Workshop, 9-12th Jul, Pelangi Meritus Hotel.</p> <p>Product :</p> <p>1. Powdered Microalgae <i>Chlorella vulgaris</i>.</p>
Awards	<p>1. 6th Malaysia Indonesia Brunei Medical Science Conference 2010 : best poster award.</p> <p>2. 30th Annual Malaysian Society of Biochemistry & Molecular Biology, 2005 : best poster award.</p>
Additional Information	Linkages: Chlorella Industry, Chikugo City, Fukuoka, JAPAN
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Gamma-Tocotrienol Modulates Oxidative Stress Response and Gene Expression of Human Lymphocytes from Different Age Groups
Project Number	02-01-02-SF0282
Project Leader and Team Members	Leader: Wan Zurinah Wan Ngah Members: NoorAini Abd Hamid, Roslan Harun, Musalmah Mazlan, Yasmin Anum Mohd Yusof and Suzana Makpol
Field of Research	Biotechnology
Project Summary/ Objectives	<p>This study aims to determine the protective effect of gamma-tocotrienol (GTT) and gamma-tocopherol (GTF) in reducing the H2O2 induced oxidative stress through modulation of gene expression in different aged lymphocytes both in vivo and in vitro. The in vitro study involves determining the effects of GTT and oxidative stress induced by several doses of H2O2 in lymphocytes from different age groups were determined by measuring cell viability to obtain IC50 dose. Using this IC50 dose, the effect of H2O2 induced oxidative stress on cell proliferation, DNA damage and apoptotic rate as well as the apoptotic proteins p53, caspase-3 and -8, and cell cycle proteins CDK2 were investigated. This was then followed by determination of pre- and post-treatment effects of GTT on H2O2 induced oxidative stress on cell proliferation, DNA damage and apoptotic rate. The oxidative status of the lymphocytes were then determined by measuring antioxidant enzymes and advanced glycation end (AGE) products. The in vivo study involves determining the effect of tocotrienol TriE supplementation in humans and effect on oxidative status and DNA damage. Lymphocytes isolated from the supplemented subjects were also exposed to H2O2 ex vivo and the effects of GTT and GTF determined for apoptosis. Services transferred are those that can be provided to assess the oxidative status of an individual besides providing service as a contract research provider.</p>
Publications/Products/ Outcomes	Journals: 1. Chin Siok Fong, Noor Aini Abdul Hamid, Musalmah Mazlan, Yasmin Anum Mohd Yusof and Wan Zurinah Wan Ngah. 2008. Reduction of DNA Damage in Older Healthy Adults by Tri E ® Tocotrienol Supplementation Nutrition. 24:1-10.



	<p>Proceedings/Conferences/ Seminars:</p> <ol style="list-style-type: none"> 1. Chin, S.F., Noor Aini, A.H., Hasnizawati, M.D. & Wan Zurinah, W.N. 2009. Tocopherol and tocotrienol improved viability of lymphocyte from different aged individuals but only tocotrienol protects against H2O2-induced DNA fragmentation. 7th COSTAM/SFRR (ASIA/MALAYSIA) International Workshop 9-12 Jul, Langkawi. 2. Hasnizawati Mohamed Dahlan, Noor Aini Abdul Hamid, Mariati Abdul Rahman, Saiful Anuar Karsani, Wan Zurinah Wan Ngah. 2009. Tocotrienol rich fraction effects on protein expression of human lymphocytes from two different age groups. 7th COSTAM/SFRR (ASIA/MALAYSIA) International Workshop, Langkawi. 3. Chin, S.F., Noor Aini, A.H., Ab Gapor, M.T. & Wan Zurinah, W.N. 2009. Cytoprotective Effects of Tocotrienol against Hydrogen Peroxide-induced DNA Fragmentation and Characterization of Cellular Uptake. Palm International Nutra-Cosmeceutical Conference 2009, Kuala Lumpur. 4. Hasnizawati Mohamed Dahlan, Noor Aini Abdul Hamid, Mariati Abdul Rahman, Saiful Anuar Karsani, Wan Zurinah Wan Ngah. 2009. Tocotrienol rich fraction effects on protein expression of human lymphocytes from two different age groups, Palm International Nutra-Cosmeceutical Conference 2009. Kuala Lumpur. 5. Chin, S.F., Noor Aini, A.H., Azian, A.L., Zaiton, Z., Musalmah, M., Yasmin, A.M.Y., Aminuddin, A.K., Johari, I., Zalina, H. & Wan Zurinah, W.N. 2007. Vitamin E, antioxidant enzymes and protein carbonyl levels in healthy older adults: An intervention by Tri E® Tocotrienol, 2nd Regional Conference On Molecular Medicine, Kuala Lumpur., 6. Hasnizawati Mohamed Dahlan, Noor Aini Abdul Hamid, Chin Siok Fong, Wan Zurinah Wan Ngah. 2007. In Vitro Effect of Tocotrienol rich fraction against hydrogen peroxide induced cell damage on human lymphocytes, 2nd Regional Conference On Molecular Medicine, Kuala Lumpur.
<p>Awards</p>	<ol style="list-style-type: none"> 1. Second Regional Conference in Molecular Medicine 2007: Best Poster Award 2. UKM Research Group Award 2009

Additional Information	<p>Linkages: Yoshikazu Yonei, Doshisha University, Kyoto, Japan; Sime Darby Sdn Berhad</p> <p>Commercialisation: Services offered under myCRO</p> <p>Spin-off: myCRO Sdn Bhd (2010)</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Potential Clinical Use of Stem Cells from Human Placental and Umbilical Cord Matrix for Tissue Repair Through Angiogenesis
Project Number	02-01-02-SF0288
Project Leader and Team Members	Leader: Hayati Abd Rahman Members: Ruszymah Idrus, Tan Geok Chin and Chua Kien Hui
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This study investigated potential clinical use of stem cells from human placental and umbilical cord matrix for tissue repair through angiogenesis. The specific stem cell isolation technique from human placental and umbilical cord tissue were determined and the specific growth factors needed for stem cell expansion were defined. Finally, the specific culture medium for stem cell differentiation toward angiogenesis property was determined. At the moment, patent for a PCR kit for detection of angiogenic genes is in the process to be filed.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Hayati, A.R., Nur Fariha, M.M, Tan, G.C., Fatimah, S.S., Tan A.E., & Chua, K.H. 2008. Defining status of stem cells-associated gene in umbilical cord matrix-derived stem cells after serial-passage. <i>Medicine & Health</i>. 3 : 1486. 2. Nur Fariha, M.M, Chua, K.H., Tan, G.C., Tan A.E., & Hayati, A.R. 2008. Depletion of stemness gene expression in initial passage of chorionic villi cells isolated from human term placenta. <i>Medicine & Health</i>. 3 : 144. 3. Manzor N.F., Chua K.H., Tan G.C., Tan A.E., Abdul Rahman H. 2008. Augmentation of angiogenic and endothelial associated gene expression by EDM50 in human chorion-derived stem cells. <i>Medical Journal of Malaysia</i>. 63:11-12. 4. Abdul Rahman H., Manzor N.F., Tan G.C., Tan A.E., Chua K.H. 2008. Upregulation of SOX-2, FZD9, Nestin, OCT-4 and FGF-4 expression in human chorion derived-stem cells after angiogenic induction. <i>Medical Journal of Malaysia</i>. 63:57-58.

- Hayati A.R., Nur Fariha M.M., Chua K.H., Tan A.E. & Tan G.C. 2008. Changes in angiogenic and endothelial gene expression pattern of Wharton's Jelly-derived cells after serial passage. *Histopathology*. 53:186.

Proceedings/Conferences/Seminar :

- Hayati A.R., Manzor N.F., Kien Hui Chua, and Tan G.C. 2008. Stemness and angiogenic gene expression profile of serial passage human placenta decidua-derived stem cells. International Federation of Placenta Associations (IFPA), 10-13 Sept, Seggau Castle, Austria.
- Hayati A.R., Fariha M.M.N., Fatimah S.S, Tan A.E., Tan G.C. and Chua K.H. 2008. Changes in angiogenic and endothelial gene expression pattern of Wharton's jelly-derived cells after serial-passage. XXVIIth International Congress of the International Academy of Pathology, 12-17 Oct, Athens, Greece.
- Mohd-Manzor N., Fariha M.M.N., Kien-Hui Chua, Geok Chin Tan, Ay-Eeng Tan and Abdul-Rahman Hayati. 2008. Chorionic villi cells from human placenta retain stemness potency after serial passage. Annual Conference of Tissue Engineering and Regenerative Medicine International Society-Asia Pacific Region, 6-8 Nov, Taipei, Taiwan.
- Nur Fariha M Manzor, Chua Kien Hui, Tan Geok Chin and Hayati A Rahman. 2008. Angiogenic potential of serial-passage chorion-derived stem cells from human term placenta. 5th World Congress on Tissue Banking, 14 Oct Malaysia Nuclear Agency, Kuala Lumpur.

Product :

- AngioEnd Kit (Angiogenic quantification kit)

Awards/Certificates

- 23rd Malaysian Society of Pharmacology and Physiology Scientific Meeting: Best Poster Award- 2009

IP Status

AngioEnd Kit patent pending

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	The Isolation of Amnion Stem Cells and Characterisation of its Potential in Skin Regeneration
Project Number	02-01-02-SF0289
Project Leader and Team Members	Leader: Tan Geok Chin Members: Chua Kien Hui, Ruszymah Idrus and Hayati Abd Rahman
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This study aimed to isolate amnion stem cells and investigate its potential in skin regeneration. The specific stem cell isolation technique from human amniotic membrane was determined. The specific culture medium for amnion stem cell expansions was determined before finally defining stem cell characteristics for skin generation. From the study, the technique to isolate the amnion stem cells was developed. Other than that, different culture medium for amnion expansion as well as their transport potential was evaluated. The epithelial and stem cell characteristics from amnion cells were also evaluated.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Fatimah S.S., Ng S.L., Chua K.H., Hayati A.R., Tan A.E. & Tan G.C. 2010. Value of human amniotic epithelial cells in tissue engineering for cornea. Human Cell 23: 141-51. 2. Siti Fatimah S., Chua K.H., Hayati A.R., Tan A.E., Tan G.C. 2008. The stemness gene expression of cultured human amniotic epithelial cells in serial passages. Medical Journal of Malaysia 63:53-4. 3. Tan G.C., Siti Fatimah S., Hayati A.R., Tan A.E., Chua K.H. 2008. Quantitative RT PCR approach to evaluate the neurogenic and gliagenic gene expression of cultured human amniotic epithelial cells. Medical Journal of Malaysia 63: 51-2. 4. Tan G.C., Siti Fatimah S., Chua K.H., Tan A.E., Nur Fariha M.M., Hayati A.R. 2008. Stemness and angiogenic gene expression of cultured human amniotic mesenchymal cells in serial passage. Placenta 29: A42-A42.

Proceedings/Conferences/Seminars:

1. Simat, S.F., Chua K.H., Abdul Rahman, H., Tan A.E. and Tan G.C. 2008. The stemness gene expression of cultured human amniotic epithelial cells in serial passages. Medical Journal of Malaysia Proceeding 63:53-4.
2. Tan G.C., Simat S.F., Abdul Rahman H., Tan A.E. and Chua K.H. 2008. Quantitative RT PCR approach to evaluate the neurogenic and gliagenic gene ex[ression of cultured human amniotic epithelial cells. Medical Journal of Malaysia Proceeding 63:51-2.
3. Siti Fatimah Simat, Chua Kien Hui, Hayati Abdul Rahman, Tan Ay Eeng and Tan Geok Chin. 2009. Effects of keratinocyte growth factor on the epithelial gene expression of cultured human amnion epithelial cells. 23rd MSPP Scientific Meeting 12-13 May, Kuala Lumpur.
4. Siti Fatimah Simat, Chua Kien Hui, Hayati Abd. Rahman, Tan Ay Eeng and Tan Geok Chin. 2008. The effects of serum reduction on gene expression profiles of cultured human amniotic epithelial cells. 22nd Malaysian Society of Pharmacology & Physiology Scientific Meeting. 5-6 Apr, Kuala Lumpur.
5. Siti Fatimah Simat, Chua Kien Hui, Tan Ay Eeng and Tan Geok Chin. 2008. Isolation and gene expression profiles of human amniotic epithelial cells. Tissue Engineering and Regenerative Medicine International Society Asia-Pasific Chapter Meeting 6-8 Nov, Taipei, Taiwan

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Explore the Potential of Human Lipoaspirate Stem Cells for Future Clinical Treatment of Cartilage Loss
Project Number	02-01-02-SF0290
Project Leader and Team Members	Leader: Chua Kien Hui Members: Naseem Malik, Jeevanan Jahendran, Samsudin Osman Cassim and Ruszymah Idrus
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This study aimed to investigate the potential of human lipoaspirate stem cells for future clinical treatment of cartilage loss. The specific stem cell isolation technique from human lipoaspirate sample was determined. This was then followed by defining suitable culture medium for the expansion of human lipoaspirate stem cells as well as defining chondrogenic induction medium for lipoaspirate stem cells. The appropriate bio-absorbable composite for cartilage construction was defined before finally evaluating the in vivo development of tissue-engineered cartilage in athymic mice model.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Chua, K.H. 2008. Lipoaspirate stem cell for cartilage engineering. The Medical Journal of Malaysia. 63: 4. 2. Hamid, A.A., Ruszymah, B.H.I., Aminuddin, B.S., Sathappan, S. and Chua, K.H. 2008. Differential gene expression of human adipose-derived stem cells in osteogenic induction. The Medical Journal of Malaysia. 63: 9-10. 3. Zaman, W.S., Makpol, S., Santhapan, S. and Chua, K.H. 2008. Stemness gene expression profile of human adipose derived stem cells in long-term culture. The Medical Journal of Malaysia. 63: 61-62. 4. Zaman, W.S., Makpol, S., Santhapan, S. and Chua, K.H. 2010. 5-Azacytidine failed to up-regulate cardiogenic genes expression in long-term culture human adipose-derived stem cells. The Medical Journal of Malaysia. 65: 98-100. 5. Adila, A.H., Ruszymah, B.H.I., Aminuddin, B.S., Somasundram, S. and Chua, K.H. 2008. High density culture of human lipoaspirate stem cells in chondrogenic medium permit large neo-cartilage formation in vitro. Medicine & Health. 3: 142.

	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Chua, K.H., Adila, A.H., Somasundram, S., Aminuddin, B.S. & Ruszymah, B.H.I. 2007. Quantitative gene expression profile of human lipoaspirate stem cells in chondrogenic induction medium: A preliminary finding. Tissue Engineering International & Regenerative Medicine Society Asia-Pacific Chapter Meeting, 3-5 Dec, Tokyo, Japan. 2. Wan Safwani K.Z., Suzana M., Somasundram S. & Chua K.H. 2008. The senescence-associated gene expression level of human adipose derived stem cells in long-term culture. TERMIS-AP, 6-8 Nov, Taiwan. 3. Adila A.H., Chua K.H., Somasundram S., Aminuddin B.S. and Ruszymah B.H. 2008. Effects of basic fibroblast growth factor on gene expression profile of human lipoaspirate derived stem cell during chondrogenesis. TERMIS-AP, 6-8 Nov, Taiwan. 4. Chua K.H., Wan Safwani K.Z., Somasundram S. & Suzana M. 2008. Differential gene expression of long-term culture human adipose derived stem cells under osteo-induction. TERMIS-AP, 6-8 Nov, Taiwan. 5. Chua, K.H., Adila, A.H., Somasundram, S., Aminuddin, B.S. & Ruszymah, B.H.I. 2007. Quantitative gene expression profile of human lipoaspirate stem cells in chondrogenic induction medium: A preliminary finding. Tissue Engineering International & Regenerative Medicine Society Asia-Pacific Chapter Meeting, 3-5 Dec, Tokyo, Japan. <p>Products:</p> <ol style="list-style-type: none"> 1. Chondro ENHANCE 2. STEM Q kit
Awards/Certificates	<ol style="list-style-type: none"> 1. Universiti Kebangsaan Malaysia 2009- Excellent Academic and Research Awards, Medical Faculty
IP Status	<ol style="list-style-type: none"> 1. Chondro ENHANCE: File for Trade Secrete and Trade Mark – 1 & 2 get the numbers 2. STEM Q kit: File for patent and Trade Mark
Additional Information	<p>Linkages: Prince of Songkla University, Thailand.</p> <p>Spin-off: Start up company by UKM: TELA Technology Sdn Bhd</p>
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Physiology, UKM Medical Centre, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur.
Phone Number	Office: 03-9289 7299 H/p: 012-215 3788
e-Mail	kienhui@pd.jaring.my/ckienhui@hotmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Molecular Genetics of Unconjugated Hyperbilirubinemia and Development of Molecular Screening Test for Severe Neonatal Jaundice
Project Number	02-01-02-SF0291
Project Leader and Team Members	Leader: Ainoon Othman Members: Boo Nem Yun, Noor Hamidah Hussi, Rohana Jaafar and Hanita Othman
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	<p>This study has elaborated and identified two mutations in the UDPGT1A1 gene and the allelic frequencies of these mutations in neonates with and without neonatal jaundice. Five different types of mutations in the OATP2 gene including a novel mutation and their allelic frequencies were also identified and determined respectively. Characterisation of the G6PD mutations in all the 455 neonates and the prevalence of co-inheritance of UDPGT1A1 as well as the OATP2 and G6PD deficient gene mutations were determined prior to frequency comparison between normal neonates and neonates with severe hyperbilirubinemia. Homozygous mutation 211G>A of the UDPGT1A1 gene is a significant independent risk factor of severe unconjugated hyperbilirubinemia and heterozygous 211G>A is an added risk factor in neonates carrying G6PD deficient mutation. G6PD mutations are associated with severe unconjugated hyperbilirubinemia. Three OATP2 genotypes are associated with severe unconjugated hyperbilirubinemia and one specific haplotype of the OATP2 gene appears to have protective effect on the development of severe unconjugated hyperbilirubinemia. The study has successfully developed and established a number of assays for mutation and SNP analysis useful for detecting genetic risk factors for neonatal jaundice.</p>
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none">1. Fei-Liang Wong, Ainoon, O., Boo, N.Y., May-Kay Wang, Farisah, R. and Hamidah, N.H. 2007. Rapid detection of UGT1A1 single nucleotide robe. Journal of Clinical Laboratory Analysis 21: 167-172.2. Nem-Yun Boo, Fei-Liang Wong, May-Kay Wang and Ainoon Othman. 2009. Homozygous variant of UGT1A1 gene mutation and severe neonatal hyperbilirubinemia. Pediatrics International 51: 488-493.

	<ol style="list-style-type: none"> 3. Fei-Liang Wong, Nem-Yun Boo, Othman Ainoon and May-Kay Wang. 2009. Comparison of detection of glucose-6-phosphate dehydrogenase deficiency using fluorescent spot test, enzyme assay and molecular method for prediction of severe neonatal hyperbilirubinemia. Singapore Medical Journal 50: 62-67. 4. Fei Liang Wong, Nem Yun Boo, Ainoon Othman and May-Kay Wang. 2009. Variants of organic anion transporter polypeptide 2 gene are not risk factors associated with severe neonatal hyperbilirubinemia. Malaysian Journal of Pathology 31: 99-104. 5. Othman, A., Wong, F.L., Boo, N.Y., Wang, M.K. and Hamidah, N.H. 2008. Rapid molecular screening of G6PD variants in Malaysian Chinese newborn using Taqman MGB SNP assay. International Journal of Laboratory Haematology 30: 125. <p>Products:</p> <ol style="list-style-type: none"> 1. A diagnostic kit : 'G6PD Genotyping Plate'
Awards/Certificates	<ol style="list-style-type: none"> 1. Malaysian Technology Expo 2009: 1 Gold Medal
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Department of Pathology, Faculty of Medicine HUKM, Jalan Yaacob Latif, 56000 Kuala Lumpur. Office: 03-9145 5020 ainoon@mail.hukm.ukm.my/ainoon@ppukm.ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Epigenetic Alteration and Gene Silencing of the MDR Gene in Acute Leukaemia
Project Number	02-01-02-SF0292
Project Leader and Team Members	Leader: Noor Hamidah Hussin Members: Hishamshah Ibrahim, Eni Juraidah, Ainoon Othman, A. Rahman A. Jamal, Hamidah Alias, Zarina Abdul Latiff, Maha Abdullah@Maha-Lakswm and Syed Zulkifli Syed
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This research aimed to study the epigenetic alteration and gene silencing of the MDR gene in acute leukaemia. First, a permanent MDR gene knockdown model was established via infection with the siRNA-hairpin expression vector. Then, the efficiency of siMDR gene in human leukaemia cell line K562/A02 and in leukemic blasts of acute leukaemia patients by in vitro cytotoxic assay and functional assay were determined. Finally the methylation status of the acute leukaemia blast of patients were detected. From the study conducted, the technique for transfection of K562 cell line using Cell Line optimisation Nucleofector Kit were successfully carried out. Optimisation of methylation status analysis of acute leukaemia cases were also successfully optimised. Basic cell culture, flow cytometry and DNA microarray-based techniques in the determining the methylation genes expressions of acute leukaemia can be transferred through future technical workshops. New knowledge was disseminated through presentations and conferences as well as through publications.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Hamidah, N.H., Choo, C.W., Maha, A., Hamidah, A., Juraidah, A.R., Hishamshah, I. and Jamal, A.R. 2009. Genome-wide detection methylated DNA in childhood acute lymphoblastic leukemia. 8th Malaysia Genetics Congress, 4-6 Aug 2009, Pahang. 2. Choo, C.W., Hamidah, N.H., Maha, A., Alias, H., Juraidah, A.R., Hishamshah, I. and Jamal, A.R. 2010. CDH11 and ADAMTSL5, putative epigenetics markers to detect early therapeutic resistance in childhood acute lymphoblastic leukemia. First Asean Federation of Haematology and VIIIth Malaysian National Haematology Scientific Meeting. 22-24 Apr 2010, Kuala Lumpur.

Awards/Certificates	<ol style="list-style-type: none"> 1. First Asean Federation of Haematology & VIIIth Malaysian Society of Haematology Scientific Meeting 2010: Poster award: 1st Runner UP 2. 8th Malaysia Genetics Conference 2009: Best Poster Award
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Department of Pathology, Faculty of Medicine, HUKM, Jalan Yaacob Latif, 56000 Kuala Lumpur. Office: 03-9145 5339 hamidah@ppukm.ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Folate, MTHFR Gene Polymorphism and Childhood Cancers
Project Number	02-01-02-SF0294
Project Leader and Team Members	Leader: Syed Zulkifli Syed Zakaria Members: Ainoon Othman, Eni Juraidah, Hishamshah Ibrahim, Noor Hamidah Hussin, Maha Abdullah@ Maha-Lakswm, Zarina Abdul Latiff, Hamidah Alias and A. Rahman A. Jamal
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This research aimed to study the relationship between folate, methyl tetrahydrofolate reductase gene (MTHFR) gene polymorphism and childhood cancers. The MTHFR gene polymorphism in parents and childhood cancer were determined. Then, the role of maternal folate consumption and its association with childhood cancers were studied. An association between maternal folate consumption, parental and child's MTHFR polymorphism as well as the risk of childhood cancers were determined. Results obtained from this study were determination of the methyl tetrahydrofolate reductase gene (MTHFR) gene polymorphism together with folate related genes polymorphisms like methyl tetrahydrofolate dehydrogenase (MTHFD1), serine hydroxy methyl transferase (SHMT1), thymidilate synthase (TS), methionine synthase (MTR), methionine synthase reductase (MTRR) and reduced folate carrier (RFC1) in children with childhood cancer, specifically children with leukemia.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Pediatrics, Faculty of Medicine, HUKM, Jalan Yaacob Latif, 56000 Kuala Lumpur.
Phone Number	Office: 03-9145 5004 H/p: 013-359 5959
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Genomic and Proteomic Markers of Endometrial Cancer in Malaysian Population
Project Number	02-01-02-SF0296
Project Leader and Team Members	Leader: Norfilza Mohd Mokhtar Members: Isa Mohamed Rose, Zainul Rashid Mohd, Ahmad Zailani Hatta Mohd and A. Rahman A. Jamal
Field of Research	Biotechnology
Project Summary/ Objectives	This project aimed to study genomic and proteomic markers of endometrial carcinoma in Malaysian population by identifying biomarkers that are involved in the development of the cancer via microarray analysis. The analysis was done on cancerous whole tissues with relation to normal ones. Among the genes that were significantly upregulated and downregulated in this case are ERBB4, TGF- β , STAT5B and caveolin. All identified genes were validated using RT-PCR. Determination of the gene expression profiling of endometrial cancer using laser capture microdissection approach and comparative differential gene expression profiling were also conducted. The genomic approach using laser capture microdissection method and microarray in order to find true difference from previous extraction technique and pure isolation of epithelial cells that expressed differential pathological variation. Eighteen genes were found differentially expressed in 8 pairs of normal and cancerous endometrial epithelial cells. EFNB3 and NDRG4 were among downregulated genes in LCM cancer cases and reported to be involved in cell-cell signalling and stress response element. For upregulated genes in LCM cancer tissue, STAT2 and ICAM1 play a role in Jak/STAT signalling pathway and cell-cell adhesion biological process.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Norfilza Mohd Mokhtar. 2008. Microarray profiling of endometrial cancer in Malaysian population - an early finding. 4th Malaysia Indonesia Brunei Medical Science Conference, 24–26 Jul 2008, PPUM, Cheras. 2. Norfilza Mohd Mokhtar. 2008. Differentially expressed genes in endometroid endometrial carcinoma using microarray: A preliminary report. Endocrine Society of Australia & Society for Reproductive Biology. 29 Aug–1 Sept 2008, Sidney.



	<ol style="list-style-type: none">3. Norfilza Mohd Mokhtar. 2009. Transcript level of ErbB-4 and stat5b in the endometrioid endometrial cancer. 3rd Regional conference on Molecular Medicine (RCMM), 2-4 May 2009, Kota Bharu.4. Norfilza Mohd Mokhtar. 2009. Gene expression Analysis in Endometrial cancer using Laser Capture Microdissection. 3rd Regional conference on Molecular Medicine (RCMM) 2009, 2-4 May 2009, Kota Bharu.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Physiology, Faculty of Medicine, HUKM, Jalan Yaacob Latif, 56000 Kuala Lumpur.
Phone Number	Office: 03-9289 7846 H/p: 016-232 3969
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Genetic Polymorphisms and Enzyme Activity of Thiopurine S-Methyltransferase: Development of Molecular Diagnostics and a Bioassay to Reduce Toxicity and Enhance Therapeutic Efficiency in Acute Lymphoblastic Leukaemia
Project Number	02-01-02-SF0298
Project Leader and Team Members	Leader: A. Rahman A. Jamal Members: Syed Zulkifli Syed Zak, Hanita Othman, Hishamshah Ibrahim, Maha Abdullah@Maha-Lakswmi, NoorHamidah Hussin, Khairul Bariah Ahmad Amin Noordin, Then Sue Mian and Zulhabri Othman
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This project aimed to develop a molecular diagnostics and bioassay to reduce toxicity as well as enhancing therapeutic efficiency in acute lymphoblastic leukaemia. In this study, the allelic frequency of thiopurine s-methyltransferase (TPMT) in local populations of patients was determined. There were two methods of genetic profiling for polymorphisms and these methods were modified and established. Phenotyping of the corresponding patients and the genotype-phenotype correlation was also carried out and established. Feedback is now given to clinicians on new patients with leukaemia who will be started on 6-MP.
Publications/Products/ Outcomes	Outcome : 1. Now offering the TPMT genotyping service to the paediatric oncology centres (Hospital Kuala Lumpur and UKM Medical Centres).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Institute of Molecular Medical Research (UMBI), HUKM, Jalan Yaacob Latif, 56000 Kuala Lumpur. Office: 03-9145 5384 rahmanj@mail.hukm.ukm.my/rahmanj@ppukm.ukm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Molecular and Genetic Profiling of Gestational Diabetes Mellitus Using Single Nucleotide Polymorphism
Project Number	02-01-02-SF0299
Project Leader and Team Members	Leader: Nor Azlin Mohamed Ismail Members: Nor Azlin Mohd Ismail, Syed Zulkifli Syed Zakaria, Zaleha Abdullah Mahdy, Shuhaila Ahmad, Harlina Halizah Siraj, Norzilawati Mohd Naim, Zainab Shamsuddin, Noor Sham Yahya Ludi, Rohana Jaafar, Shareena Ishak, Roslan Harun, Abdul Rahman Abdul Jamal, Wan Zurinah Wan Ngah, Huzwah Khaza'ai and Mohd Sokhini Abdul Mutalib
Field of Research	Chemical Sciences
Project Summary/ Objectives	This project is aimed to determine the molecular profile of gestational diabetes mellitus using single nucleotide polymorphism. The single nucleotide polymorphism (SNP) profile that is associated with gestational diabetes mellitus (GDM) among Malaysian population has been identified. The profile managed to correlate the specific SNP's and the disease severity of gestational diabetes mellitus (GDM). The likelihood of GDM using the identified SNP feature sets were predicted. The SNP profile with the outcomes of babies from mothers with GDM was determined. These achievements were elaborated further in a student's Master's thesis.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Obstetrics and Gynaecology, Faculty of Medicine, HUKM, Jalan Yaacob Latif, 56000 Kuala Lumpur.
Phone Number	Office: 03-9145 5962 H/p: 019-312 2255
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Genetic and Biochemical Variation of Glucose-6-Phosphate Dehydrogenase (G6PD) Status Among Negritos (orang asli) Population in Peninsular Malaysia
Project Number	02-01-02-SF0316
Project Leader and Team Members	Leader: Endom Ismail Members: Zilfalil Alwi and Hoh Boon Peng
Field of Research	Biological Sciences
Project Summary/ Objectives	This study was dedicated to identify genetic and biochemical variation in G6PD genes and enzyme activities among the orang asli populations in Peninsular Malaysia. The correlation between the genetic and biochemical variation was established. The results of the project are to be shared with other national and international institutions that have similar interest in G6PD mutational research or any population geneticist worldwide. Information transfer was achieved.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Biosciences and Biotechnology, Faculty of Science and Technology Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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e-Mail	eismail@ukm.my/eism@hotmail.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Simultaneous Polishing Unit of Ammonia and Manganese Using Biological Aerated Filter in Drinking Water Treatment System
Project Number	02-01-02-SF0367
Project Leader and Team Members	Leader: Siti Rozaimah Sheikh Abdullah Members: Shahrom Md Zain, Fatihah Suja', Noorhisham Tan Kofli and Siti Kartom Kamarudin
Field of Research	Biological Sciences
Project Summary/ Objectives	This study was dedicated for the development of simultaneous polishing unit of ammonia and manganese using biological aerated filter (BAF). The performance of BAF in polishing manganese and ammonia were simultaneously evaluated. After having completed the optimisation stage, it was tested in ABASS Sdn. Bhd.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) 43600 UKM Bangi, Selangor. Office: 03-8921 6407 rozaimah@vlsi.eng.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification of New Prognostic and Predictive Markers of Lung Cancer
Project Number	02-01-02-SF0399
Project Leader and Team Members	Leader: Roslan Harun Members: Fauzi Md. Anshar, Nor Adina Ahmad Tajudin, Roslina Abdul Manap, Andrea Ban Yu-Lin, Mohd Nazil Salleh, Mohamed Saifulaman Mohame, Isa Mohamed Rose, Gabriele Anisah Froemming and A. Rahman A. Jamal
Field of Research	Biological Sciences
Project Summary/ Objectives	This project was conducted to identify new prognostic and predictive markers of lung cancer. First, the genes whose expression correlated with tumour aggressiveness and patient survival were identified. Studies done managed to identify gene expression profiles associated with patient survival in advanced non-small cell lung cancers (NSCLC). A gene signature that is able to predict patient survival in advanced NSCLC was also identified. Functions of the selected molecular signatures were also determined using RNA interference in lung cancer xenografts. The gene expressions were found to change between stage III and stage IV in NSCLC.
Contact Institution/Entity/ Address	Universiti Kebangsaan Malaysia (UKM) Senior Research Fellow, Institute of Molecular Medical Research (UMBI), HUKM, Jalan Yaacob Latif, 56000 Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Construction of Multifunctional Oxygenase Gene Cassette for Aromatic Hydrocarbons Degradation
Project Number	02-01-02-SF0408
Project Leader and Team Members	Leader: Ainon Hamzah Members: Othman Omar, Amir Rabu, Zeti Azura Mohamed Hussein and Salmijah Surif
Field of Research	Biotechnology
Project Summary/ Objectives	This study aimed to construct multifunctional oxygenase gene cassette for aromatic hydrocarbon degradation. To achieve this, biphenyl and toluene oxygenase genes were identified by integrating sequence information and bioinformatic tools. Clones that carry multifunctional oxygenase genes were also constructed before expressing and characterising the enzymes produced. Expression and characterisation of the target enzymes has also been carried out.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) 43600 UKM Bangi, Selangor. Office: 03-8921 3812 H/p: 019-316 0747 antara@pkrisc.cc.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Expression of Cellobiohydrolase and Endoglucanase Genes from <i>Aspergillus terreus</i> Suk-1 in <i>Pichia pastoris</i>
Project Number	02-01-02-SF0419
Project Leader and Team Members	Leader: Nik Marzuki Sidik Members: Othman Omar and Sahidan Senafi
Field of Research	Biotechnology
Project Summary/ Objectives	This study was done to express cellobiohydrolase and endoglucanase genes from <i>Aspergillus terreus</i> SUK-1 in <i>Pichia pastoris</i> . Initially, the production of cellobiohydrolase and endoglucanase from <i>A. terreus</i> SUK-1 using <i>P.pastoris</i> was optimised. Subsequently, the kinetic parameters for the expressed cellobiohydrolase and endoglucanase were characterised.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Biosciences and Biotechnology, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Ipomea reptans (water spinach, kangkung) for Bioremediation Application: The Isolation and Characterisation of Metallothionein (MT) Gene
Project Number	02-01-02-SF0420
Project Leader and Team Members	Leader: Khairiah Jusoh Member: Che Radziah
Field of Research	Biological Sciences
Project Summary/ Objectives	This study aimed to isolate and characterise metallothionein (MT) gene for bioremediation application. The initial objective was to obtain a full-length MT gene from Ipomea reptans (L.). Poir. However, only partial-length gene was obtained. The expression profile of MT gene in I. reptans treated with heavy metals was then analysed and the expression profile was successfully identified.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Tg. Nilam, Tg. I., Khairiah, J., Che Radziah, C.M.Z. and Nik Marzuki, S. 2008 Kadar penyerapan logam Kadmium oleh Ipomoea reptans (kangkung). UMT 7th International Annual Symposium on Sustainability Science and Management, 8-10 Jun 2008, Kuala Terengganu.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Environmental and Natural Resource Sciences, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM, Bangi, Selangor.
Phone Number e-Mail	Office: 03-8921 5084 khairiah@pkrisc.cc.ukm.my/khairiah@ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Effect of Phyllagathis rotundifolia Jack Extract on Endometriosis
Project Number	02-01-02-SF0421
Project Leader and Team Members	Leader: Azimahtol Hawariah Lope Pihie Member: Asmah Rahmat
Field of Research	Biological Sciences
Project Summary/ Objectives	This project studies the effects of Phyllagathis rotundifolia Jack extract on endometriosis. An aqueous extract of P. rotundifolia was obtained and the mechanisms of actions of P. rotundifolia were determined in vivo using rats. Besides, a phytopharmaceutical product based on P. rotundifolia has been successfully formulated for the treatment of endometriosis and has been approved by the Ministry of Health Malaysia.
Publications/Products/ Outcomes	Product: Endometcare (Mal. No. 08021495tc)
Awards/Certificates	1. Kuala Lumpur Convention Centre 2009: 1 Gold Medal
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Pusat Pengajian Biosains and Bioteknologi, Fakulti Sains and Teknologi, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Regeneration of Cochlear Hair Cells for the Future Treatment of Deafness
Project Number	02-01-02-SF0441
Project Leader and Team Members	Leader: Lokman Saim Members: Chua Kien Hui, Fariah Suhaimi, Azian Abd Latiff, Faizah Othman, Asma, Goh Bee See, Ruszymah Idrus and Mazita Ami
Field of Research	Biotechnology
Project Summary/ Objectives	This project aimed to regenerate cochlear hair cells for future treatment for deafness. In this study, two regions to isolate auditory progenitor hair cells, which are from cochlear and vestibular tissues were identified. The suitable medium to regenerate the auditory progenitor was also identified in vitro.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Dean of Faculty of Medicine and Director of UKM Medical Centre, HUKM, Jalan Yaacob Latif, 56000 Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Reconstruction of External Ear Via Tissue Engineering Technology Utilising Co-Polyester Materials in Sheep Model for Future Clinical Application
Project Number	02-01-02-SF0444
Project Leader and Team Members	Leader: Goh Bee See Members: Ruszymah Idrus, Chua Kien Hui and Lokman Saim
Field of Research	Biotechnology
Project Summary/ Objectives	Attempt was carried out to reconstruct external ear via tissue engineering technology by utilising co-polyester materials by using the sheep model. A three-dimensional co-polyester scaffold was fabricated. Poly-lactic-glycolic acid (PLGA) was identified while the solvent-casting and particle-leaching technique were successfully defined. We discovered that the optimal incorporation method of cultured auricular chondrocytes with co-polyester material scaffold involved the use of a carrier, autologous fibrin. The behaviour of cultured cells was also evaluated by microscopy, growth profile and cell cycle analysis. The tests showed that cultured chondrocytes have normal cell behaviour in vitro. As a means to define the subfacial expansion techniques, a comparison was made with the use of tissue expander. Results showed that tissue expander was not needed in sheep model. Besides, the structural integrity of the construct was also evaluated. PLGA promotes the growth of cartilage-like tissue. However, some difficulties were encountered as the construct did not retain its shape post-implantation. Thus, Medpor was used as endoskeleton where combination of PLGA and medpor maintained good shape.
Publications/Products/ Outcomes	Journals: 1. Ishak, M.F., Munirah, S., Chua, K.H., Asma, A., Lokman, B.S., Ruszymah, B.H.I. and Goh, B.S. 2008. Growth kinetic study on normal and microtic chondrocytes of human auricular cartilage. <i>Medical Journal of Malaysia</i> . 63: 117-8.



	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Goh B., Ishak M.F., Chua K.H., Asma A., Lokman B.S., Aminuddin B.S. and Ruszymah B.H.I. 2008. Comparison On Normal And Microtic Human Auricular Chondrocytes: Growth kinetic and gene expression analyses, <i>Tissue Engineering And Regenerative Medicine International Society Scientific Meeting (TERMIS)</i> June 22-26, Portugal. 2. Goh, B.S., Ishak, M.F., Lokman, B.S., Asma, A., Aminuddin, B.S., Ruszymah, B.H.I. 2009. Reduction of stem cell in microtic ear as compared to normal ear could be the possible cause of arrested. Development Of The External Ear, <i>Tissue Engineering And Regenerative Medicine International Society Scientific Meeting (TERMIS)</i>. August 31 - September 3, South Korea.
<p>Contact</p> <p>Institution/Entity</p> <p>Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM)</p> <p>43600 Bangi,</p> <p>Selangor.</p> <p>Office: 03-9170 2415</p> <p>H/p: 012-393 2329</p> <p>irenegbs@yahoo.com</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Reconstruction of Tissue-Engineered Human Neural Tube for Future Clinical Application in Nerve Injury
Project Number	02-01-02-SF0445
Project Leader and Team Members	Leader: Shalimar Abdullah Members: Amaramalar Selvi Naicker, Jamari Sapuan Ohnmar Htwe @ Rashidah Ismail, Angela Ng Min Hwei and Ruszymah Idrus
Field of Research	Biotechnology
Project Summary/ Objectives	<p>This study aimed to reconstruct tissue-engineered human neural tube for future clinical application in nerve injury. The proliferation of human neuro-progenitor cells from peripheral nerve via cell culture technique has not been achieved. Therefore, bone marrow-derived stem cells were opted and differentiated into nerve-like cells. Evaluation on the characteristics of neuro-progenitor cells for various neural regenerating markers showed that the transdifferentiated nerve-like cells expressed all the nerve markers. Two types of biomaterials were tested / fabricated in the laboratory i.e. human muscle-stuffed vein (biological) and poly-glycolic-lactic acid (PLGA) (synthetic) and the procedures were optimised to achieve the desirable physical structure. PLGA was premolded into cylindrical shape and hydrolysed muscle was stuffed into a vein to serve as scaffold for nerve conduit. The seeded nerve conduits were implanted intramuscularly in nude mice and assessed periodically. We found that the scaffold material degraded after 8 weeks of implantation and was replaced with matrix-secreted by the seeded cells. No inflammatory reaction was observed in all the implanted constructs. The tissue engineered nerve conduit showed promising result that can be translated into clinical application. These conduits had been tested in parallel for the treatment of animal models (rats) with nerve defects in a different project and showed positive functional outcome. Further testing in a larger species is required and more rigorous functional outcome evaluated before embarking on human clinical trial.</p>
Publications/Products/ Outcomes	Journals: 1. Nur Hidayah, H., Mazzre M., Angela Ng, M.H. Ruszymah B.H.I. and Shalimar, A. 2008. Approaches To Deriving Schwann Cells From Human Bone Marrow For Neural Tube Regeneration In A Clinical Setting. <i>Medical Journal of Malaysia</i> . 63: 39-40.



	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nur Hidayah H., Ng, M.H., Ruszymah, B.H.I., Naicker, A.S., and Shalimar, A. 2009. Preparation of acellularized muscle stuffed vein and seeded with neuro trans-differentiated mesenchymal stem cells: A conduit for guided nerve regeneration. <i>23rd Malaysian Society of Pharmacology & Physiology Scientific Meeting</i>, 12 - 13 May, 2009, Kuala Lumpur. 2. Nur Hidayah, H. Mazzre, M. Angela Ng, M.H., Ruszymah, B.H.I. and Shalimar, A. 2008. Approaches to deriving schwann cells from human bone marrow for neural tube regeneration in a clinical setting. <i>2nd Malaysian Tissue Engineering & Regenerative Medicine Society Scientific Meeting</i>, 22-23 Jul 2008, UKM Medical Center. 3. Nur Hidayah, H., Angela Ng, M.H., Ruszymah, B.H.I. and Shalimar, A. 2010. Sem evaluation of acellularized muscle stuffed vein construct seeded with human neuro trans-differentiated mesenchymal stem cells: In vitro and in vivo study. <i>3rd Malaysian Tissue Engineering & Regenerative Medicine Society Scientific Meeting</i>, 13 - 14 Oct 2010, UKM, Bangi. 4. Nur Hidayah, H., Ng, M.H., Ruszymah, B.H.I., Naicker, A.S., and Shalimar, A., 2009. Comparison Of PLGA And acellularized muscle stuffed vein seeded with neuro trans-differentiated mesenchymal stem cells as a conduit for guided nerve regeneration. <i>2nd Tissue Engineering & Regenerative Medicine International Society World Congress 2009 (TERMIS WC 09): Tissue Engineering & Regeorative Medicine</i>, 31 Aug - 3 Sep 2009, Seoul.
Awards/Certificates	<ol style="list-style-type: none"> 1. 23rd MSPP Scientific Meeting 2008: Young Investigator Awards 2. 3rd Malaysia Tissue Engineering & Regenerative Medicine Scientific Meeting 2010: 2nd place in the poster presentation 3. TERMIS World Congress 2009: Student Travel Awards 4. TESMA2 009: Student Travel Awards
Additional Information	Linkages: Agensi Nuklear Malaysia (MINT).

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Peripheral Nerve Regeneration Via Tissue Engineering Technique for the Treatment of Paralysis
Project Number	02-01-02-SF0446
Project Leader and Team Members	Leader: Amaramalar Selvi Naicker Members: Ohnmar Htwe @ Rashidah Ismail, Shalimar Abdullah, Angela Ng Min Hwei and Ruszymah Idrus
Field of Research	Medical and HealthScience
Project Summary/ Objectives	<p>This project aimed to regenerate peripheral nerve via tissue engineering technique for the treatment of paralysis. However, the attempt to isolate and culture-expand neuro-progenitor cells from peripheral nerve was unsuccessful. Nevertheless, the same attempt were made using another cell source namely olfactory ensheathing cells which was successfully cultured and characterised. Suitable biomaterials from natural and synthetic biomaterials to be used as scaffolds for neural tube formation was also successfully prepared or fabricated. Besides, a neural tube was successfully constructed by incorporating neuro-progenitor cells into neural tube scaffold. A traumatic nerve defect using the tissue-engineered neural tube in an animal model was also successfully treated.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Yazid, A.G., Anuar, A., Ohnmar, H., Ng, M.H., Ruszymah, B.H.I., Naicker, A.S. Sourcing Different Neuro-Progenitor Cell for the use of Nerve Construct. <i>The Medical Journal of Malaysia</i>. 2008. 63: 113-114. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Tan, C.W., Anuar, A., Mazzre, M., Nur Hidayah, H., Mohd Yazid A.G., Shalimar, A., Ohnmar, H., Naicker, A.S. Modified Minimally Invasive Surgical Approach To Rat Sciatic Nerve TERMIS (Tissue Engineering Regenerative Medicine International Society) 2nd World Congress, 3 Sep 2009, Seoul, Korea. 2. Mazzre, M., Ohnmar, H., Ng, M.H., Rizal, A.M., Naicker, A.S. 2010. Evaluation of tissue engineered biological conduit in peripheral nerve injury - <i>Animal Study 40th Malaysian Orthopaedic Association/ Annual General Meeting & Annual Scientific Meeting</i>, 20-22 May 2010, Johor Bahru.

	<p>3. Anuar, A., Yazid, A.G., Ohnmar, H., Ng, M.H., Rizal, A.M., Ruszymah, B.H.I., Naicker, AS. Comparative study between reversed autograft and surgically created sciatic nerve defect in rats. 2010. <i>The Neuro-Physiological Outcome 40th Malaysian Orthopaedic Association/ Annual General Meeting & Annual Scientific Meeting</i>, 20 - 22 May 2010, Johor Bahru.</p> <p>4. Ohnmar, H., Ng, A.M.H., Ruszymah B.H.I., Amaramalar, S.N. Sourcing different neuro-progenitor cell for the use of nerve construct. <i>Medical Journal of Malaysia, 2nd Malaysia Tissue Engineering & Regenerative Medicine Society, Scientific Meeting 2008 (MTERMS 2008)</i>. 22-23 Jul 2008, Kuala Lumpur.</p>
Additional Information	Linkages: University of Tübingen, Agensi Nuklear Malaysia (MINT).
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification of Potential Oncogenes for Diagnosis and Prognostication of Prostate Cancer
Project Number	02-01-02-SF0450
Project Leader and Team Members	Leader: Siti Aishah Md Ali Members: Clarence Ko Ching Huat, Sharifah Noor Akmal and Zubaidah Zakaria
Field of Research	Chemical Sciences
Project Summary/ Objectives	The objective of this study was to identify the potential oncogenes for diagnosis and prognosis of prostate cancer. In this project common chromosomal imbalances in tumorigenesis of prostate cancer was characterised and specific genes and protein biomarkers overexpression involved in diagnosis and prognosis of prostate cancer was identified. The correlation between chromosomal abnormalities and clinicopathological characteristics were also identified.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Nenny, N.S., Siti-Aishah, M.A., Reena, M.Z., Zulkifli, M.Z., Rohaizak, M., Zubaidah, Z. 2009. Preliminary study of gains and losses in prostate cancer cases by array comparative genomic hybridization. <i>8th Malaysia Genetics Congress</i>, 4-6 Aug 2009, Pahang. 2. Nenny, N.S., Siti-Aishah, M.A., Reena, M.Z., Zulkifli, M.Z., Zubaidah, Z. 2009. Cyclin D1 And P27kip1 overexpressions in prostatic adenocarcinoma. <i>23rd MSPP Scientific Meeting</i>, 12-13 May 2009, Kuala Lumpur. 3. Nenny, N.S., Siti-Aishah, M.A., Reena, M.Z., Zulkifli, M.Z., Rohaizak, M., Zubaidah, Z. 2009. Cyclin D1 expression in prostate cancer by immunohistochemistry and array comparative genomic hybridization techniques. <i>3rd Regional Conference on Molecular Medicine RCMM</i>, 2-4 May 2009, Kota Bharu.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) 43600 Bangi, Selangor. Office: 03-9145 5363 saishah@mail.hukm.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	The Formation of Tissue Engineered Conjunctiva for the Treatment of Pterygium
Project Number	02-01-02-SF0451
Project Leader and Team Members	Leader: Faridah Hanom Annuar Members: Jemaima Che Hamzah, Ruszymah Idrus, Chua Kien Hui, Ropilah Abdul Rahman and Norzana Abd Ghafar
Field of Research	Biotechnology
Project Summary/ Objectives	<p>This study aimed to form tissue engineered conjunctiva for the treatment of pterygium. The study has isolated the conjunctival epithelial cells and fibroblast from the tissue and culture expand it until the passage 3. The cells were positive for specific conjunctival markers namely CK4, CK19 and MUC5AC. Human conjunctival sheet for transplantation was formed. Air-Dried human amniotic membrane and autologous fibrin were used as biomaterial to form 3D conjunctiva construct. Sufficient numbers of cultured cells were incorporated into the biomaterials. The in vivo development of human tissue engineered conjunctival sheet in athymic mice model was evaluated. Histological and gene analysis of the implanted constructs showed the properties of conjunctival epithelium were present after 2 weeks of implantation on the nude mice. Finally, an animal study utilising autologous tissue engineered conjunctival sheet was performed. Clinical observation showed a better healing rate in treatment group compared to the control in a rabbit model.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Nizam, M.H., Ruszymah, B.H.I., Chua, K.H. Norzana, A.G., Jemaima, C.H. 2008. Ex vivo growth of rabbit bulbar, fornix and palpebral conjunctival epithelia in a serum-free and feeder layer-free culture system. <i>Medical Journal of Malaysia</i>. 63: 111-112. <p>Proceedings/Conferences/Seminars: 8</p> <ol style="list-style-type: none"> 1. Nizam, M.H., Siti, N.S., Jemaima, C.H., Chua, K.H., Norzana A.G., Ruszymah, B.H.I., Faridah, H.A. 2009. Comparative analysis of cultured human bulbar, fornix and palpebral conjunctival epithelia: growth kinetics & gene expression profile. <i>23rd Malaysian Society of Pharmacology & Physiology Scientific Meeting</i>, 12-13 May 2009, Kuala Lumpur.



	<ol style="list-style-type: none"> Nizam, M.H., Siti, N.S, Jemaima, C.H., Chua, K.H., Norzana, A.G., Ruszymah, B.H.I., Faridah, H.A. 2008. Comparative analysis of cultured human bulbar, fornix and palpebral conjunctival epithelia: growth kinetics & gene expression profile. <i>23rd Malaysian Society of Pharmacology & Physiology Scientific Meeting</i>, 12 - 13 May 2009, Kuala Lumpur. In-vitro Cell Expansion and Growth Kinetics of Human Bulbar, fornix and Palpebral Conjunctival Epithelium: <i>Observational Study. Asia-ARVO 2011</i>, 22-23 Jan 2011, Singapore. Autologous fibrin: A new scaffold material in cultivating autologous conjunctiva. <i>Asia-ARVO 2011</i>, 22-23 Jan 2011, Singapore. <p>Outcomes: Living tissue engineered conjunctiva in a form of sheet utilising human amniotic membrane and autologous fibrin were successfully formed in the laboratory. In vivo assessment of the sheet transplanted in the animal model of conjunctival tissue loss showed faster epithelium restoration rate compared to the control (no transplant).</p>
Awards/Certificates	<ol style="list-style-type: none"> UKM Ophthalmology Symposium 2010: Best Poster Presentation (1st Place), Nova-MSO Young Investigator Award 2011: Best Oral Presentation (2nd Place) TESMA 2009: Student Travel Award <ol style="list-style-type: none"> <i>Nova-MSO Young Investigator award 2011. In-vitro Cell Expansion and Growth Kinetics of Human Bulbar, fornix and Palpebral Conjunctival Epithelium: Observational Study.</i>
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Department of Ophtalmology , Faculty of Medicine, UKM Medical Centre, HUKM, Jalan Yaacob Latif, 56000 Kuala Lumpur. Office: 03-9145 5986 jemaimac@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Regeneration of Alveolar Bone via Tissue Engineering Technique to Facilitate Dental Implant Placement in Atrophic Alveolar Bone - an Animal Study
Project Number	02-01-02-SF0497
Project Leader and Team Members	Leader: Roszalina Ramli Members: Ruszymah Idrus, Roslan Abdul Rahman, Mohd Nazimi Abd Jabar, Badiah, Masfueh Razali, Shariffah Shuriana Abd Shukor and Norziha Yahaya
Field of Research	Biological Sciences
Project Summary/ Objectives	The objective of this study was to adopt the tissue engineering approach for tissue regeneration in dental procedures. As an initiative, the regeneration of alveolar bone, which is a common problem that requires tissue grafting was proposed. In view of the future translation of this technique in human, a study using large animal models such as sheep, dogs or primates was proposed. Initially, alveolar bones were regenerated from bone marrow derived stem cells or other potential cell sources which require less invasive harvesting methods such as the mucoperiosteum and the dental pulp tissue using tissue engineering technique. The different forms of cell carrier namely injectable or ceramic block for the stable incorporation of the tissue engineered bone constructed at the defect sites were determined. Finally, the osseointegration of titanium implant with the tissue engineered bone was attempted. However, only some only of the proposed objectives were achieved. After extensive studies, alveolar bones were generated only from bone marrow derived stem cells. Besides, only ceramic block was used as cell carrier to carry the tissue engineered bone construct at the defect sites. On the other hand, osseointegration of the titanium implant with the tissue engineered bone is currently being assessed.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Human Mimicking Sensory System for Environmental and Agriculture Applications
Project Number	02-01-15-SF0002
Project Leader and Team Members	Leader: Abdul Hamid Adom Members: Ali Yeon Md. Shakaff, Abu Hassan Abdullah, Shah Fenner Khan Mohamad and Mohd Noor Ahmad
Field of Research	Chemical sciences
Project Summary/ Objectives	This objective of this study was to develop human mimicking sensory system for environmental and agriculture applications. An integrated artificial olfactory and taste sensors setup was successfully developed. Neural networks model that is able to discriminate or recognise data from experimental setup was also developed. Other than that, a prototype human mimicking sensory system for environmental and agricultural purposes was fabricated while a system capable of non-destructive testing for fruit maturity classification/ detection of VOCs or plant malaise was partially developed.
Contact Institution/Entity Address	Universiti Malaysia Perlis (UniMAP) Taman JKKK Kubang Gajah, 02600 Arau, Perlis.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Process Design Study: Bioadsorption Medium Development
Project Number	02-01-15-SF0031
Project Leader and Team Members	Leader: Khairul Farihan Kasim Members: Farizul Hafiz Kasim, Ku Syahidah Ku Ismail, Alina Rahayu Moham and Mohamed Zulkali Mohamed
Field of Research	Biotechnology
Project Summary/ Objectives	This project aimed to develop bioadsorption medium from biological/agricultural waste. The efficacy of selected medium bioadsorption was determined prior to evaluation of absorption performance from selected medium. The suitable material to be used for bioadsorption was evaluated and identified. Basically, a few types of medium had been developed with different agricultural waste namely rice husk, rice straw, empty fruit bunch, and used saw dusk. The efficiency and performance study had been done and some of the medium shows very significant results which were better than commercial activated carbon. Among the mediums studied, rice straw had been identified as the most suitable material to be used for bioadsorption. An improved and novel bioadsorbent had been developed namely MAG (magnetised bio-adsorbent) and Feromass (Novel, magnetised bioadsorbent for dye removal).
Publications/Products/ Outcomes	Products: 1. MAG: Magnetized Bioadsorbent for Dye Removal. 2. Feromass: Novel, Magnetized Bioadsorbent for Dye Removal
Awards/Certificates	1. ITEX 2009: Silver medal
Contact Institution/Entity Address	Universiti Malaysia Perlis (UniMAP) School Of Bioprocess Engineering, Universiti Malaysia Perlis, 01000 Kangar, Perlis.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Dense Hydroxyapatite from Natural Bone
Project Number	02-01-15-SF0043
Project Leader and Team Members	Leader: Sri Asliza Md Amin Members: Mohd Zaheruddin Kasmu, Ho Li Ngee, Nor Azwin Ahad and Mohd Nazree Derman
Field of Research	Biotechnology
Project Summary/ Objectives	This project aimed to develop dense hydroxyapatite (HA) from natural bone. First, the effects of MgO, Al ₂ O ₃ and BaO to the properties of natural HA were identified. The effects of sintering process to the properties of natural bone HA were then investigated prior to production of dense HA from natural source.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Shahrizal, M. H., Sri Asliza, M. A., Nazree, D., Zaheruddin K. 2008. Study The effect Of TiO₂ and soaking time to the natural hydroxyapatite properties. <i>2nd Penang International Conference For Young Chemists</i>, 31 May 2008, Penang. 2. Sri Asliza, M. A., Zaheruddin, K., Shahrizal, H. and Nurul Fazlina, Z. A. 2008. Study the properties of dense hydroxyapatite-extract from cow bone. <i>Proceeding Of 4th International Conference On X-Rays And Related Techniques In Research And Industries</i>, 2-6 Jun 2008, Kota Kinabalu, Sabah. 3. Sri Asliza M. A., Shahrizal M. H., Zaheruddin K., Azida A and Siti Sarah I. 2008. Preparation And characterisation Of Hydroxyapatite Powder From Biological Natural Bone. Prosiding Seminar Kebangsaan Aplikasi Sains Dan Matematik, 24 - 25 Nov 2008, Batu Pahat, Johor. 4. Shahrizal M. H., 1Sri Asliza M. A, Nazree D, Zaheruddin K. 2008. Preparation and characterisation of natural hydroxyapatite from bovine bone. <i>2nd Penang International Conference For Young Chemists</i>, 31 May 2008, Penang. 5. Sri Asliza, M. A., Shahrizal, H., Zaheruddin, K., Azida, Azmi. 2009. Study the effect of different sintering conditions on the microstructure and mechanical properties of dense natural hydroxyapatite. <i>RAMM2009</i>, 2-4 May 2009, Kota Bharu, Kelantan.

	Product : 1. Dense Hydroxyapatite from cow bone
Contact Institution/Entity Address	Universiti Malaysia Perlis (UniMAP) Ketua Pegawai Eksekutif Universiti Malaysia Perlis (UniMAP) Kampus Kubang Gajah 01000 Kangar, Perlis.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Screening of Ultraviolet Radiation Protection of Bioactive Compounds from Selected Plants (Pteridophyte)
Project Number	02-01-15-SF0054
Project Leader and Team Members	Leader: Khairul Farihan Kasim Members: Shaída Fariza Sulaiman, Ku Syahidah Ku Ismail and Mohamed Zulkali Mohamed
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	Selected Pteridophyte used in this study were identified as <i>Diplazium esculentum</i> , <i>Nephrolepsis exaltata</i> , <i>Nephrolepsis bisarrata</i> , <i>Asplenium nidus</i> , <i>Selaginella braunii</i> , <i>Dicranopteris linearis</i> and <i>Stenochlaena palustris</i> . Comparison study on various extraction methods were carried out; soxhlet, autoclave, soaking, boiling, sonication. A prototype of PHWE had been successfully developed. PHWE was chosen and showed a promising yield and efficient in extracting bioactive compounds as ultraviolet protection. The screenings of bioactive compounds were determined by using DPPH free radicals scavenging activity, total phenolic contents and total flavonoids contents. Several flavonoids and flavanone glucoside were isolated and identified and were proven to have antioxidant activities. An antioxidant film based on blends of Pteridophyte flour and PVA also had been successfully developed. This antioxidant films can be used mainly in cosmetic applications; anti aging, skin problem.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Khairul, F.K., Nur Azirah, Ku Ismail, J. K.S., Zulkali, M. M. D. 2009. Antioxidative properties of pressurized hot water extraction systems from selected local ulam. <i>Malaysian Technical Universities Conference on Engineering and Technology (MUCEET2009)</i>, 20-22 June 2009, Kuantan, Pahang. 2. Nur Azirah Jamial, Khairul Farihan Kasim, Mohamed Zulkali Mohamed Daud. 2008. Flavonoids: Plants' UV Radiation Defense Compound. <i>2nd International Conference On Science and Technology (ICSTIE'08)</i>, 12-13 Dec 2008, Permatang Pauh, Penang, Malaysia.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Production of Biofuel from Starch-Based Compound via Green Technology
Project Number	02-01-15-SF0074
Project Leader and Team Members	Leader: Ku Syahidah Ku Ismail Members: Badhrulhisham Abdul Aziz, Khairul Farihan Kasim, Asmida Ideris, Mohamed Zulkali Mohamed and Farizul Hafiz Kasim
Field of Research	Engineering sciences
Project Summary/ Objectives	This project has identified a variety of wild, non edible cassava as a suitable source of starch. The root has high starch content (20%) that is able to produce high yield bioethanol. This project has also determined the optimum parameters for fermentation in producing bioethanol. In addition, a bioethanol rig for low temperature and atmospheric pressure to minimise operating cost was developed. It is a green process for production of bioethanol due the treatment done to the effluent where cyanide was degraded before draining the wastewater.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Mashitah Abdullah, Noorulnajwa Diyana Yaacob, Ku Syahidah Ku Ismail, Khairul Farihan Kasim, Mohamed Zulkali Mohamed Daud. 2009. Production of Bioethanol from Cassava: Enzyme Concentration Study. <i>3rd International Conference on Chemical and Bioprocess Engineering</i>, 12 -14 Aug 2009, Universiti Malaysia Sabah. 2. Noorulnajwa Diyana Yaacob, Ku Syahidah Ku Ismail, Khairul Farihan Kasim and Mohamed Zulkali Mohamed Daud. 2009. Production of Glucose from Cassava Starch: Statistical Approach. <i>Malaysian International Conference on Trends in Bioprocess Engineering</i>, 12-13 Dec 2009, Kuala Lumpur. 3. Ku Ismail, K.S., Ahmad, A.A., Inba, T., Kasim, K.F. and Daud, M.Z.M. 2008. Thermoenzymatic Hydrolysis of Cassava Starch by alfa amylase and amyloglucosidase. <i>Proceeding of Malaysian Technical Univ Conference on Engineering and Technology MUCET 2008</i>, 8-10 Mac 2008, Perlis.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Digestive Protease from Fish: Isolation, Purification, Characterisation and Expression
Project Number	02-02-08-SF0001
Project Leader and Team Members	Leader: Lokman Shamsudin Members: Roshani Othman and Syarul Nataqain
Field of Research	Biotechnology
Project Summary/ Objectives	The target protease gene of Zebra fish (Danio rerio) was isolated through a molecular approach. The gene was cloned and sequenced. Study on expression level of the recombinant protease in eukaryotic system was carried out . However, it was unsuccessful because this fragment was actually a partial gene which contained the non-coding introns.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of a Patentable Strain of <i>Arthrospira platensis</i> as a Nutritious Feed for Fish Larvae
Project Number	02-02-08-SF0002
Project Leader and Team Members	Leader: Lokman Shamsudin Members: Tan Do Yew, Umi Kalsom Abu Bakar, Lai Long Wee and Roshani Othman
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	A new mutant strain <i>Arthrospira platensis</i> has been developed and the phytonutrient content was analysed. We have also established a culture method for the mutant strain and tested its suitability as feed for fish larvae.
Contact Institution/Entity Address	Universiti Industri Selangor (UNISEL) Jalan Zirkon A7/A, Seksyen 7, Off Persiaran Masjid, 40000 Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Enhancing Reproduction, Growth and Quality of Bivalves Through Biotechnology for Social Well Being
Project Number	02-02-08-SF0004
Project Leader and Team Members	Leader: Fatimah @ Corazon Abdullah Members: Sharr A. Harmin, Rozila Alias, Thalathiah Saidi and Normawati @ Nadzirah
Field of Research	Environmental sciences
Project Summary/ Objectives	The genetic variation study in green mussels, <i>Perna viridis</i> population from 16 mussel farms in Peninsular Malaysia was carried out using random amplified microsatellites (RAMs)- a dominant DNA marker. Analysis of biological and chemical contaminants in bivalves collected from 16 sampling sites in 7 states in Peninsular Malaysia was also carried out. From this, eight different pathogens were identified using conventional and rapid PCR techniques. ICP-OES technique was used to assess heavy metal levels in these samples.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Protein and Gene Profiling in the Developing Chick Embryo Under Normal and Treated Conditions
Project Number	02-01-04-SF0001
Project Leader and Team Members	Leader: Nor Aripin Shamaan Member: Muhajir Hamid Yasmin Anum Mohd Yusof
Field of Research	Biotechnology
Project Summary/ Objectives	A 2-dimensional electrophoretic protein maps during the early stage of embryonic growth and development under normal and cancer-induced conditions in chicken as a model for the study of carcinogenesis induced by chemicals have been obtained and analysed. The changes in protein and DNA profiles under normal, cancer induced and chicken embryos treated with medicinal plant extracts was characterised and analysed. The information obtained can be used to identify and subsequently isolate and purify proteins and genes of special interest to be used as biomarkers for the very early stage of carcinogenesis.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Media Formulation and Optimisation of Culture Conditions for Bacteriocin Production by Locally Isolated Lactic Acid Bacteria
Project Number	02-01-04-SF0002
Project Leader and Team Members	Leader: Foo Hooi Ling Members: Arbakariya Ariff, Raha Abdul Rahim and Rosfarizan Mohamad
Field of Research	Biotechnology
Project Summary/ Objectives	The industrial medium was formulated using commercially available selective medium as reference for production of bacteriocin from locally isolated Lactic acid bacteria. The culture conditions with formulated industrial medium were optimised using 2 liter stirred tank fermenter for bacteriocin production from locally isolated lactic acid bacteria.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Loh, T.C., Chong, S. W., Foo, H. L. and Law, F.L. 2009. Effects on growth performance, faecal microflora and plasma cholesterol after feeding with spray-dried metabolite in postweaning rats. <i>Czech Journal of Animal Science</i> 54: 10-16. 2. Loh, T.C., Harun, H. A., Foo, H. L. and Law, F.L. 2008. Effects of feeding spray-dried metabolites of <i>Lactococcus lactis</i> subsp. <i>lactis</i> – <i>RW18</i> in postweaning rats <i>International Journal of Probiotics & Prebiotics</i> 3: 1-6. 3. Loh, T.C., Lee, T.M., Foo, H. L., Law, F.L., and Rajion, M. A. 2008. Growth performance and fecal microflora of rats offered metabolites from lactic acid bacteria <i>Journal of Applied Animal Research</i> 34: 61-64. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Foo, H.L., Lim, Y. S., Anuradha, K., Thanh, N. T., Loh, T.C., Raha, A. R., Bejo, M. H., Mariana, N. S., and Rusul, G. 2009. Probiotic effect of metabolites derived from <i>Lactobacillus plantarum</i>. <i>International Congress of Malaysian Society for Microbiology</i>, 1 - 4 Dec 2009, Penang. 2. Nadia, S. O. M. O., Norhazira, S. Y., Norkhalidah, J., Raha, A. R., Rosfarizan, M., Arbakariya, A., Loh, T. C. and Foo, H.L. 2009. Effect of carbon to nitrogen ratio

	<p>on bacteriocin production by <i>Lactobacillus plantarum</i> strains. <i>International Congress of Malaysian Society for Microbiology</i>, 1 – 4 Dec 2009, Penang.</p> <ol style="list-style-type: none"> Ooi, M. F., Nadia, S. O. M. O., Norkhalidah, J., Norhazira, S. Y., Arbakariya, A., Rosfarizan, M., Raha, A. R., Loh, T. C. and Foo, H.L. 2009. Effects of pH, temperature and carbon to nitrogen ratio on bacteriocin production by <i>Lactobacillus plantarum</i> I-UL4. <i>International Congress of Malaysian Society for Microbiology</i>, 1 – 4 Dec 2009, Penang. Nurzafirah, M., Foo, H. L., Raha, A. R. and Rosfarizan, M. 2008. Effect of nitrogen and carbon sources on bacteriocin production by <i>Lactobacillus plantarum</i> I-UL4. <i>30th Symposium of Malaysian Society for Microbiology</i>, 16-19 Aug 2008, Kuantan, Pahang. Tai, H. F., Morteza, S. M., Raha, A. R. and Foo, H. L. 2008. Characterisation of bacteriocin genes in <i>Lactobacillus plantarum</i> I-UL4. <i>33rd Annual Conference of The Malaysian Society for Biochemistry and Molecular Biology</i>, 27-28 Aug 2008, Kuala Lumpur. Morteza, S. M., Foo, H. L., Raha, A. R. and Adam Leow, T. C. 2008. <i>Lactobacillus plantarum</i> strains isolated from Malaysian fermented foods harbor two different classes of structural bacteriocin genes. <i>33rd Annual Conference of The Malaysian Society for Biochemistry and Molecular Biology</i>, 27-28 Aug 2008, Kuala Lumpur.
IP Status	<ol style="list-style-type: none"> Malaysian Patent filed (PI20097032); Probiotic composition for nutraceutical product International Patent filed (PCT/MY/2010/000306); Probiotic composition for nutraceutical product
Additional Information	<p>Technology Licensing:</p> <ol style="list-style-type: none"> Malaysia patent filed (PI20042295); A Process for Producing Bacteriocin from <i>Lactobacillus plantarum</i>. Filed patent (PCT/MY2009/000050) Monogastric Animal Feed. <p>Spin-off: Nu-trino Synbio (M) Sdn. Bhd.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Effect of Recombinant Glycoproteins of Newcastle Disease Virus on Cancer Cells
Project Number	02-01-04-SF0004
Project Leader and Team Members	Leader: Khatijah Mohd Yusoff Members: Abdul Manaf Ali, Noorjahan Banu Alitheen and Muhajir Hamid
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The HN and F glycoproteins of NDV were successfully expressed in HT-29 and Hep-G2 cell lines. Effects of the expression of these genes was successfully investigated. These putative proteins will be screened for their ability to induce apoptosis in various other cancer cells. Their apoptosis-inducing ability offers a promise towards the use of these proteins in cancer therapy.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) 43400 UPM Serdang, Selangor. Office: 03-8946 7590 H/p: 019-383 3251 kyusoff@biotech.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Expression and Structural Studies of L2 Lipase
Project Number	02-01-04-SF0005
Project Leader and Team Members	Leader: Abu Bakar Salleh Member: Raja Noor Zaliha
Field of Research	Biotechnology
Project Summary/ Objectives	The L2 lipase gene was successfully cloned and expressed in <i>E. coli</i> . Beside that, a site-directed mutagenesis of L2 lipase gene has been successfully performed on this gene in order to generate new properties. Analysis of this mutated gene of L2 lipase was completed using computer modelling to explore protein structure functions. Further understanding of its three-dimensional tertiary or quaternary structure are required for future development and would lead to tailor-made enzyme with desired properties.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification of the Self-Assembly Domain of Nipah Virus Nucleocapsid Protein and its Application in Diagnosis
Project Number	02-01-04-SF0013
Project Leader and Team Members	Leader: Tan Wen Siang Members: Janna Ong Abdullah, LingTau Chuan and Muhajir Hamid
Field of Research	Biotechnology
Project Summary/ Objectives	The nucleocapsid (N) gene of Nipah virus was cloned. A total of 23 N mutated proteins were expressed in <i>E. coli</i> and analysed. The characterization of the virus-like particles in <i>E. coli</i> was carried out. The mutated nucleocapsids was purified using sucrose gradient technique and analysed with electron microscope and light scattering machine. In addition, ELISA for detection of anti-N antibodies was developed.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ong, S.T., Yusoff, K., Abdullah, J.O., Kho, C.L. and Tan, W.S. 2009. Mutagenesis of the nucleocapsid protein of Nipah virus involved in capsid assembly. <i>Journal of General Virology</i>. 90: 392-397. 2. Chong, F.C., Tan, W.S., Awang Biak, D.R., Ling, T.C and Tey, B.T. 2009. Purification of histidine-tagged nucleocapsid protein of Nipah virus using immobilized metal affinity chromatography. <i>Journal of Chromatography B</i>. 877:1561-1567. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ong, S.T., Yusoff, K., Abdullah, J.O., Kho, C.L. and Tan, W.S. 2007. Analysis of the Self-assembled Nucleocapsid Protein of Nipah Virus in <i>Escherichia coli</i>. <i>6th ASEAN Microscopy Conference</i>, 10-12 Dec 2007, Pahang. 2. Chong, F.C., Tan, W.S., Awang, Biak, D.R., Ling, T.C. and Tey, B.T. 2007. An efficient purification method for the direct recovery of recombinant nucleocapsid protein of Nipah virus. <i>32nd Annual Conference of the Malaysian Society for Biochemistry and Molecular Biology</i>, 5-6 Sept 2007, Petaling Jaya. 3. Joseph, N.M.S., Tan, C.S. and Tan, W.S. 2008. Cloning of Nipah virus N gene into a yeast expression vector. <i>30th Symposium of the Malaysian Society for Microbiology</i>. 16-19 Aug 2008, Kuantan, Pahang.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Functional Elucidation of Seaweed Genes Related to Agar Biosynthesis
Project Number	02-01-04-SF0018
Project Leader and Team Members	Leader: Ho Chai Ling Members: Zeti Azura Mohamed Hussein and Phang Siew Moi
Field of Research	Biotechnology
Project Summary/ Objectives	The specific objectives of this project were to identify genes related to agar biosynthetic pathways by integrating sequence information and bioinformatics tools, to elucidate functions of seaweed genes in agar biosynthesis and to verify the predicted functions through functional assays.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Ho, W.Y., Teoh, S., Teo, S.S. and Ho, C.L. 2008. Cloning of the cDNA sequence encoding galactose-1-phosphate uridylyltransferase (GALT) from <i>Gracilaria changii</i> for recombinant protein production. <i>19th Intersociety Biochemistry Seminar</i> , UTAR and MSBMB, 22 Mar 2008, UTAR. 2. Siow, R.S., Teoh, S., Ho, W.Y. and Ho, C.L. 2008. Molecular cloning and recombinant protein production of GDP mannose pyrophosphorylase, GDP mannose-3', 5' epimerase and galactose-1-phosphate uridylyl transferase from <i>Gracilaria changii</i> in <i>Escherichia coli</i> . <i>33rd Annual Conference of MSBMB</i> , 27-28 Aug 2008, Kuala Lumpur.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number e-Mail	Office: 03-8946 7475 clho@biotech.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Molecular Modelling and Site-Directed Mutagenesis of Type III Polyketide Synthase and Vanadium Dependent Haloperoxidase
Project Number	02-01-04-SF0020
Project Leader and Team Members	Leader: Ho Chai Ling Member: Ng Kim Yong
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The project specific objectives were to deduce the molecular models for seaweed type III polyketide synthase and vanadium dependent haloperoxidase and to relate the structure of type III polyketide synthase and vanadium dependent haloperoxidase to their functions by introducing site-directed mutagenesis to the active site of these enzymes.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Baharum, H., Morita, H., Tomitsuka, A., Lee, F.C., Ng, K.Y., Abdul Rahim, R., Abe, I. and Ho, C.L. 2011. Molecular cloning, modeling, and site-directed mutagenesis of Type III polyketide synthase from <i>Sargassum binderi</i> (Phaeophyta). <i>Marine Biotechnology</i> 1436-2236. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Baharum, H., Lee, F.C., Abd. Razak, M., Ng, K.Y., Abd. Rahim, R. and Ho, C.L. 2008. Molecular cloning and recombinant protein production of type III polyketide synthase (PKS) from <i>Sargassum binderi</i>. <i>17th Scientific Meeting of the MSMBB</i>, 23-25 Jun 2008, Kuala Lumpur. 2. Baharum, H., Ng, K.Y., Raha, A.R., Ho, C.L. 2008. Site-directed mutagenesis of Type III polyketide synthase (PKS) from <i>Sargassum binderi</i>. <i>33rd Annual Conference of the MSBMB</i>, 27-28 Aug 2008, Kuala Lumpur.
Additional Information	Linkages: University of Tokyo, Japan
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Studies on Mesenchymal Stem Cells as a Potential Cellular Therapy for Cancer
Project Number	02-01-04-SF0028
Project Leader and Team Members	Leader: Rajesh Ramasamy Members: Maha Abdullah@Maha-Lakswm, Seow Heng Fong and Sharmili Vidyadaran
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The detailed interaction between MSC and tumour cells were evaluated. The results showed that MSC inhibit the tumour cells in dose-dependent manner via cell-to-cell Contact mode. MSC induce an arrest in G0/G1 and G2/M phases of cell cycle of tumour cells. In the presence of MSC, tumour cells were prevented from entering S phase (DNA synthesis) or M phase (Mitosis, cell division). Cyclin molecules that govern cell cycle progress, their relevant kinases and kinase inhibitors; molecules that mediate signalling pathways have showed a generalised pattern of inhibition. Cyclin D1, D3, A and E; PCNA and ERK signalling molecules were significantly reduced in the presence of MSC. The ability of MSC to induce tumour suppression via cell cycle arrest promise a great potential in cancer therapy. However, the safety and efficacy of the MSC need to be verified prior to clinical application.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Tong, C.K., Sarmadi, V.H., Latifah, S.Y., Seow, H.F. and Ramasamy, R. 2008. Human bone marrow derived mesenchymal stem cell suppress T cell proliferation by inducing cell cycle arrest. <i>Malaysian Journal Medical Sciences and Health Sciences</i> 4: 41-50. 2. Ramasamy, R., Tong, C.K., Seow, H.F., Vidyadaran, S. and Dazzi, F. 2008. The immunosuppressive effect of human bone marrow derived mesenchymal stem cell targets T cell proliferation but not the effector function. <i>Cellular Immunology</i> 251: 131-136. 3. Sarmadi, V.H., Tong, C.K., Vidyadaran, S., Abdullah, M., Seow, H.F., Ramasamy, R. 2010. Mesenchymal stem cells inhibit proliferation of lymphoid origin haematopoietic tumour cells by inducing cell cycle arrest. <i>Medical Journal of Malaysia</i> 65: 38-43.

	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ramasamy, R., Tong, C.K., Sarmadi, V.H., Seow, H.F. and Dazzi, F. 2008. Mesenchymal stem cells inhibit proliferation of tumour cells: Impact on cancer therapy. <i>2nd Malaysian Tissue Engineering and Regenerative Medicine Scientific Meeting</i>, 22-23 Jul 2008, Kuala Lumpur. 2. Sarmadi, V.H., Tong, C.K., Mahdi, J., Seow, H.F. and Ramasamy, R. 2008. Mesenchymal stem cells profoundly inhibit tumour cell proliferation. <i>2nd Malaysian Tissue Engineering and Regenerative Medicine Scientific Meeting</i>, 22-23 Jul 2008, Kuala Lumpur. 3. Ramasamy, R., Sarmadi, V.H., Vidyadaran, S., Abdullah, M. and Seow, H.F. 2010. Studies on mesenchymal stem cells as a potential cellular therapy for cancer. <i>National Biotechnology Seminar</i>, 24-26 May 2010, Kuala Lumpur. 4. Ramasamy, R., Sarmadi, V.H., Vidyadaran, S., Tong, C.K. and Abdullah, M. 2010. Mesenchymal stem cells inhibit hematopoietic origin tumor cells via cell cycle arrest. <i>ISSCR 8th Annual Meeting</i>, 16-19 Jun 2010, San Francisco. 5. Ramasamy, R., Sarmadi, V.H., Tong, C.K., Vidyadaran, S., Abdullah, M. and Seow, H.F. 2010. Mesenchymal stem cells inhibit proliferation of lymphoid origin haematopoietic tumour cells by inducing cell cycle arrest. <i>9th Annual Scientific Meeting</i>, 26 Jun 2010, UPM.
Awards/Certificates	<ol style="list-style-type: none"> 1. 9th Annual Scientific Meeting, College of Pathologists, Academy of Medicine of Malaysia 2010: Best Poster Award 2. Pameran Reka Cipta, Penyelidikan dan Inovasi (PRPI) 2009:1 Gold Medal 3. (BioInno Awards 2009) BIOMALAYSIA 2009:1 Bronze Medal 4. Pameran Reka Cipta, Penyelidikan dan Inovasi (PRPI) 2008:1 Silver Medal
Additional Information	Linkages: Imperial College of London, UK
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Studies on Industrial Dye Effluent Degradation by Locally Isolated White Rot Fungi and Bacteria
Project Number	02-01-04-SF0035
Project Leader and Team Members	Leader: Mohd. Arif Syed Member: Mohd. Yunus Abd. Shukor
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	Project objectives were to partially characterised the chemical composition and physical parameters of industrial dye effluents from various locations in Malaysia; to isolate microbes (fungi and bacteria) that can degrade or decolourise industrial dye and to test the efficacy of industrial dye degradation by previously isolated fungi and bacteria and their enzymes under replicated natural conditions.
Publications/Products/ Outcomes	Journals: 1. Syed, M.A., Sim, H.K., Khalid, A. and Shukor, M.Y. 2009. A simple method to screen for azo-dye degrading bacteria. <i>Journal of Environmental Biology</i> 30: 89-92.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Cloning and Characterization of Novel 5'-Cis-Acting Promoters and Other Controlling Elements in Green Microalgae <i>Ankistrodesmus Convolutus</i>
Project Number	02-01-04-SF0041
Project Leader and Team Members	Leader: Suhaimi Napis Members: Hishamuddin Omar and Clemente Michael Wong Vui
Field of Research	Biotechnology
Project Summary/ Objectives	Convolutus was developed. cDNA library of <i>A. convolutus</i> was successfully constructed, and the representative cDNA clones were categorised according to the relative abundance by probing against the total cDNA fragments collection and analysing the signal strength as shown on the X-ray film. The highly-expressive <i>A. convolutus</i> RbcS gene and its 5'-upstream region were isolated and analysed. Several important cis-acting elements of AcRbcS promoter were identified and partially analysed.
Publications/Products/ Outcomes	Journals: 1. Thanh, T., Chi, V.T., Abdullah, M.P., Omar, H., Noroozi, M., Ky, H. and Napis, S. 2011. Construction of cDNA library and preliminary analysis of expressed sequence tags from green microalga <i>Ankistrodesmus convolutus</i> Corda. <i>Molecular Biology Reporter</i> 38: 177-182. 2. Thanh, T., Omar, H., Abdullah, M.P., Chi, V.T., Noroozi, M., Ky, H. and Napis, S. 2009. Rapid and effective method of RNA isolation from green microalga <i>Ankistrodesmus convolutus</i> . <i>Molecular Biotechnology</i> 43: 148-153.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	<i>In Vivo</i> and <i>In Vitro</i> Study of Atherogenesis and the Potential Benefits of <i>Anacardium occidentale</i> Linn. in Experimental Atherosclerosis
Project Number	02-01-04-SF0042
Project Leader and Team Members	Leader: Zulkhairi Amom Members: Mohamad Taufik Hidayat, Zamree Md Shah and Maznah Ismail
Field of Research	Biotechnology
Project Summary/ Objectives	Supplementation of <i>Anacardium occidentale</i> extract to atherosclerotic-induced animal was able to exert a hypocholesterolemic effect and acted as antioxidant <i>in vivo</i> , thus delaying the progression of atheromatous plaque formation.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Evaluation of Probiotic Strains in Chickens by Real-Time Quantitative PCR
Project Number	02-01-04-SF0052
Project Leader and Team Members	Leader: Sieo Chin Chin Members: Kalavathy Ramasamy, Ho Yin Wan and Norhani Abdullah
Field of Research	Agricultural Sciences
Project Summary/ Objectives	Species specific primers were developed for detection of Lactobacillus probiotic strains by real time PCR. The Lactobacillus probiotic strains were quantified from in vivo samples
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Lee, C.M., Sieo, C.C., Abdullah, N. and Ho, Y.W. 2008. Sequence analysis of 16S rDNA and 16S-23S rDNA intergenic spacer region for differentiation of probiotics Lactobacillus strains isolated from the gastrointestinal tract of the chicken. <i>Annual Microbiollogi</i> 58: 133-140. 2. Lee, C.M., Sieo, C.C., Abdullah, N. and Ho, Y.W. 2008. Estimation of 16S ribosomal RNA gene copy number in several probiotic Lactobacillus strains isolated from the gastrointestinal tract of chickens. <i>FEMS Microbiology Letters</i> 287: 136-141. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Lee, C.M., Sieo, C.C., Abdullah, N. and Ho, Y.W. 2010. Comparison of conventional plate count and real-time PCR methods for the enumeration of probiotic Lactobacillus strains for poultry. <i>International Symposium of Lactic Acid Bacteria</i>, 25-27 Jul 2010, UPM. 2. Lee, C.M., Sieo, C.C., Abdullah, N. and Ho, Y.W. 2010. Genotypic studies of probiotic Lactobacillus strains isolated from the gastrointestinal tract of broilers. <i>International Symposium of Lactic Acid Bacteria</i>, 25-27 Jul 2010, UPM. 3. Lee, C.M., Sieo, C.C., Abdullah, N. and Ho, Y.W. 2009. Identification, characterisation and quantification of probiotic Lactobacillus strains for poultry using molecular techniques. <i>Proceedings of 2nd International Conference on Sustainable Animal Agriculture for Developing Countries</i>, 8-11 Nov 2009, Kuala Lumpur.





	<p>4. Lee, C.M., Sieo, C.C., Abdullah, N. and Ho, Y.W. 2010. Evaluation of probiotic <i>Lactobacillus</i> strains in chickens by quantitative real-time PCR. <i>National Biotechnology Seminar</i>, 24-26 May 2010, Kuala Lumpur.</p> <p>5. Lee, C.M., Sieo, C.C., Abdullah, N. and Ho, Y.W. 2010. Molecular genotyping of several probiotic <i>Lactobacillus</i> strains for poultry. <i>UMS Biotechnology Symposium IV</i>, 1-3 Dec 2010, UMS Kota Kinabalu.</p>
Additional Information	<p>1. The Invention, Research and Innovation Exhibition 2006: 1 Gold Medal</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Putra Malaysia (UPM) Department of Microbiology Faculty of Biotechnology and Biomolecular Sciences 43400 UPM Serdang Selangor.</p> <p>Office: 03-8946 6702 H/p: 012-334 1152 ccsseo@biotech.upm.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Isolation and Characterisation of Acetylcholinesterase and Butyrylcholinesterase Inhibitor from <i>Knema laurina</i>
Project Number	02-01-04-SF0059
Project Leader and Team Members	Leader: Md Nordin Lajis Member: Faridah Abas
Field of Research	Biological Sciences
Project Summary/ Objectives	Project objectives were to establish the protocol for acetylcholinesterase and butyrylcholinesterase inhibition assays; to isolate and characterise (elucidate) the structures of the bioactive (acetylcholinesterase) constituents from <i>Knema laurina</i> ; evaluate the bioactivity of the isolates (with respect to acetylcholinesterase and butyrylcholinesterase inhibition activity) and to compare the activity exhibited by the isolates and establish the preliminary structure-activity relationship.
Publications/Products/ Outcomes	Journals: 1. Muhammad Nadeem Akhtar, Kok Wai Lam, Faridah Abas, Maulidiani, Syahida Ahmad, Syed Adnan Ali Shah, Atta-ur-Rahman, M. Iqbal Choudhary and Nordin Hj Lajis. 2011. New class of acetylcholinesterase inhibitors from the stem bark of <i>Knema laurina</i> and their structural insights. <i>Bioorganic & Medicinal Chemistry Letters</i> . In press.
IP Status	1. Malaysia Patent filed (PI2011001275); An Acetylcholinesterase Inhibitor and Related Compounds Derived Thereof
Additional Information	Linkages: HEJ – Research Institute of Chemical Research, Karachi.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Molecular Targets of Natural and Synthetic Quinones
Project Number	02-01-04-SF0066
Project Leader and Team Members	Leader: Daud Ahmad Israf Ali Members: Md Nordin Lajis and Abdul Rahman Omar
Field of Research	Environmental Sciences
Project Summary/ Objectives	A quinone, namely atrovirone, showed significant drug-like activity. This compound inhibited various mediators of inflammation in a dose-response fashion. Mediators affected include nitric oxide, prostaglandin, TNF-alpha, IL-6, IL-8 and IL-1beta. The activity of atrovirone was shown to inhibit the nuclear translocation of p65 and also expression of both ERK and p38.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of a Strip Assay to Identify Beta-Thalassemia Alleles in Ethnic Groups in Malaysia
Project Number	02-01-04-SF0073
Project Leader and Team Members	Leader: Elizabeth George Members: Patimah Ismail, Rozita Rosli and Mary Anne Tan Jin Ai
Field of Research	Biotechnology
Project Summary/ Objectives	This project has developed strip assays to identify beta-thalassaemia alleles in the Malay, Chinese and Indian population in Malaysia. The strip assay is an effective and accurate laboratory method that can identify common mutations simultaneously in each ethnic group.
Publications/Products/ Outcomes	Journals: 1. Elizabeth George, Lai Kuan Teh, Mei I Lai and Mary Anne Tan. 2010. An innovative 2-step strategy for beta-thalassemia mutation identification in Malays. <i>International Journal of Laboratory Hematology</i> 32: 112. 2. Lai Kuan Teh, Elizabeth George, Mei I Lai, Rozita Rosli and Mary Anne Tan Jin Ai. 2010. Amplification refractory mutation systems (ARMS) versus Reverse Dot Blot Hybridization (RDBH) in screening beta-thalassemia among Malays. <i>The Malaysian Journal of Pathology</i> 32: 159.
Awards/Certificates	1. Innovation, Research and Invention Exhibition 2009: 1 Bronze Medal
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8947 2381 H/p: 012-217 9815 elizg@medic.upm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Microbial Biotransformation of Selected Diterpenoids, Flavonoids and Phenolic Compounds from Natural Sources
Project Number	02-01-04-SF0074
Project Leader and Team Members	Leader: Khozirah Shaari Members: Suraini Abd. Aziz, Md Nordin Lajis and Faridah Abas
Field of Research	Biological Sciences
Project Summary/ Objectives	Project objectives were to identify a useful microbial system for the biotransformation of natural product compounds by screening selected groups of bacteria and/or fungal strains; to prepare the microbial transformed compounds in sufficient quantities; to characterise the structures of the transformed compounds and to evaluate the biological activities of the compounds.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 8062 khozirah@ibs.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Genetic Characterisation of Indigenous Kedah Kelantan Cattle and its Crossbred Breed Types
Project Number	02-01-04-SF0076
Project Leader and Team Members	Leader: Jothi Malar Panandam Member: Vincent Ng In Hooi
Field of Research	Biotechnology
Project Summary/ Objectives	The project objectives were to obtain elucidated data on genetic variation within Kedah Kelantan cattle and its crossbred breed types; to analyse the genetic differences and distances among the cattle breed types and to estimate the amount of inbreeding in the local cattle populations.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Matrix Real-Time Polymerase Chain Reaction for the Rapid Detection of Colonic Bacteria Associated with Inflammatory Bowel Disease
Project Number	02-01-04-SF0078
Project Leader and Team Members	Leader: Loong Yik Yee Members: Mohd Yazid Abd Manap and Shuhaimi Mustafa
Field of Research	Biotechnology
Project Summary/ Objectives	Few specific primers for selected genus of bacteria associated with inflammatory bowel disease has been developed. The researchers manage to optimise the technique for real-time PCR in detection and enumeration of faecal bacteria after encountering some technical difficulties initially. A protocol for faecal bacteria detection and enumeration was developed using real-time PCR.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Huda Faujan, Nura Mustafa, Shuhaimi, M., Yazid, A.M., Yee Loong Yik, Fatimah, A.B. 2007. The role of microbial agents in the pathogenesis of inflammatory bowel disease. <i>Medical Microbiology</i> 18: 47-53. 2. Huda Faujan, Shuhaimi, M., Yazid, A.M. and Loong Yik Yee. 2007. The role of microbial agents in the pathogenesis of inflammatory bowel disease. <i>Medical Microbiology</i> 18: 47-53. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Fatimah, A.B., Huda Faujan, Loong Yik Yee, Shuhaimi, M. and Yazid, A.M. 2007. Real-time PCR as rapid detection of probiotics in human faecal sample. <i>Pameran Rekacipta, Penyelidikan dan Inovasi (PRPI)</i>, 27-29 Nov 2007, UPM.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Utilisation of Locally Produced Additive in Replacement of Antimicrobials in the Diet of Broiler Chickens
Project Number	02-01-04-SF0080
Project Leader and Team Members	Leader: Loh Teck Chwen Members: Foo Hooi Ling and Mohd Hair Bejo
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	Natural metabolites produced by probiotic <i>Lactobacillus</i> sp. as feed additive or growth promoter for worldwide livestock and poultry industries.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Thanh, N.T., Loh, T.C., Foo, H.L., Bejo, M.H. and Kasim, A. 2009. Effects of feeding metabolite combinations produced by <i>Lactobacillus plantarum</i> on growth performance, faecal microbial population, small intestine villus height and faecal volatile fatty acids in broilers. <i>British Poultry Science</i> 50: 298-306. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Thanh, N.T., Loh, T.C., Foo, H.L., Bejo, M.H. and Azhar, K.B. 2007. Inhibitory activity of different combinations of metabolites from different strains of <i>Lactobacillus plantarum</i> against pathogens. <i>29th Symposium of the Malaysian Society for Microbiology</i>, 24-26 Nov 2007, Kuala Terengganu. 2. Thanh, N.T., Loh, T.C., Foo, H.L., Bejo, M.H. and Azhar, K.B. 2007. Effect of feeding metabolite mixture from <i>Lactobacillus plantarum</i> strains on broilers performance. <i>28th Malaysian Society of Animal Production</i>, 29-31 May 2007, Kuching. 3. Thanh, N.T., Loh, T.C., Foo, H.L., Bejo, M.H. and Azhar, K.B. 2008. Effects of feeding metabolite combinations from <i>L. plantarum</i> on VLDL lipids profiles and bile salt deconjugation. <i>29th Malaysian Society of animal Production</i>, 25-27 May 2008, Penang.
Awards/Certificates	<ol style="list-style-type: none"> 1. PECIPTA 2009: 1 Gold Medal 2. PRPI 2009: 1 Gold Medal
IP Status	Malaysian Patent filed (PI20042148); Animal Feed Additive International: Filed PCT PCT/MY2009/000050



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Gene Profiling and Survival of Acute Leukaemia
Project Number	02-01-04-SF0087
Project Leader and Team Members	Leader: Maha Abdullah@Maha-Lakswmi-Pon Members: Leong Chooi Fun, Cheong Soon Keng and Seow Heng Fong
Field of Research	Biotechnology
Project Summary/ Objectives	Subtractive hybridisation with commercial kit was used to isolate differentially expressed genes from paired patients of good and poor prognosis. The subtracted transcripts were sequenced commercially. Match analysis of sequences with online gene data bank (BLAST) revealed a total of 79 different known genes and 40 chromosome contigs (unknown genes).
Publications/Products/ Outcomes	Journals: 1. Maha Abdullah, Ngiew Shin Foong, Jasmine Lim, Leong Chooi Fun, Cheong Soon Keng and Seow Heng Fong. 2007. Identification and characterisation of two differentially expressed genes in acute myeloid leukaemia. <i>The Malaysian Journal of Pathology</i> 29: 194.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Evaluation of New Andrographolide Derivatives for Inhibitory Activities Against Tumour Vasculature and Metastasis
Project Number	02-01-04-SF0089
Project Leader and Team Members	Leader: Johnson Stanslas Members: Ahmad Sazali Hamzah and Md Nordin Lajis
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	<p>A lead antiangiogenic compound (DDAG) was identified to have in vitro and in vivo activities. Semi synthetic modifications of DDAG yielded derivatives with improved in vitro antiangiogenic effects. None of the andrographolide derivatives had anti vascular properties. However, screening of in-house library of natural compounds revealed alpha-mangostin with good antivasular activities, which include induction of apoptosis of human umbilical vein endothelial cells (HUVECs) and disruption of cord (new blood vessels). SRS28, SRS49 and SRS86, semi synthetic derivatives of DDAG displayed antiinvasive effect against B16F10 mouse melanoma cells which could be related to the compounds' ability to suppress the activity of the enzymes matrix metalloproteinases (MMP)-2 and -9. Agents with antiinvasive effect have strong potential as antimetastatic agents. As SRS28 was the most promising agent among the three compounds with antiinvasive activity, it was selected for evaluation of in vivo antimetastatic activity in a C57BL/6 mice inoculated with B16F-10 melanoma cells. Preliminary results indicated SRS28 had the potential to reduce tumour incidence in the lungs of the animals. The lead antiangiogenic compounds discovered from this study could be further developed into potential clinical candidates for treating human cancers, which will be economically very beneficial, and could contribute to the scientific advancement in the field of new drug discovery especially for the treatment of cancer with alternate strategies.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none">1. Wong, M.S., Sagineedu, S.R., Khalivulla, S.I., Lajis, N.H., Sidik, S., Mahmud, R. and Stanslas, J. 2009. New semisynthetic compounds in the treatment of invasive and metastatic cancers. <i>23rd Malaysian Society of Pharmacology and Physiology Scientific Meeting</i>, 12-13 May 2009, Kuala Lumpur.

	2. Tang, S.C., Sagineedu, S.R., Ithnin, H., Billa, N. and Stanslas, J. 2008. Pharmacological activities of CRDD-2 as an antiangiogenic agent. <i>22nd Malaysian Society of Pharmacology and Physiology Scientific Meeting</i> , 5-6 Apr 2008, Universiti Malaya.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03- 8946 8555 rcxjs@medic.upm.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Large-Scale Production of <i>Bifidobacterium pseudocatenulatum</i> G4 Prelude to Product Testing
Project Number	02-01-04-SF0121
Project Leader and Team Members	Leader: Shuhaimi Mustafa Members: Arbakariya Ariff, Fatimah Abu Bakar and Mohd Yazid Abd Manap
Field of Research	Biotechnology
Project Summary/ Objectives	Project objectives were to optimise a milk-based culture medium using RSM for maximum biomass production; to improve the growth performance in 2-L stirred tank bioreactor using various process controls; to scale-up fermentation process to pilot scale based on different scale-up techniques and to identify a suitable cell preservation method for <i>B. pseudocatenulatum</i> .
Publications/Products/ Outcomes	Journals: 1. Stephenie, W., Kabeir, B.M., Shuhaimi, M., Rosfarizan, M. and Yazid, A.M. 2007. Growth optimization of a probiotic candidate, <i>B. pseudocatenulatum</i> G4, in milk medium using RSM. <i>Biotechnology and Bioprocess Engineering</i> . 12: 106-113.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification of Suitable Organs/Materials in the Intertidal Molluscs as Biomonitoring Organs/Tools for Heavy Metal Pollution in the Malaysian Intertidal Area
Project Number	02-01-04-SF0161
Project Leader and Team Members	Leader: Yap Chee Kong Members: Tan Soon Guan and Ahmad Ismail
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	Project objectives were to determine the heavy metal concentrations in the different tissues of intertidal molluscs especially in mussel <i>Perna viridis</i> , snails <i>Nerita</i> and <i>Telescopium</i> and other molluscs and to identify which part of the tissue of mussels <i>Perna viridis</i> , snails <i>Nerita</i> and <i>Telescopium</i> are good biomonitoring organ for a particular metal pollution in the intertidal area.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Yap, C.K. and Tan, S.G. 2007. Changes of Allozymes (GOT, EST and ME) of <i>Perna viridis</i> Subjected to Zinc Stress: A Laboratory Study. <i>Journal of Applied Sciences</i> 7: 3111-3114. 2. Yap, C.K., Pang, B.H., Fairuz, M.S., Hoo, Y.I. and Tan, S.G. 2007. Heavy metal (Cd, Cu, Ni, Pb and Zn) pollution in surface sediments collected from drainages receiving different anthropogenic sources from Peninsular Malaysia. <i>Wetland Science</i> 5: 97-104. 3. Yap, C.K., Edward, F.B. and Tan, S.G. 2007. Determination of heavy metal distributions in the green-lipped mussel <i>Perna viridis</i> as bioindicators of heavy metal contamination in the Johor Straits and Senggarang, Peninsular Malaysia. <i>Trends in Applied Sciences Research</i> 24: 284-294. 4. Yap, C.K. and Tan, S.G. 2007. Iron concentrations in the byssus and soft tissues of the green-lipped mussel <i>Perna viridis</i> (L.): byssus as an excretion route of Fe and Fe bioavailability in the coastal waters. <i>Indian Journal of Marine Sciences</i> 36: 227-234. 5. Yap, C.K., Ismail, A. and Chiu, P.K. 2007. Water quality and dissolved heavy metal concentrations in surface water collected from Kelana Jaya Lakes. <i>Asian Journal of Water, Environment and Pollution</i> 4: 187-190.



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Influence of Rice Genotype and Its Associated Diazotrophs on Biological N ₂ Fixation and Nitrogen Use Efficiency
Project Number	02-01-04-SF0169
Project Leader and Team Members	Leader: Radziah Othman Member: Halimi Mohd Saud
Field of Research	Agricultural Sciences
Project Summary/ Objectives	<p>Several nitrogen fixing bacteria (diazotrophs) were isolated from Tanjong Karang rice irrigation project area and were identified as <i>Rhizobium</i>, <i>Corynebacterium</i>, and <i>Burkholderia</i> spp. using Biolog Identification method. Seven sugars and 16 amino acids were identified from root exudates of 3 rice genotypes (Mayang Segumpal, Mahsuri, and MR219). Inoculation enhanced sugar and amino acids production. Mayang Segumpal inoculated with <i>Rhizobium</i> sp. Sb16 applied with galactose significantly increased plant N content (4.2%) and fixed 42% of atmospheric N (Ndfa). About 40% atmospheric N was fixed by MR219 inoculated with <i>Corynebacterium</i> sp. Sb26 amended with arabinose. The associations of Mayang Segumpal with <i>Rhizobium</i> sp., and MR219 with <i>Corynebacterium</i> sp. increased about 64 - 77% of plant biomass compared to non-inoculated control. An increased of 35.5 – 55.5% plant biomass over 60 kg ha⁻¹ equivalent of inorganic N fertiliser treatment. In general, the diazotrophs showed specific preference for sugar utilisation and plant association. <i>Rhizobium</i> sp. preferred galactose, while <i>Corynebacterium</i> sp. preferred arabinose. Application of 10 mM of soluble sugars either galactose or arabinose to the respective rice genotype as available carbon sources, enhanced the growth and N₂ fixation activity of these two diazotrophs. The diazotrophic association with rice plants significantly increased nitrogen fixation, plant N content, leaf area, photosynthesis activity and plant biomass compared to non-inoculated and inorganic N fertiliser treatments. The availability of specific sugars in rhizosphere system could improve the biological nitrogen fixation in rice.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Naher, U.A., Radziah, O., Halimi, M.S., Shamsuddin, Z.H. and Razi, I.M. 2009. Influence of root exudates carbon compounds of three rice genotypes on rhizosphere and endophytic diazotrophs. <i>Pertanika Journal Tropical Agricultural Science</i> 32: 209-223.



	<ol style="list-style-type: none"> Naher, U.A., Radziah, O., Halimi, M.S., Shamsuddin, Z.H. and Razi, I.M. 2009. Isolation of diazotrophs from different soils of Tanjong Karang rice growing area in Malaysia. <i>International Journal of Agricultural Biotechnology</i> 11: 547-552. Naher, U.A., Radziah, O., Shamsuddin, Z.H., Halimi, M.S. and Razi, I.M. 2009. Growth enhancement and root colonization of rice seedlings by <i>Rhizobium</i> and <i>Corynebacterium</i> spp. <i>International Journal of Agricultural Biotechnology</i> 11: 586-590. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> NurAizat, A.B., Radziah, O., Halimi, M.S. 2008. Genetic characterization of N₂ fixing bacteria from Tanjong Karang rice field. <i>30th Symposium of Malaysian Society for Microbiology</i>, 16-19 Aug 2008, Kuantan. Naher, U.A., Radziah, O., Shamsuddin, Z.H., Halimi, M.S. and Mohd Razi, I. 2008. Growth enhancement and root colonization of rice seedlings by diazotrophs. <i>30th Symposium of Malaysian Society for Microbiology</i>, 16-19 Aug 2008, Kuantan. Naher, U.A., Radziah O., Halimi, M.S., Shamsuddin, Z.H. and Mohd Razi, I. 2008 Specific growth rate and carbon sugar consumption of diazotrophs isolated from rice rhizosphere. <i>Soil Science Conference of Malaysia</i> 2008, 15-17 Apr 2008, Perak.
Awards/Certificates	<ol style="list-style-type: none"> Invention, Research and Innovation Exhibition 2009: 1 Silver Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Methicillin Resistant Staphylococcus aureus in Companion Animals and Livestock
Project Number	02-01-04-SF0195
Project Leader and Team Members	Leader: Zunita Zakaria Members: Goh Yong Meng, Saleha Abdul Aziz and Siti Khairani Bejo
Field of Research	Biotechnology
Project Summary/ Objectives	MRSA in different species of animals were successfully isolated. Different percentage of occurrence of MRSA were found in different species. The antibiotic resistant patterns and MIC of the isolates were successfully determined. A prototype micro broth MIC test kit was developed and evaluated. The results were reproducible; however, it does not provide good correlation with the standard MIC E-test kit.
Publications/Products/ Outcomes	<p>Journals :</p> <ol style="list-style-type: none"> 1. Zunita, Z., Bashir, A. and Hafizal, A. 2008. Occurrence of multidrug resistant Staphylococcus aureus in horses in Malaysia. <i>World Veterinary Journal</i> 1: 165-167. 2. Khairina, A.K., Zunita, Z. and Ooi, P.T. 2009. Low levels of methicillin resistant Staphylococcus aureus (MRSA) in pigs. <i>Veterinary Records</i> 164: 626-627. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Abdulkadir, M.M., Zunita, Z., Goh, Y.M., Saleha, A.A. and Son Radu. 2007. Occurrence of methicillin resistant Staphylococcus Aureus (MRSA) In chickens. <i>19th Veterinary Association Malaysia Scientific Congress</i>, 3-5 Aug 2007, Kuala Lumpur. 2. Mohd Fhitri Shari and Zunita Zakaria. 2008. Methicillin resistant Staphylococcus aureus in raw chicken meat. <i>Seminar on Veterinary Sciences</i> 2008, 7-11 Jan 2008, UPM. 3. Aklilu, E., Zunita, Z., Latiffah, H. and Chen, H.C. 2008. Occurrence of methicillin resistant Staphylococcus aureus in veterinary medicine students at Universiti Putra Malaysia. <i>29th Malaysian Society of Animal Production Annual Conference</i>, 25-27 May 2008, Penang.



	<p>4. Zunita Zakaria, Saleha Abd Aziz, Latiffah Hassan, Son Radu, Chen Hui Chen, Goh Yong Meng, Abdulkadir Magaji Magashi and Erkihun Aklilu Woldegiorgis. 2009. High prevalence of methicillin resistant <i>Staphylococcus aureus</i> in animals in Malaysia. <i>Staph Symposium</i>, 11-14 Mar 2009, Hawaii.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 8339 zunita@vet.upm.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Protein-Based Diagnostic Kit for Ovine Brucellosis
Project Number	02-01-04-SF0198
Project Leader and Team Members	Leader: Siti Khairani Bejo Members: Zunita Zakaria and Sharifah Hamidah Syed Mohd
Field of Research	Biotechnology
Project Summary/ Objectives	Project objectives were to develop a specific and sensitive ELISA kit for ovine brucellosis and to validate the ELISA kit as a screening confirmatory test for ovine brucellosis.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Shahaza-Othman, Khairani-Bejo, S., Zunita, Z. and Bahaman, A.R. 2008. Comparison of commercial and in-house Rose Bengal plate agglutination test (RBPT) for the rapid diagnosis of brucellosis in goats. <i>20th Congress of Veterinary Association Malaysia</i>, 15-17 Aug 2008, Bangi. 2. Zainor, M., Khairani-Bejo, S., Bahaman, A.R. and Zunita, Z. 2008. Isolation of <i>Brucella abortus</i> from an aborted ovine foetus. <i>20th Congress of Veterinary Association Malaysia</i>, 15-17 Aug 2008, Bangi. 3. Wan Zarina Che Wan Mohamed Anuar, Siti Khairani Bejo and Abdul Rani Bahaman. 2008. Serological prevalence of Brucellosis in cattle in Pahang, Malaysia. <i>Seminar on Veterinary Sciences</i>, 7-11 January, 2008, UPM. 4. Shahaza Othman, Siti Khairani Bejo and Abdul Rani Bahaman. 2007. Polymerase chain reaction assay for the detection of <i>Brucella melitensis</i> in experimentally infected mice. <i>Seminar on Veterinary Sciences</i>, 15-19 January, 2007, UPM. 5. Takele, B.Y., Khairani-Bejo, S., Bahaman, A.R. and Omar, A.R. 2008. Detection and differentiation of <i>Brucella melitensis</i> by Real-time PCR. <i>29th MSAP Annual Conference</i>, 25-27 May 2008, Penang.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Diagnostic Kits Based on Leptospiral DNA and Proteins for Early Detection of Acute Clinical Leptospirosis
Project Number	02-01-04-SF0199
Project Leader and Team Members	Leader: Abdul Rani Bahaman Members: Abdul Rahman Omar and Siti Khairani Bejo
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	A diagnostic kit based on the enzyme-linked immunosorbent assay to detect the LipL21 protein has been developed.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Pathogenicity and Characteristics of Avian Adenovirus Isolates of Malaysia
Project Number	02-01-04-SF0205
Project Leader and Team Members	Leader: Mohd Hair Bejo Members: Aini Ideris and Abdul Rahman Omar
Field of Research	Biotechnology
Project Summary/ Objectives	The clinical signs, gross and histological lesions due to Fowl Adenovirus (FAdV) infection in chickens were established. Five isolates of FAdV were successfully isolated using SPF embryonated chicken eggs. The isolates were characterised as FAdV serotype 9 or 2. Pathogenicity and pathogenesis of the selected isolates were also established in the SPF eggs and chickens. The pattern of recent outbreaks of FAdV may suggest that FAdVs have high potential as a primary agent in disease outbreaks. This may invite for the development of FAdV vaccine and diagnostic kits.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Alemnesh, W., Hair-Bejo, M., Aini, I. and Omar, A.R. 2007. Pathogenicity of local isolate of avian adenovirus in specific pathogen free embryonated chicken eggs. 19th Veterinary Association Malaysia Congress, 3-5 Aug 2007, Kuala Lumpur. 2. Alemnesh, W., Hair-Bejo, M., Aini, I. and Omar, A.R. 2008. Mortality and gross lesions of specific pathogen free embryonated chicken eggs in response to fowl adenovirus of Malaysian isolate. 29th Malaysian Society of Animal Production Annual Conference, 25-27 May 2008, Penang. 3. Jason, P.S., Hair-Bejo, M., Omar, A.R. and Aini, I. 2007. Molecular characterisation of fowl adenovirus isolated from an outbreak of inclusion body hepatitis in broiler chickens in Malaysia. 19th Veterinary Association Malaysia Congress, 3-5 Aug, 2007, Kuala Lumpur. 4. Hair-Bejo, M. and Lee, C.L. 2007. Emergence of group 1 avian adenovirus infections in commercial broiler chickens. 28th Malaysian Society of Animal Production Annual Conference, 29-31 May 2007, Sarawak.



Awards/Certificates	1. 29th Malaysian Society of Animal Production Annual Conference 2008: Best Poster Presentation
Additional Information	Linkages: Gondar University, Ethiopia. Malaysian Vaccines and Pharmaceutical (MVP) Sdn. Bhd., Charoen Pokphand (CP) Malaysia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Molecular Cloning and Expression of an Organic Solvent Tolerant Lipase Gene from Locally Isolated Staphylococcus sp.
Project Number	02-01-04-SF0212
Project Leader and Team Members	Leader: Raja Noor Zaliha Raja Abd Rahman Members: Abu Bakar Salleh and Mahiran Basri
Field of Research	Engineering Sciences
Project Summary/ Objectives	An Organic solvent tolerant lipase gene obtained from a Staphylococcus epidermidis AT2. The target gene was successfully cloned and sequence analysed. Optimisation of expression in prokaryotic cell and eukaryotic system was obtained. 3D structure of the enzyme was predicted.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Yunus, J., Rahman, R.N.Z.A., Salleh, A.B. and Basri, M. 2010. Expression of an organic solvent stable lipase from Staphylococcus epidermidis AT2. <i>International Journal Molecule Science</i> 11: 3195-3208. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Jalimah Yunus, Raja Noor Zaliha Raja Abd Rahman, Mahiran Basri and Abu Bakar Salleh. 2008. Isolation and identification of an organic solvent tolerant lipase from Staphylococcus sp. <i>30th Symposium of Malaysian Society for Microbiology</i>, 16-17 Aug 2008, Kuantan. 2. Siti Nur Kamilah Shahrudin, Raja Noor Zaliha Abd. Rahman, Abu Bakar Salleh and Mahiran Basri. 2008. Production of an organic solvent tolerant lipase from Staphylococcus sp. <i>30th Symposium of Malaysian Society for Microbiology</i>, 16-17 Aug 2008, Kuantan.
IP Status	1. Malaysian Patent filed (PI 20097040); Novel Organic Solvent Lipase DENE
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Characterisation of the Reproductive Activity of the Male Lesser Mouse Deer (<i>Tragulus javanicus</i>) Using Immunohistochemistry and Radioimmunoassay
Project Number	02-01-04-SF0225
Project Leader and Team Members	Leader: Mohd Zamri Saad Members: Abd Wahid Haron and Mohd Azam Khan Gorima
Field of Research	Biotechnology
Project Summary/ Objectives	Project objectives were to determine the morphological changes of seminiferous tubules and spermatogenic cells; to identify the distribution and changes of glycoproteins during spermatogenesis; to evaluate serum testosterone concentrations by radioimmunoassay and to determine the immunolocalisation of gonadal regulatory hormones; activin and inhibin.
Publications/Products/ Outcomes	Journals: 1. Agungpriyono, S., Kurohmaru, M., Kimua, J., Wahid, A.H., Sasaki, M., Kitamura, N., Yamada, J., Fukuta, K. and Zuki, A.B. 2009. Distribution of lectin-bindings in the testis of the lesser mouse deer, <i>Tragulus javanicus</i> . <i>Anatomia, Histologia, Embryologia</i> 38: 208-13.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Gene Therapy for β -Thalassemia: Development of Vector with Persistent Transgene Expression for Haematopoietic Stem Cells (HSCs) Gene Transfer
Project Number	02-01-04-SF0230
Project Leader and Team Members	Leader: Syahrilnizam Abdullah Members: Rozita Rosli, Khatijah Mohd Yusof, Elizabeth George, Rajesh Ramasamy, Sharmili Vidyadaran and Sumita Sugnaseelan
Field of Research	Medical Science
Project Summary/ Objectives	The protocols on lentivirus production have been established and optimised. The protocols in transducing HSCs in vitro and transplanting the transduced HSCs intravenously into the irradiated BALB/c mice have been established and optimised. DNA methylation and histone deacetylation have been identified as the factors of transgene silencing in HSCs in vitro.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ngai Siew Ching, Rajesh Ramasamy, Rozita Rosli and Syahril Abdullah. 2010. Prevention and reversion of transgene silencing in hematopoietic stem cells transduced with lentiviral vector. <i>18th Annual Congress of European Society of Gene and Cell Therapy</i>, 22-25 Oct 2010, Milan, Italy. 2. Ngai Siew Ching, Rajesh Ramasamy, Rozita Rosli and Syahril Abdullah. 2010. Comparison of transgene expression and gene transfer efficiency driven by UbC and CMV promoter in non-viral and viral gene delivery context in vitro. <i>19th Scientific conference on electron microscopy society of Malaysia</i>, 14-16 Dec 2010, Langkawi. 3. Low Poh Tee, Lai Mei I, Rozita Rosli and Syahril Abdullah. 2010. Comparison of transduction efficiency using green fluorescent protein (GFP) and CpG-free GFP in lentiviral gene delivery context in vitro. <i>19th Scientific conference on electron microscopy society of Malaysia</i>, 14-16 Dec 2010, Langkawi.



Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Prevalence of Human Papilloma Virus (Hpv) Genotypes and Viral Load among Asymptomatic Women and Cervical Cancer Patients in Multi-Ethnic Malaysia
Project Number	02-01-04-SF0235
Project Leader and Team Members	Leader: Chong Pei Pei Member: Noraihan Mohd Nordin
Field of Research	Biotechnology
Project Summary/ Objectives	The prevalence and genotypes of HPV among asymptomatic women in Malaysia has been determined. The specific objective of this project was achieved with a total of 200 samples were collected and processed, and the results were analysed for prevalence. However, the second and third objectives were revised and changed to study the associated risk factor with HPV infection in Malaysian women and to compare the different methods of HPV detection for the positive and negative predictive value.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Chong, P.P., Asyikin, N., Rusinahayati, M., Halimatun, S., Rozita, R., Ng, C.K., Wan Hamilton, W.H., Tan, B.C., Noraihan, N., Rohani, A., Faezah, H., Latiffah, L., Maha, A. and Sabariah, A.R. 2010. High prevalence of human papillomavirus DNA detected in cervical swabs from women in Southern Selangor, Malaysia. <i>Asia Pacific Journal of Cancer Prevention</i> 11: 645-1651. 2. Rusinahayati, M., Pei Pei, C., Nurul Asyikin, A., Noraihan, M., Maha, A., Rohani, A., Wan Hamilton, W.H. and Ng, C. 2009. Socio-demographic factor associated with HPV infection from non-cervical cancer women in Southern Selangor, Malaysia. <i>International Journal of Gynecology and Obstetrics</i> 107: S717. 3. Nurul Asyikin, A.R., Rozita, R., Ng, C.K., Wan Hamilton, W.H., Tan, B.C., Rusinahayati, M. and Chong, P.P. 2008. Prevalence of human papillomavirus (HPV) infection from cervical swabs of normal women in Southern Selangor, Malaysia. <i>International Journal of Infectious Diseases</i> 12: e186.



	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Chong, P.P., Asyikin, A.N., Rusinahayati, M., Halimatun, A.S., Rozita, R., Ng, C.K., Wan Hamilton, H.W., Tan, B.C., Noraihan, N.M., Maha, A. and Sabariah, R.A. 2008. High prevalence of human papillomavirus (HPV) DNA detected in cervical swabs from women in Southern Selangor, Malaysia. <i>Proceedings of the Australian Health and Medical Research Congress 2008</i>, 16-21 Nov 2008, Australia. 2. Rusinahayati, M., Pei Pei, C., Nurul Asyikin, A., Noraihan, M., Maha, A., Rohani, A., Wan Hamilton, H.W. and Ng, C. 2009. Socio-demographic factor associated with HPV infection from non-cervical cancer women in Southern Selangor, Malaysia. <i>XIX FIGO World Congress of Gynecology and Obstetrics 2009</i>, 4-9 Oct 2009, Cape Town, South Africa.
Additional Information	<p>Linkages: Linkage was fostered with Associate Prof. Dr. Patti Gravitt from Johns Hopkins University. Plans are underway to apply for research grants jointly.</p>
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Optimisation and Scaling Up of Enzymatic Synthesis of Kojic Acid Esters using Stirred Tank Reactor
Project Number	02-01-04-SF0238
Project Leader and Team Members	Leader: Rosfarizan Mohamad Members: Mahiran Basri, Arbakariya Ariff, Abu Bakar Salleh and Siti Efliza Ashari
Field of Research	Applied Science and Technologies
Project Summary/ Objectives	The reaction conditions for kojic acid ester synthesis using various lipases as biocatalyst and oil palm-based products as substrates have been optimised and the product has been characterised. The mechanism and kinetics of kojic acid ester synthesis were investigated at large scale. The standard operating procedure for kojic acid production using a stirred tank reactor was developed and established. Other important parameters influencing the enzymatic process were studied.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Efliza, A., Rosfarizan, M., Basri, M., Salleh, A.B. and Ariff, A. 2009. Optimization of enzymatic synthesis of palm-based kojic acid ester using response surface methodology. <i>Journal of Oleo Science</i> 58: 503-510. 2. Khamaruddin, N., Basri, M., Lian, G.E.C., Salleh, A.B., Rahman, R.N.Z.R.A., Ariff, A., Rosfarizan, M. and Awang, R. 2008. Enzymatic synthesis and characterization of palm-based kojic acid ester. <i>Journal of Oil Palm Research</i> 20: 461-469. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Rosfarizan, M., Siti Efliza, A., Mahiran, B., Salleh, A.B. and Ariff, A. 2009. Characterization and optimization of enzymatic synthesis of kojic acid esters. <i>2nd World Congress in Industrial Biotechnology</i>, 5-7 Apr 2009, Seoul, South Korea. 2. Siti Efliza, A., Rosfarizan, M., Ariff, A., Basri, M. and Salleh, A.B. 2009. Optimization of enzymatic synthesis of kojic acid esters. <i>National Symposium of Organic Synthesis (NaSoS) 2009</i>, 13-16 Jun 2009, Kuala Terengganu.



Awards/Certificates	1. Invention & Research Exhibition 2008: 1 Bronze Medal 1. Invention & Research Exhibition 2008: 1 Bronze Medal
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 7518 H/p: 013-263 6029 farizan@biotech.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Production of Organic Acids from Food Wastes and Polyhydroxyalkanoates (PHA) in Large Scale
Project Number	02-01-04-SF0263
Project Leader and Team Members	Leader: Nor'Aini Abdul Rahman Members: Mohd Ali Hassan and Arbakariya Ariff
Field of Research	Biotechnology
Project Summary/ Objectives	Project objectives is to optimise organic acids production from food waste by anaerobic digester (50L); to develop commercially viable method for recovery and production of organic acids from fermented food waste and to establish fermentation process for the production of polyhydroxyalkanoates (PHA) by <i>Alcaligenes latus</i> using organic acids obtained from fermented wastes in 100L stirred tank fermenter.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Halimatun Saadiah Hafid, Farah Nadia Omar, Nor Nadia Ban, Nor 'Aini Abdul Rahman and Mohd Ali Hassan. 2008. Enhancement of organic acids production from food waste using different inocula. <i>30th Symposium of the Malaysian Society for Microbiology</i> , 16-19 Aug 2008, Kuantan.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 7515 H/p: 019-314 1074 nor_aini@biotech.upm.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Modulation of Melanin Biosynthesis by Selected Malaysian Traditional Plants Using Epidermal Melanocytes Cell Line
Project Number	02-01-04-SF0297
Project Leader and Team Members	Leader: Syahida Ahmad Members: Abdul Manaf Ali, Juzu Hayati Arshad and Khozirah Shaari
Field of Research	Biotechnology
Project Summary/ Objectives	A selected Malaysian traditional plant showed high inhibitory activity towards mushroom tyrosinase enzyme and free radical scavenging activities. The ethyl acetate fraction of the selected plant enhanced the tyrosinase activity and melanin content derived from human melanocytes cell line. The potential bioactive compounds could be developed as a pharmaceutical product mainly in treating hypopigmentation disorders.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification and Characterisation of the Causal Pathogen of Red-Tip Disease in Pineapple
Project Number	02-01-04-SF0301
Project Leader and Team Members	Leader: Ganesan Vadamalai Members: Ahmad Husni Mohd Hanif and Lau Wei Hong
Field of Research	Biotechnology
Project Summary/ Objectives	Nucleic acid characterisation and sequencing confirmed the presence of a tospovirus in all diseased plants and not found in healthy plants. Protein analysis, biological assays and electron microscopy also confirmed the presence of this virus. Several clones of the virus have been obtained but specific diagnostic probes have yet to be tested. Surveys carried out showed red-tip incidence in pineapples planted in Kota Samarahan, Sarawak. This showed that red-tip incidence was not confined to the peat soil areas in Johor. The incidence rate was almost similar to that of in Johor which was about 30-40% of the plants. Disease severity index was also developed using an optical ground sensor.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Vadamalai, G., Lim W.L., Husni, M.H.A., Kadir, J., Lau, W.H. and Balasundram, S.K. 2010. Association of a tospovirus with pineapple red-tip disease. <i>ISSAAS International Congress 2010</i> , 14-18 Nov 2010, Bali, Indonesia.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number	Office: 03-8946 7263 H/p: 012-371 9244
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of an Improved Baculovirus Producing Occlusion Bodies that Contain <i>Bacillus thuringiensis</i> Insect Toxin
Project Number	02-01-04-SF0304
Project Leader and Team Members	Leader: Lau Wei Hong, Members: Tan Yee How, Khatijah Mohd Yusof and Ahmad Said Sajap
Field of Research	Biological Sciences
Project Summary/ Objectives	Project objectives were to enhance the efficacy of baculovirus by inclusion of Cry1 <i>Bacillus thuringiensis</i> toxin; to construct and characterise a recombinant baculovirus that produces polyhedra incorporating Cry1 <i>Bacillus thuringiensis</i> toxin and to determine the infectivity of recombinant baculovirus to susceptible insect pests.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Hamzah, A.A., Lau, W.H., Yusoff, K., Sajap, A.S. and Tan, Y.H. 2008. Genotypic studies of genetically improved-baculoviruses carrying insect toxin genes from <i>Bacillus thuringiensis</i> subsp. <i>aizawai</i> . <i>7th International Conference on Plant Protection in the Tropics</i> , 27-29 Aug 2008, Kuala Lumpur. 2. Hamzah, A.A., H., Lau, W.H., Tan, Y.H., Sajap, A.S. and Yusoff, K. 2008. Expression of <i>Bacillus thuringiensis</i> subsp. <i>aizawai</i> Cry1D toxins in <i>Escherichia coli</i> . <i>XXIII International Congress of Entomology</i> , 6-12 Jul 2008, Durban, South Africa.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Lactic Acid Bacteria as an Approach to Vitamin Fortification
Project Number	02-01-04-SF0330
Project Leader and Team Members	Leader: Raha Abdul Rahim Members: Rosfarizan Mohamad, Foo Hooi Ling and Sieo Chin Chin
Field of Research	Biotechnology
Project Summary/ Objectives	The folC and folKE genes have been identified to be important in the folate metabolic pathway. These genes have been amplified and cloned into <i>E. coli</i> and sub-cloned and transformed into lactis. The lactic acid bacteria collection in the laboratory were screened for high folic acid producer and several were identified. <i>L. plantarum</i> and <i>L. lactis</i> MG1363 were chosen for further optimisation to enhance folate production. The level of folic acid produced was shown to have increased 2.5-fold after optimisation processes.
Publications/Products/ Outcomes	Journal: <ol style="list-style-type: none"> Norfarina, M.N., Rosfarizan, M., Foo, H.L., and Raha, A.R. 2010. Improvement of folate biosynthesis by lactic acid bacteria using response surface methodology. <i>Food Technology Biotechnology</i> 48: 243–250. Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> Norfarina Muhammad Nor, Seyed Sadegh Mousavi, Noreen Suliani Mat Nanyan, Rosfarizan Mohamad, Foo Hooi Ling and Raha Abdul Rahim. 2008. Screening of lactic acid bacteria for folic acid production from various sources. <i>30th Symposium of Malaysian Society for Microbiology</i>, 16–19 Aug 2008, Pahang. Noreen Suliani Mat Nanyan, Rosfarizan Mohamad, Sieo Chin Chin and Raha Abdul Rahim. 2010. Improvement of folate production from <i>Lactococcus lactis</i> by overexpressing the gene that is involved in folate biosynthesis pathway. <i>International Symposium for Lactic Acid Bacteria</i>, 25-27 Jul 2010, UPM.
Additional Information	Linkages: NARA Institute of Technology, Japan.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Antimicrobial Peptides Production for Destruction of Multiple Drug Resistant Superbugs, MRSA
Project Number	02-01-04-SF0337
Project Leader and Team Members	Leader: Mariana Nor Shamsudin Members: Zamberi Sekawi, Chong Pei Pei, V. Neela and Raha Abdul Rahim
Field of Research	Biotechnology
Project Summary/ Objectives	The activity of aqueous and organic extracts from the marine invertebrate, sea cucumber and other comparable marine extracts on growth of superbugs MRSA has been obtained. The mechanism of sea cucumber extract activity through membrane permeabilising assay and target gene assay has been determined.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Nagi, A. Al-Haj, Nurmas, I.M., Mariana, N.S., Habsah, M., Charles, S.V. and Zamberi, S. 2010. Antibacterial activity of marine source extracts against multidrug resistance organisms. <i>American Journal of Pharmacology and Toxicology</i> 5: 95-102. 2. Nagi, A., Nurmas, I.M., Mariana, N.S., Mohamad, H., Charles, S.V. and S. Zamberi. 2009. Application of RT-PCR to detect treated and untreated <i>Staphylococcus aureus</i> genes with marine algae. <i>Research Journal of Biological Sciences</i> 4: 952-959. 3. Nagi, A., Amghalia, E., Mariana, N.S., Abdullah, R., Mohamed, R. and Zamberi, S. 2009. Novel molecular analysis for characterization of <i>Staphylococcal</i> Cassette Chromosome in a methicillin-resistant <i>Staphylococcus aureus</i> isolated from Malaysian Hospital. <i>Research Journal of Biological Sciences</i> 4: 937-942. 4. Nagi, A., Amghalia, E., Mariana, N.S., Abdullah, R., Mohamed, R. and Zamberi, S. 2009. Antibacterial activity of honey against methicillin-resistant <i>Staphylococcus aureus</i>. <i>Research Journal of Biological Sciences</i> 4: 943-947. 5. Mariana, N.S., Norfarrah, M.A., Nik, K.A.N.I., Yusoff, F.M. and A. Arshad. 2009. Evaluating the antibacterial activity and in vivo. assay of methanolic extract of <i>Stichopus badionotus</i>. <i>International Journal of Pharmacology</i> 5: 228-231.

	6. Nurmas, I.M., Nagi, A., Mariana, N.S., Mohamad, H., Charles, S.V. and S. Zamberi. 2009. Detection the antibacterial effect of seaweeds on <i>Staphylococcus aureus</i> DNA repair gene (<i>adaB</i>) and cell wall protein synthesis (<i>sav1017</i>) by molecular approaches. <i>Research Journal of Biological Sciences</i> 4: 662-667.
Awards/Certificates	<ol style="list-style-type: none"> 1. 30th Symposium Malaysian Society for Microbiology 2008: Second best poster Medical Microbiology section 2. 28th Symposium Microbiology Society 2006: Best Poster in Medical Microbiology Section
Additional Information	Linkages: Erasmus Medical Center, Netherlands
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia 43400 UPM Serdang, Selangor. Office: 03-8947 2371 H/p: 019-385 1522 mariana@medic.upm.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Discovering Signal Transduction Inhibitors from Actinomycetes for Potential Anti-Cancer Drugs
Project Number	02-01-04-SF0347
Project Leader and Team Members	Leader: Seow Heng Fong Members: Maha Abdullah@Maha Lakswm and Yunus Gul Alif Gul
Field of Research	Biotechnology
Project Summary/ Objectives	Identification of active fractions from H7372 crude extract was achieved. Alteration of signal transduction molecules by the active fractions was defined.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Yip, W.K., Cheenpracha, S., Chang, L.C, Ho, C.C. and Seow, H.F. 2010. Anti-proliferative and anti-invasive properties of a purified fraction from <i>Streptomyces sp. H7372</i>. <i>International Journal Oncology</i> 37: 1229-1241. 2. Cheenpracha, S., Borris, R.P., Tran, T.T., Jee, J.M., Seow, H.F., Cheah, H.Y., Ho, C.C. and Chang, L.C. 2010. Three new amides from <i>Streptomyces sp. H7372</i>. <i>Journal of Brazilian Chemical Society</i> 22: 223-229. 3. Cheenpracha, S., Zhang, H., Mar, A.M., Foss, A.P., Foo, S.H., Lai, N.S., Jee, J.M., Seow, H.F., Ho, C.C. and Chang, L.C. 2009. Yeast glycogen synthase kinase-3beta pathway inhibitors from an organic extract of <i>Streptomyces sp.</i> <i>Journal of Natural Products</i> 72: 1520-1523.
IP Status	<ol style="list-style-type: none"> 1. Malaysia National Phase Patent (PCT/MY2009/000037); Antifungal Compound and Its Production 2. Malaysian Patent filed (PI2010005785); Antifungal Compound and Its Production
Additional Information	Linkages: Collaboration with Dr Chang Chee Leng, Department of Pharmaceutical Sciences, College of Pharmacy, University of Hawaii Hilo, 34 Rainbow Drive, 96720 Hilo, HI, USA
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Variant Surface Glycoprotein (VSG) Heterogeneity and Dynamics of Antigenic Switching in <i>Trypanosoma evansi</i>
Project Number	02-01-04-SF0368
Project Leader and Team Members	Leader: Reuben Sunil Kumar Sharma Member: Rehana Abdullah San
Field of Research	Biotechnology
Project Summary/ Objectives	Project objectives were to determine the VSG gene repertoire in Malaysian isolates of <i>T. evansi</i> from wild and domestic animals; to evaluate the extent of mature polypeptide heterogeneity in the expressed surface glycoprotein coat and to determine the rate and dynamics of antigenic switching and parasitemia in a caprine model.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Chin, Y.Y., Sani, R.A., Watanabe, M., Nur Mahiza, M.I. and Sharma, R.S.K. 2009. Phylogenetic insights on the Variant Surface Glycoproteins (VSGs) expressed by Malaysian isolates of <i>Trypanosoma evansi</i>. <i>45th Annual Seminar Malaysian Society of Parasitology and Tropical Medicine</i>, 18-19 Mar 2009, Kuala Lumpur. 2. Wong, M.T., Sani, R.A., Chin, Y.Y., Anka, I.A. and Sharma, R.S.K. 2009. Dynamics of parasitaemia and haematologic changes associated with <i>Trypanosoma evansi</i> infection in local goats. <i>45th Annual Seminar Malaysian Society of Parasitology and Tropical Medicine</i>, 18-19 Mar 2009, Kuala Lumpur. 3. Anka, I.A., Sani, R.A. and Sharma, R.S.K. 2009. Seroprevalence of caprine trypanosomosis in Selangor, Malaysia. <i>Proceedings of the 45th Annual Seminar Malaysian Society of Parasitology and Tropical Medicine</i>, 18-19 Mar 2009, Kuala Lumpur.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number e-Mail	Office: 03-8946 8058 reuben@vet.upm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of a Multiplex PCR Assay for the Detection of Economically Important Poultry Mycoplasma
Project Number	02-01-04-SF0370
Project Leader and Team Members	Leader: Aini Ideris Members: Mohd Hair Bejo, Abdul Rahim Abdul Muta and Abdul Rahman Omar
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	Multiplex MG PCR development and molecular characterisation of local isolates of MG and MS were achieved.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Liew, P.S., Tan, C.G., Aini, I. and Omar, A.R. 2008. The evaluation of multiplex PCR for rapid detection and differentiation of Mycoplasma gallisepticum field and vaccine strains. <i>Seminar on Veterinary Sciences 2008</i>, 7-11 Jan 2008, UPM. 2. Tan C.G., Chan, J.T., Aini, I., Hair-Bejo, M. and Kleven, S.H. 2008. Caseous air sacs lesions in Mycoplasma gallisepticum inoculated embryos. <i>23rd World's Poultry Congress (WPC)</i>, 30 Jun - 4 Jul 2008, Brisbane, Australia. 3. Yii Chen Pei, Tan Ching Giap, Aini Ideris and Abdul Rahman Omar. 2007. Molecular detection of viable and non-viable Mycoplasma gallisepticum. <i>Seminar on Veterinary Sciences</i>, 15-19 Jan 2007, UPM. 4. Kartini, A., Aini, I., Omar, A.R. and Tan, C.G. 2009. Sequence and phylogenetic analysis of Mycoplasma gallisepticum isolates from Malaysia. <i>21st Veterinary Association Malaysia Congress 2009</i>, 7-9 Aug 2009, Port Dickson, Negeri Sembilan. 5. Zahraa Faisal, Aini Ideris, Tan Ching Giap and Abdul Rahman Omar. 2009. The prevalence of Mycoplasma gallisepticum infection in chicken's from Peninsular Malaysia. <i>21st Veterinary Association Malaysia Congress 2009</i>, 7-9 Aug 2009, Port Dickson, Negeri Sembilan.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification and Characterisation of Specific Proteins as Biomarkers for Early Detection of Vascular Disease
Project Number	02-01-04-SF0374
Project Leader and Team Members	Leader: Rasedee @ Mat Abdullah Members: Hazilawati Hamzah, Abdul Rahman Omar and Abdul Rahim Abdul Mutalib
Field of Research	Biotechnology
Project Summary/Objectives	Identification and isolate circulating endothelial cells (CEC) form peripheral blood. CD146 mRNA in peripheral blood using real-time RT_PCR was detected.
Publications/Products/Outcomes	Proceedings/Conferences/Seminars: 1. Nur Azwa, A.A., Hazilawati, H., Rosly, S.M., Siti Khatijah, M., Teo, G.Y., Rasedee, A. and Omar, A.R. 2008. Development of a nested RT-PCR assay for the detection of CD 146 – endothelial cells in rats. <i>20th Veterinary Association Malaysia Scientific Congress</i> , 15-17 Aug 2008, Putrajaya.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Nutraceuticals from <i>Morinda citrifolia</i> (L), <i>Centella asiatica</i> (L) and <i>Momordica charantia</i> in Prevention and Treatment for Obesity and its Related Disorders
Project Number	02-01-04-SF0388
Project Leader and Team Members	Leader: Azizah Abdul Hamid Members: Suhaila Mohamed and Nazamid Saari
Field of Research	Biotechnology
Project Summary/ Objectives	<p>The extracts of <i>Momordica charantia</i>, <i>Morinda citrifolia</i> and <i>Centella asiatica</i> were found to inhibit lipoprotein and pancreatic lipase in vitro. The extracts also inhibited the pancreatic lipase activity as the positive controls, epicatechin and Orlistat. <i>Centella asiatica</i> extract showed the best inhibition (25%) at a low concentration of 15 ppm. <i>Morinda citrifolia</i> was the best at inhibiting lipoprotein lipase activity with an inhibition value of 22% at a concentration of 1mg/mL. Analysis revealed that all three tropical herbs contained excellent amounts of phenolic compounds. <i>Centella asiatica</i> had the highest total phenolic content (4.04 ± 0.99 g GA equivalent/100g), followed by <i>Momordica charantia</i> (3.51 ± 1 g GA equivalent/100g) and lastly <i>Morinda citrifolia</i> (1.99 ± 0.23 g GA equivalent /100g). Out of thirteen standards used, eight flavonoids were detected and they were identified as catechin (84.5 to 193.9 mg/g), epicatechin (1.5 to 23.25 mg/g), rutin (1.99 to 19.9 mg/g), naringin (1.45 to 7.1 mg/g), quercetin (1.9 to 29.9mg/g), luteolin (1.9 to 7.7mg/g) and kaempferol (1.8 to 6.4mg/g). Generally, the major flavonoids found in the extracts were catechin, epicatechin, quercetin and rutin. <i>Morinda citrifolia</i> fruit extract was found to contain of the highest catechin (193 mg/g dry weight), followed by <i>Momordica charantia</i> fruit extract (123.9 mg/g) and <i>Centella asiatica</i> leaf extract (84.5 mg/g). The cytotoxicity effects of the extracts were determined on 3T3-L1 preadipocytes. Both MCE and CAE exhibited toxic effect with the LC50 value of 1.6mg/mL and 2.4 mg/mL, respectively. MCFE showed the least toxic effect on 3T3-L1 cell lines, with LC50 value of 4.5 mg/ml.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mohd Sabri Pak-Dek, Azizah Abdul-Hamid, Azizah Osman and Cui San Soh. 2008. Inhibitory effect of <i>Morinda citrifolia</i> L. on lipoprotein lipase activity. <i>Journal of Food Science</i> 78: 595-598.

	2. Najla Gooda Sahib, Azizah Abdul Hamid, David Kitts, Monica Purnama, Nazamid Saari and Faridah Abas. 2009. The effects of Morinda Citrifolia, Momordica Charantia and Centella Asiatica extracts on lipoprotein lipase and 3t3-L1 preadipocytes. <i>Journal of Agriculture and Food Chemistry</i> 35: 1745-4514.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 8375 azizah@fsb.upm.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Rapid Detection of New Antioxidant Constituents from <i>Persicaria Tenella</i> by HPLC-DAD-MS Analysis
Project Number	02-01-04-SF0389
Project Leader and Team Members	Leader: Faridah Abas Members: Suhaila Mohamed, Khozirah Shaari
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	Liquid-liquid fractionation found that the active components reside mainly at ethylacetate and butanol fractions. Twenty components have been identified based on HPLC-DAD-MS/MS analysis and comparison with the literature data and quantitatively determined and ten components have been isolated and the biological activities of the compounds were evaluated using bioautographic assay.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Predictive Microbiology: Modelling Bacterial Growth of <i>Salmonella typhi</i> as a Function of Water Activity, pH and Temperature in Rojak Gravy, Satay Gravy and Coconut Milk (santan)
Project Number	02-01-04-SF0390
Project Leader and Team Members	Leader: Son Radu Members: Farinazleen Mohamad Ghaza and Cheah Yoke Kqueen
Field of Research	Biotechnology
Project Summary/ Objectives	Project objectives were to assess growth response of <i>Salmonella typhi</i> in rojak gravy, satay sauce, cendol and santan (modelling growth rate).
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Production of Oil Seeds and Seed Oil of <i>Moringa oleifera</i> (Kelor or Mungai) and Enzymatic Re-Designing of its High Oleic Acid Oil with other Edible Oils/Fats for Product Diversification
Project Number	02-01-04-SF0395
Project Leader and Team Members	Leader: Hasanah Mohd Ghazali Members: Siti Hajar Ahmad and Abdul Azis Ariffin
Field of Research	Chemical Sciences
Project Summary/ Objectives	Agronomic traits of local <i>Moringa oleifera</i> variety using stem cuttings of indigenous or locally available <i>Moringa oleifera</i> varieties, especially in terms of oil seed yield per hectare were determined. The results supported reports on the viability of <i>Moringa oleifera</i> as a source of edible oil that is especially rich in oleic acid. The data could be used to promote the planting of the plant on a larger scale. <i>Moringa oleifera</i> oil with other fats/oils to produce feedstock for food applications has been extracted, refined and enzymatically re-designed.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Compounds from <i>Cratoxylum aborescens</i> , <i>Cratoxylum glaucum</i> , <i>Carcinia nitida</i> and <i>Carcinia mangostana</i> and their Potential as Anti-Cancer Lead Compounds
Project Number	02-01-04-SF0415
Project Leader and Team Members	Leader: Gwendoline Cheng Lian Ee Members: Taufiq Yap Yun Hin, Mawardi Rahmani and Lee Han Lim
Field of Research	Biotechnology
Project Summary/ Objectives	Several pure anti-cancer compounds were isolated and identified from the plants studied. Some of the crude extracts were also found to have anti-cancer properties.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Establishment of Nuclear Transformation Protocol of <i>Ankistrodesmus convolutus</i> for the Expression of Therapeutic Proteins
Project Number	02-01-04-SF0431
Project Leader and Team Members	Leader: Suhaimi Napis Member: Mohd Puad Abdullah
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This study was conducted on the construction of suitable transformation vector based on plant vector. Optimisation of transformation parameters to introduce vector into the cells using microprojectile bombardment.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Biomonitoring of Heavy Metals in the Environment Using a Novel Inhibitive Enzyme Assay System
Project Number	02-01-04-SF0445
Project Leader and Team Members	Leader: Mohd Yunus Abd. Shukor Members: Mohd Arif Syed and Nor Aripin Shamaan
Field of Research	Chemical Sciences
Project Summary/ Objectives	Project objectives were to develop a novel inhibitive heavy metal assay based on cysteine and serine proteases better than a previously developed assay using papain; to determine interfering agents such as salts and xenobiotics to the sensitivity of the assay towards heavy metals; to carry out extensive field trial works at a selected class V river using the developed assay and to determine heavy metals in samples from field work using Atomic Absorption Spectrometry.
Publications/Products/ Outcomes	<p>Journals :</p> <ol style="list-style-type: none"> 1. Shukor, M.Y., Baharom, N.A., Masdor, N., Abdullah, M.P.A., Shamaan, N.A., Jamal, J.A. and Syed, M.A. 2009. The development of an inhibitive determination method for zinc using a serine protease. <i>Journal of Environmental Biology</i> 30: 17-22. 2. Shukor, M.Y., Masdor, N., Baharom, N.A., Jamal, J.A., Abdullah, M.P.A., Shamaan, N.A. and Syed, M.A. 2008. An inhibitive determination method for heavy metals using bromelain, a cysteine protease. <i>Applied Biochemistry and Biotechnology</i> 144: 283-291. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Yunus Shukor, Baskaran Gunasekaran, Mohd. Syahmi Ramzi, Mohd. Badrin Hanizam, Nor Aripin Shamaan and Mohd. Arif Syed. 2008. A composite enzyme-based Xeno-assay® Kit for monitoring xenobiotics pollution. <i>1st Regional Conference on Biosensor and Biodiagnostics 2008</i>, 21-22 May 2008, Kuala Lumpur. 2. Shukor, M.Y. 2007. Enzyme-based Xenoassay-metal® Kit for monitoring heavy metals pollution. <i>The 9th Regional Seminar on the Role of Chemistry in Industry and Environment</i>, 27-28 Nov 2007, West Sumatera, Indonesia.



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Combating Biofilm: Gentamycin Drug Delivery System in Bone Tissue
Project Number	02-01-04-SF0451
Project Leader and Team Members	Leader: Fauziah Othman Members: Idris Besar, Sharmili Vidyadaran, Mariana Nor Shamsud, Rusnah Mustaffa and Asmah Rahmat
Field of Research	Biological Sciences
Project Summary/ Objectives	Project objectives were to determine the cytotoxicity of antibiotic enriched biomaterial to bone tissues and to monitor the drug efficacy in vivo in preventing biofilm formation.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Au, L.F., Othman, F., Mustaffa, R., Vidyadaran, S., Rahmat, A., Besar, I., Akim, A.M., Khan, M.A., Saidi, M., Shamsudin, M.N., Froemming, G.A. and Ishak, A.K. 2008. Cytotoxicity and scanning electron microscopy study of gentamycin-coated HA effect on biofilm. <i>Medical Journal of Malaysia</i> 63: 16-17. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Au Lee Fong, Fauziah Othman, Asmah Rahmat, Rusnah Mustaffa, Idris Besar, Sharmili Vidyadaran, Abdah Md Akim, Mohd Azam Khan Goriman Khan, Saidi Moin, Mariana Nor Shamsudin, Gabriele Anisah Froemming, Abdul Karim Ishak and Fuzina Nor Hussein. 2008. Cytotoxicity effect and morphological study of gentamycin-coated HA on Biofilm formation. <i>The 17th EMSM Scientific Conference and 18th Annual General Meeting 2008</i>, 18-20 Dec 2008, Shah Alam.
IP Status	1. Malaysia Patent Filed (PI 20085327); A Drug Delivery System in Bone Tissue
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Rapid Test for Diagnosis of Feline Coronavirus
Project Number	02-01-04-SF0485
Project Leader and Team Members	Leader: Siti Suri Arshad Members: Abdul Rahman Omar, Heng Hock Gan and Zeenathul Nazariah
Field of Research	Biotechnology
Project Summary/ Objectives	<p>The data at UVH was analysed and the risk factors analysis for FIP was determined. At least 22 virus isolates which were positive with rapid test were able to grow and adapt in the cell culture. The conventional RT-PCR was optimised using published primer targeted on the UTR region and able to detect all feline coronaviruses, both FECV and FIPV, including canine coronavirus (CCV). The developed test was able to screen ascites fluid and faeces from cats suspected of FIP. The real-time RT-PCR was developed based on the UTR region and the test was found to be 10 times more sensitive compared to the former test. In addition to that, the test is more specific as it detects all reference viruses FECV and FIPV except CCV. Work is still on going to differentiate between cat infected with FIPV and FECV. Since macrophages are the target cell tropism for FIPV replication, published primers of the Leader M gene were optimised to detect replicating virus in the blood. Preliminary finding showed that the primer was able to differentiate cat with FIPV and FECV.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none">1. Sharif, S., Arshad, S.S., Hair Bejo, M., Omar, A.R., Zeenathul, N.A. and Hafidz, M.A.I. 2009. Prevalence of feline coronavirus in two cats populations in Malaysia. <i>Journal of Feline Medicine and Surgery</i> 11: 1031-1034.2. Sharif, S., Arshad, S.S., Hair Bejo, M., Omar, A.R., Zeenathul, N.A., Lau, S.F., Nor-Alimah, R., Habibah, A., Shahirudin, S. and Mohd-Kamarudin, A.I. 2010. Descriptive distribution and phylogenetic analysis of feline infectious peritonitis virus isolates of Malaysia. <i>Acta Veterinaria Scandinavica</i> 52: 1-7.

	<ol style="list-style-type: none"> 3. Saeed Sharif, Siti Suri Arshad, Mohd Hair-Bejo, Abdul Rahman Omar, Nazariah Allaudin Zeenathul, Nor-Alimah Rahman and Amer Alazawy. 2011. Evaluation of feline coronavirus viraemia in clinically healthy and ill cats with feline infectious peritonitis. <i>Journal of Animal and Vet Advances</i> 10: 18-22. 4. Saeed Sharif, Siti Suri Arshad, Mohd Hair-Bejo, Abdul Rahman Omar, Nazariah Allaudin Zeenathul and Amer Alazawy. 2010. Diagnostic methods for feline coronavirus: A review. <i>Veterinary Medicine International</i> 1-7. 5. Arshad, S.S. 2010. Letter to the editor: Prevalence of feline coronavirus. <i>Journal of Feline Medicine and Surgery</i> 12: 360. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Alazawy, A.K., Arshad, S.S., Hair Bejo, M., Omar, A.R., Sharif, S. and Hafidz, M.A. 2009. Isolation and adaptation of feline coronavirus in Crandell feline kidney cell culture. <i>21st Veterinary Association Malaysia Congress 2009</i>, 7-9 Aug 2009, Negeri Sembilan.
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Putra Malaysia (UPM) Department of Veterinary Pathology and Microbiology, Faculty of Veterinary Medicine, 43400 UPM Serdang, Selangor. Office: 03-8947 1951 suri@putra.upm.edu.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of an Affinity Adsorption Method for the Purification of Recombinant Hepatitis B Core Antigen
Project Number	02-01-04-SF0486
Project Leader and Team Members	Leader: Tey Beng Ti Members: Ling Tau Chuan, Suryani Kamarudin and Tan Wen Siang
Field of Research	Biotechnology
Project Summary/ Objectives	An affinity adsorbent utilised M13 phage as ligand has been developed and demonstrated that can be used to capture HBcAg. The developed affinity adsorbent has been characterised with electron microscope, fluorescent microscope and ligand leakage test. The results of the characterisations clearly showed that the M13 has strongly bound onto the adsorbents and the ligand leakage rate is very low. Beside its reusability for the purification of HBcAg also being tested and showed that the adsorbent can be reused for several times. The developed affinity adsorbent was used to purify HBcAg from unclarified E. coli feedstock using expanded bed adsorption chromatography process. The operational condition of the expanded bed such as linear flow velocity, ionic strength of the binding buffer, pH and temperature on the adsorption of HBcAg in the expended bed have been optimised. The optimised condition for the elution of HBcAg from the expended bed was used to purified the HBcAg from unclarified E. coli feedstock. A yield of approximately 12% with a purification factor of 4.14 was achieved in a single pass EBA operation. The recirculation of the feedstock into the column has led to an 18% increase in the yield of HBcAg compared with that obtained in the single pass operation. The HBcAg purified with the phage-immobilised adsorbent in both EBAC operations shows to be antigenic.
Publications/Products/ Outcomes	Journals: 1. Tey B.T., Ooi, S.T., Yong, K.S., Ng, M.Y.T., Tan, W.S. and Ling, T.C. 2008. The propagation of bacteriophage M13 retards the growth of Escherichia coli (ER2738). <i>African Journal of Biotechnology</i> 8: 268-273. 2. Ho, C.W., Tan, W.S., Kamaruddin, S., Ling, T.C. and Tey, B.T. 2008. The batch mode bead milling for the release of Hepatitis B core antigen (HBcAg) from Escherichia coli. <i>Process Biochemistry</i> 43: 206-212.

3. Ho, C.W., Tan, W.S., Ling, T.C. and Tey, B.T. 2009. A fast preparative purification process for recombinant Hepatitis B core antigen from *Escherichia coli* disruptate using expanded bed adsorption and size exclusion chromatography. *Journal of Microbiology and Biotechnology* 19: 416-423.
4. Ng, M.Y.T., Tan, W.S., Abdullah, N., Ling, T.C. and Tey, B.T. 2008. Direct recovery of recombinant Hepatitis B Core antigen from two different unclarified *Escherichia coli* homogenates via expanded bed adsorption chromatography. *Malaysian Journal of Biochemistry and Molecular Biology* 16: 64.
5. Ho, C.W., Tan, W.S., Ling, T.C. and Tey, B.T. 2008. Comparative evaluation of different disruption methods for the release of recombinant Hepatitis B core antigen from *E. coli* and its purification. *Biotechnology and Bioprocess Engineering* 13: 577-583.

Proceedings/Conferences/Seminars:

1. Tey, B.T., Ho, C.W., Kamaruddin, S., Ling, T.C. and Tan, W.S. 2007. A scale-able mechanical cell disruption method for the release of hepatitis B core antigen (HBcAg) from *Escherichia coli*. *19th Federation of Asian and Oceanian Biochemists and Molecular Biologists (FAOBMB) Seoul Conference*, 27-30 May 2007, Seoul, Korea.
2. Tey, B.T. 2010. Chromatographic purification of recombinant virus like particles (VLPs). *2nd International Biotechnology and Biodiversity Conference*, 6-8 Jul 2010, Johor Bahru.
3. Ng, M.Y.T., Tan, W.S. and Tey, B.T. 2008. Heat-treatment of unclarified *Escherichia coli* homogenate improves the performance of expanded bed adsorption. *14th Symposium of Young Asian Biochemical Engineers' Community (YABEC2008)*, 29 Nov - 1 Dec 2008, Tokyo, Japan.

IP Status

1. Malaysia Patent filed (PI20080736); Recovery Process for Recombinant Hepatitis B Core Antigen

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Plant-Based Vaccine for Newcastle Disease in Poultry
Project Number	02-01-04-SF0497
Project Leader and Team Members	Leader: Norihan Mohd. Saleh Members: Abdel Aziem Farouk and Khatijah Mohd Yusof
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	Sixteen different constructs (plant vector system) carrying different versions and sizes of the Fusion (F) genes have been developed successfully using the ImpactVector 1.1 and 1.3. These constructs were individually transformed in prokaryotic (<i>E. coli</i>) and eukaryotic system (<i>Nicotiana benthamiana</i>) in order to analyse their expressions. Transient transformations have been carried initially to determine the suitable construct(s) which can express the fusion protein, followed by stable plant transformation using pBinPlus vector. The expression of the recombinant Fusion (F) protein had been analysed in <i>E. coli</i> and <i>N. benthamiana</i> and suitable construct.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Single Nucleotide Polymorphisms of the Human Fatty Acid Amide Hydrolase Gene and the Risk of Drug Addiction in Malaysian Subjects
Project Number	02-01-04-SF0524
Project Leader and Team Members	Leader: Rozita Rosli Members: Lekhraj Rampal and Maznah Ismail
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The association between fatty acid amide hydrolase (FAAH) 385C, a mutation and drug addiction in Malaysian subjects was determined. The relative risk of vulnerability in the susceptible individuals was also ascertained. High-throughput screening protocols were established to screen the FAAH variants. Several single nucleotide polymorphisms (SNPs), including novel SNPs, were identified in exons, introns and other noncoding regions of the FAAH gene. Although the primary aim was to identify variation in the coding regions, SNPs in the intronic regions were also taken into consideration as it may be involved in mRNA processing, RNA stability, splicing or changes of transcription rate. The association of these SNPs with drug association was also investigated.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Rapid Diagnostic Tools Based on Polymerase Chain Reaction (RT-PCR) and Specific Antibodies for Identification and Diagnosis of Viral Encephalopathy and Retinopathy (VER) of Marine Food Fishes
Project Number	02-01-04-SF0630
Project Leader and Team Members	Leader: Hassan Mohd Daud Member: Siti Suri Arshad
Field of Research	Biotechnology
Project Summary/ Objectives	Project objectives were to isolate and identify VER agents from infected marine fish and to develop local susceptible fish cell culture for virus maintenance.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Bioreactor System for Production of Thermophilic Xylanolytic Enzymes by Recombinant Escherichia coli DH5alpha
Project Number	02-01-04-SF0645
Project Leader and Team Members	Leader: Arbakariya Ariff Member: Rosfarizan Mohamad
Field of Research	Environmental Sciences
Project Summary/ Objectives	Medium composition (carbon and nitrogen sources) and culture conditions (temperature, pH, aeration and agitation for growth of recombinant E. coli, capable of secreting xylanolytic enzymes in stirred tank fermenter were optimised. The kinetics of xylanolytic enzymes production by recombinant E. coli in batch fermentation using stirred tank fermenter were studied, where the kinetic parameter values of the process were generated. High cell density culture of E. coli for efficient production of xylanolytic enzymes in stirred tank fermenter based on fed-batch fermentation technique using 2L stirred tank fermenter was developed.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Basar, B., Mohd Shamzi, M., Rosfarizan, M., Puspaningsih, N.N.T. and Ariff, A.B. 2010. Enhanced production of thermophilic xylanase by recombinant Escherichia coli DH5a through optimization of medium and dissolved oxygen level. <i>International Journal of Agriculture and Biology</i> 12: 321-328. 2. M. Rusli Farliahati, Ramakrishnan Nagasundara Ramanan, Rosfarizan Mohamad, Ni Nyoman Tri Puspaningsih and Arbakariya B. Ariff. 2010. Enhanced production of xylanase by recombinant Escherichia coli DH5a through optimization of medium composition using response surface methodology. <i>Annals of Microbiology</i> 60: 279-285. 3. Farliahati Mohd Rusli, Mohd Shamzi Mohamed, Rosfarizan Mohamad, Ni Nyoman Tri Puspaningsih and Arbakariya B. Ariff. 2009. Kinetics of xylanase fermentation by recombinant Escherichia coli DH5 in shake flask culture. <i>American Journal of Biochemistry and Biotechnology</i> 5: 110-118. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Basar, B., Mohd-Shamzi, M., Rosfarizan, M., Puspaningsih, N.N.T. and Ariff, A.B. 2009. Effect of



	medium formulation and dissolved oxygen tension on xylanase production by <i>Escherichia coli</i> DH5alpha in stirred tank bioreactor. <i>Proceeding of Science Conference</i> , 2-4 Jun 2009, UTM, Johor Bahru.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Immunohistochemical Assessment of Endothelial and Smooth Muscle Cell Integrity of Saphenous Veins Harvested by Endoscopic and Open Methods for Coronary Bypass Surgery
Project Number	02-01-04-SF0648
Project Leader and Team Members	Leader: Sabariah Abdul Rahman Members: Mohamed Ezani Md. Tai and Rozita Rosli
Field of Research	Agricultural Sciences
Project Summary/ Objectives	The project was aimed to assess the integrity of endothelial and smooth muscle cells using immunohistochemical studies on saphenous vein grafts harvested by endoscopic and open methods for CABG surgery. The project was able to demonstrate that there was no difference in effects of the endoscopic and the conventional methods on the endothelial and smooth muscle cell integrity of saphenous vein for CABG.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Ligno-Cellulase Enzymes Production of Fungi Based on Solid State Growth System
Project Number	02-01-04-SF0735
Project Leader and Team Members	Leader: Mohd Noor Abd Wahab Members: Shuhaimi Mustafa and Tong Chow Chin
Field of Research	Biotechnology
Project Summary/ Objectives	The active lignocellulase enzymes such as laccase, xylanase and cellulases were obtained on the growth with OPEFB of mushrooms fungi such as <i>Pleurotus sajor-caju</i> , <i>Aucularia auricular-judae</i> , <i>Pleurotus cystidiosus</i> and <i>Ganoderma lucidum</i> in both growth techniques of SSG and SgS systems. However, the active cellulases production was obtained from the newly isolated Ascomycetes fungus, <i>Aspergillus terreus</i> , which best grown on treated chemically, physically and supplemented with effective microbes in the growth system of submerged or liquid stage (SgS) of Bioreactor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of an Efficient Cell Culture Process for the Production of Monoclonal Antibody
Project Number	02-01-04-SF0763
Project Leader and Team Members	Leader: Tey Beng Ti Members: Suryani Kamarudin and Muhajir Hamid
Field of Research	Biotechnology
Project Summary/ Objectives	Mammalian cells are commonly used for the production of complex biomolecules required the correct post-translational modification such as glycosylation, which is absence in prokaryotic microbial cells. Mammalian cells usually require specific growth factors, which are often added in the form of serum, or other animal originated protein and lipid components. Serum may contain infectious agents like viruses and prions. Therefore, the use of serum during the manufacturing of biopharmaceutical is prohibited by regulatory agency. Cell death in the industrial cell culture is predominantly via apoptosis. Apoptotic cell death at the premature stage of an industrial cell culture process will reduce the production rate of biopharmaceutical. Hence, inhibition of apoptosis cell death in bioreactor is an important strategy for the enhancement of mammalian cell productivity. Therefore, the objective of the present study is to investigate the influence of X-linked mammalian inhibitor of apoptosis protein (XIAP) on cell growth and death under serum limitation conditions. The plasmid containing XIAP gene was successfully constructed, and transfected into hybridoma and CHO cells. The over-expression of XIAP was able to reduce the serum dependency of both hybridoma and CHO cell lines and able to protect the cells from serum deprivation induced apoptosis.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Chong, S.L., Mou, D.G., Ali, A.M., Lim, S.H. and Tey, B.T. 2008. Cell growth, cell-cycle progress, and antibody production in hybridoma cells cultivated under mild hypothermic condition. <i>Hybridoma</i> 27: 207-111. 2. Chong, S.L., Mou, D.G., Lim, S.H., Ali, A.M. and Tey, B.T. 2009. Enhancement of monoclonal antibody productivity by promoting active hypothermic growth in hybridoma cell. <i>Journal of Chemical Technology and Biotechnology</i> 84: 1674-1680.



	<ol style="list-style-type: none"> 3. Liew, J.C.J., Tan, W.S., Mohamed Alitheen, N.B. and Tey, B.T. 2010. Over-expression of the X-linked inhibitor of apoptosis protein (XIAP) delays serum deprivation-induced apoptosis in CHO-K1 cells. <i>Journal of Bioscience and Bioengineering</i> 110: 338-344. 4. Tey, B.T., Yap, K.C., Yamaji, H., Ali, A.M. and Tan, W.S. 2010. Supplementation of phosphatidylcholine protects the hybridoma cells from apoptosis induced by serum withdrawal. <i>Animal Cell Technology: Basic & Applied Aspects</i>. 16: 73-77. 5. Tey, B.T., Chong, S.L., Mou, D.G., Lim, S.H. and Ali, A.M. 2008. Monoclonal antibody productivity of hybridoma cells under active hypothermic growth condition. <i>Animal Cell Technology: Basic & Applied Aspects</i>. 16: 77-83.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Catalytic Promiscuity in Biosynthesis of Chiral Drugs and Chemical Synthesis
Project Number	02-01-04-SF0766
Project Leader and Team Members	Leader: Mohd Basyaruddin Abdul Rahman Member: Abu Bakar Salleh
Field of Research	Agricultural Sciences
Project Summary/ Objectives	Project objectives were to create an artificial enzyme by introducing ligand and metal into an existing enzyme; to introduce new activity into enzyme by manipulating the protein structure; to examine the biophysical properties (e.g. thermodynamic and biomolecular interaction) of metalloenzyme at the atomic level; to evolve enzyme using a combination of rational design and molecular modelling and to use enzyme as biocatalyst for chiral drugs and chemical synthesis
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mohd Basyaruddin Abdul Rahman, Harmiza Harun, Mahiran Basri, Raja Noor Zaliha Abdul Rahman and Abu Bakar Salleh. 2009. Catalytic promiscuity of thermostable T1 lipase from <i>Geobacillus zalihaai</i> by metal substitution. <i>III International Conference on Environmental, Industrial and Applied Microbiology (BioMicroWorld) 2009</i>, 2–4 Dec 2009, Lisbon, Portugal. 2. Mohd Basyaruddin Abdul Rahman, Syarajatul Erma Khalid, Mahiran Basri, Raja Noor Zaliha Raja Abdul Rahman and Abu Bakar Salleh. 2009. Synthesis and structural characterization of semisynthetic catalyst based on thermolysin from <i>Bacillus thermoproteolyticus</i> rokko. <i>2nd Annual World Congress of Industrial Biotechnology</i>, 5-7 Apr 2009, Seoul, South Korea. 3. Mohd. Basyaruddin Abdul Rahman, Ahmad Haniff Jaafar, Mahiran Basri, Raja Noor Zaliha Raja Abdul Rahman, Abu Bakar Salleh and Habibah Abdul Wahab. 2007. Design of novel semisynthetic metalloenzyme from thermolysin. <i>System Biology, Bioinformatics, Synthetic Biology (BioSysBio)</i>, 11-13 Jan 2007, Manchester, United Kingdom.
Additional Information	Linkages: Professor Dr. Romas Kazlauskas (University of Minnesota, USA).



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Multicellular Tumour Spheroids (MCTS) Culture System to Investigate the Effect of Activated Natural Killer (NK) Cells
Project Number	02-01-04-SF0770
Project Leader and Team Members	Leader: Noorjahan Banu Mohamed Alitheen Members: Muhajir Hamid and Abdul Rahman Omar
Field of Research	Biotechnology
Project Summary/ Objectives	MCF-7 MCTS was developed. MCTS was able to cryopreserve for one month without major modification of cell cycle profile. MCF-7 MCTS possessed higher resistancy against chemotherapy drug Doxorubicin. NK cells possessed cytotoxicity effect against MCF-7 MCTS through apoptosis rather than necrosis.
Publications/Products/ Outcomes	<p>Book :</p> <ol style="list-style-type: none"> Alitheen, N.B., Yeap, S.K., Ho, W.Y. 2009. Elephantopus scaber Linn.: From ground to the clay pot. RPMP vol. 27. <i>Ethnomedicine: Source & Mechanism I</i>. (pp. 123-143). Studium Press LLC, USA <p>Journals:</p> <ol style="list-style-type: none"> Alitheen, N.B., Manaf, A.A., Yeap, S.K., Shuhaimi, M., Nordin, L., Mashitoh, A.R., 2010. Immunomodulatory effect of damnacanthol isolated from roots of <i>Morinda elliptica</i>. <i>Pharmaceutical Biology</i> 48: 446-452. Alitheen, N.B., Yeap, S.K., Mashitoh, A.R., Suhaimi, M., Nordin, L. and Ali, A.M. 2009. Cytotoxicity and immunomodulatory effects of damnacanthol and nordamnacanthol isolated from roots of <i>Morinda elliptica</i>. <i>Journal Agrotechnology and Food Science</i> 1: 29-42. Alitheen, N.B., Yeap, S.K., Shuhaimi, M., Abdul Manaf, A., Mashitoh, A.R. and Nordin, L. 2009. Cytotoxic effect of damnacanthol, nordamnacanthol, zerumbone and betulinic acid isolated from Malaysian plant sources. <i>International Food Research Journal</i> 17: 711-719. Yeap, S.K., Alitheen, N.B., Mustafa, S., Abdul Aziz, S., Abdul Rahman, M. and Ali, A.M. 2010. Immunomodulatory effects of zerumbone isolated from roots of <i>Zingiber zerumbet</i>. <i>Pakistan Journal of Pharmaceutical Sciences</i> 23: 75-82.



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Formulations of Functional Cosmetics Using Local Plant Extracts in Nanoemulsion Systems
Project Number	02-01-04-SF0780
Project Leader and Team Members	Leader: Dzulkefly Kuang Abdullah Members: Atan Mohd Sharif, Anuar Kassim and Gwendoline Cheng Lian Ee
Field of Research	Biotechnology
Project Summary/ Objectives	Project objectives were to extract and evaluate the activity of the functional agents from <i>Centella asiatica</i> and <i>Aloe vera</i> for the preparation of the nanoemulsion containing plant extracts; to characterise the physicochemical properties of the nanoemulsions that related to cosmetic applications and to formulate and test skin cosmetic containing plant extracts.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development and Utilisation of Immunological Avidity Test for Rapid Diagnosis of Toxoplasmosis
Project Number	02-01-04-SF0801
Project Leader and Team Members	Leader: Wan Omar Abdullah Members: Malina Othman and Ngah Zasmy Unyah
Field of Research	Agricultural Sciences
Project Summary/ Objectives	Project objectives was to develop a rapid immunological avidity test for diagnosis of toxoplasmosis and subsequent utilisation in screening of infections in reservoir animals and humans in rural agricultural communities. From this study, two types of antigens were generated viz., crude <i>T. gondii</i> tachyzoite lysate (TL) and recombinant surface antigen 1 (rSAG1); Four assay formats were configured: microplate ELISA based on crude TL antigen; dot- ELISA; microplate ELISA based on rSAG1 as capture antigen and dipstick immunoassay (DIA) for IgG and IgM.
Publications/Products/ Outcomes	Journal: 1. Wan Omar, A., Ngah, Z.U., Malina, O., and Rukman, A. H., 2008. Seroprevalence of Toxoplasma gondii among agricultural workers using a recombinant antigen based ELISA and meat samples survey in Peninsular Malaysia. <i>Journal of Community Health</i> 14: 69.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Efficient Purification of Immunoglobulin-G (anti-HBc-IgG antibody) for the Epidemic Screening and Diagnosis of Hepatitis B (HBV) Infection
Project Number	02-01-04-SF0808
Project Leader and Team Members	Leader: Ling Tau Chuan Members: Tan Wen Siang and Zanariah Mohd Dom
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	Project objectives were to develop and construct a pseudo-affinity dye ligands adsorbent for the adsorption of pure IgG and model protein; to evaluate the developed pseudo-affinity adsorbent for the adsorption of anti HBc-IgG from clarified rabbit serum and to develop and optimize a pseudo-affinity dye ligand expanded bed adsorption process for the direct recovery of anti-HBc-IgG from the unclarified rabbit serum.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Rattana, W., Tey, B.T., Tan, W.S., Taip, F.S., Mustapa Kamal, S.M. and Ling, T.C. 2009. Application of dye-ligands affinity adsorbent in capturing of rabbit immunoglobulin G. <i>Biochemical Engineering Journal</i> 45: 232–238. 2. Rattana, W., Tey, B.T., Tan, W.S., Subramanian, S.K., Taip, F.S. and Ling, T.C. 2011. Purification of rabbit polyclonal immunoglobulin G using anion exchangers. <i>Process Biochemistry</i>. 46: 101–107. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Rattana, W., Tey, B.T., Tan, W.S., Taip, F.S. and Ling, T.C. 2010. Application of anion exchanger in recovery of rabbit polyclonal immunoglobulin G. <i>International Congress of Antibodies</i>, 24-26 Mar 2010, Beijing, China. 2. Rattana, W., Tey, B.T., Tan, W.S., Taip, F.S. and Ling, T.C. 2010. Dye ligand adsorption of immunoglobulin G. <i>17th Regional Symposium on Chemical Engineering</i>, 22–23 Nov 2010, Bangkok, Thailand. 3. Rattana, W., Tey, B.T., Tan, W.S., Taip, F.S., Ling, T.C. 2008. Dye-ligands adsorption of antibody. <i>30th Symposium of Malaysian Society for Microbiology</i>, 16–18 Aug 2008, Pahang.
IP Status	1. Malaysian Patent filed (PI 2010005910); Purification of Antibodies Against Hepatitis B



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Wire Mesh Collimator for a 3D Spect Camera
Project Number	02-01-04-SF0834
Project Leader and Team Members	Leader: M. Iqbal Saripan Members: Rozi Mahmud, MD, Abdul Jalil Nordin, MD and Mdm Roslizah Ali
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This research was focused on the design of a 3D image acquisition model using Wire Mesh collimator gamma camera and find optimum structure.
Publications/Products/ Outcomes	Journal: 1. M. Iqbal Saripan, Wira Hidayat Mohd Saad, Suhairul Hashim, Rozi Mahmud, Abdul Jalil Nordin and Mohd Adzir Mahdi. 2009. Monte Carlo simulation on breast cancer detection using Wire Mesh Collimator Gamma Camera. <i>IEEE Transactions on Nuclear Science</i> 56: 1321-1324.
Awards/Certificates	1. International Radiation Physics Society: Young Researcher Travel Award 2. PECIPTA 2009: 1 Gold Medal
IP Status	1. Malaysia Patent filed (PI20082818); Wire mesh collimator
Additional Information	Linkages: RMIT; University of Surrey; Lawrence Berkeley National Laboratory
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Distribution of Arginine Catabolic Mobile Element (ACME), Cytolytic and Superantigenic Toxins Among Local <i>Staphylococcus aureus</i> Isolates
Project Number	02-01-04-SF0853
Project Leader and Team Members	Leader: Vasanthakumari Neela Members: Rukman, Mariana Nor Shamsudin and Zamberi Sekawi
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	The characteristics of local <i>Staphylococcus aureus</i> isolates on the basis of antimicrobial susceptibility pattern, SCCmec and spa types are determined. The antibiotic resistant pattern, distribution of hospital acquired (HA) and community acquired (CA) MRSA isolates and the predominant local clones are determined. The genes coding for ACME, Panton Valentine (PVL) (cytolytic) and entero and epidermolytic toxins (superantigenic) amplified. The distribution of virulent factors in the local isolates will be obtained. This project is also managed to relate the distribution of various virulent factors and staphylococcal cassette chromosome mec (SCCmec) types among local clones. The highly virulent and antibiotic resistant HA and CA <i>S. aureus</i> clones circulating in Malaysia are identified.
Publications/Products/ Outcomes	Journal: 1. Vasanthakumari Neela, Mohd Zafrul Arif, Mariana Nor Shamsudin, Alex van Belkum, Liew Yun Khoo and Ehsanollah Ghaznavi Rad. 2009. Prevalence of St-9 MRSA among pigs and 1 pig handlers in Malaysia. <i>Journal of Clinical Microbiology</i> 47: 4138-4140.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification of Hb Variants and Development of an Electronic Database for Thalassaemia in Malaysia
Project Number	02-01-04-SF0876
Project Leader and Team Members	Leader: Elizabeth George Members: Mary Anne Tan Jin Ai and Rozita Rosli
Field of Research	Biotechnology
Project Summary/ Objectives	To develop a novel diagnostic tool: e-Cgram-HbVar, an electronic database for the identification of Hb variants and thalassaemia interactions have been developed.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. George, E., Lai, M.I., Teh, L.K., Lim, W.F., Goh, E.H., Asokan, K. and Vasudevan, M. 2001. A novel diagnostic tool for screening for thalassaemia in red blood cells of cord blood samples: A Malaysian cord blood banking experience. <i>Malaysian Journal of Obstetrics & Gynaecology</i> 8: 40-46. 2. George, E., Tan, J., Noor Azian, A.S., Rahimah, A. and Zubaidah, Z. 2009. A rare case of alpha-thalassemia intermedia in a Malay patient double heterozygous for α^+-thalassemia and a mutation in $\alpha 1$ globin gene CD59(GCC→GAC). <i>Medical Journal of Malaysia</i> 64: 263-264. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Elizabeth George, Lai Mei I, Teh Lai Kuan, Lim Wai Feng, Goh Ern Huei, Kamalan Asokan and Maithili Vasudevan. 2009. A novel diagnostic tool for screening for thalassaemia in red blood cells of cord blood samples: A Malaysian cord blood banking experience. <i>19th Cogress of The Obstetrical & Gynaecological Society of Malaysia</i>, 4-7 Jun 2009, Kota Kinabalu.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Bioactive Glass Ceramics Filled Polymethylmethacrylate (PMMA) Bone Cements
Project Number	02-01-05-SF0316
Project Leader and Team Members	Leader: Mariatti Jaafar @ Mustapha Members: Noor Hayati Abdul Razak and Radzali Othman
Field of Research	Natural Sciences, Technologies and Engineering
Project Summary/ Objectives	In the search of high potential filler for bone cement applications, new formulation of bioactive glass-ceramics has been developed. The use of bioactive glass ceramic particles as a bioactive filler on acrylic bone cements leads to promote bone growth around an implant and improve mechanical properties. For that reason, this study aims to synthesize a new composition of bioactive glass-ceramic and to evaluate the effect of incorporating the glass-ceramic particles into commercial PMMA bone cement.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Chou, P.M. and Mariatti, M. 2010. Properties of polymethyl methacrylate (PMMA) bone cement filled with titania and hydroxyapatite fillers. <i>Polymer - Plastics Technology and Engineering</i> 49: 1163. 2. Hamizah A. Samad and Mariatti Jaafar. 2009. Effect of polymethyl methacrylate (PMMA) powder to liquid monomer (p/l) ratio and powder molecular weight on the properties of PMMA cement. <i>Polymer-Plastics Technology and Engineering</i> 48: 554-560. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Hamizah Abd. Samad, mariatti Jaafar, Radzali Othman, Masakazu Kawashita, Noor Hayati Abdul Razak. 2010. Setting and flexural properties of polymethylmethacrylate (PMMA) bone cement composites incorporated with hydroxyapatite and glass ceramic. <i>Regional Biomaterials Scientific Meeting 2010</i>, 29-30 Oct 2010, Kelantan. 2. Hamizah Abd. Samad, Mariatti Jaafar, Radzali Othman, Masakazu Kawashita and Noor Hayati Abdul Razak. 2010. Thermal and fracture properties of polymethylmethacrylate (PMMA) bone cement composites incorporated with hydroxyapatite and glass ceramic. <i>10th National Symposium on Polymeric Materials (NSPM)</i>, 8-10 Nov 2010, Langkawi.

	3. Chou, P.M. and Mariatti Jaafar. 2010. Characterization of PMMA bone cement filled with bioactive fillers. <i>SAMPE Asia Conference 2010</i> , 19-20 Jan 2010, Kuala Lumpur.
Additional Information	Linkages: Prof. Masakazu Kawashita (Tohoku University, Japan)
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Identification of Membrane Associated Protein Biomarkers for Infiltrating Ductal Carcinoma: Proteomics Approach
Project Number	02-01-05-SF0353
Project Leader and Team Members	Leader: Gam Lay Harn Member: Shaharum Shamsuddin
Field of Research	Health
Project Summary/ Objectives	Identification of differentially expressed proteins between cancerous tissues and normal tissues from Malaysian breast cancer patients.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Liang Seng, Singh Manjit and Lay-Harn Gam. 2010. The differential expression of aqueous soluble proteins in breast normal and cancerous tissues in relation to stage and grade of patients. <i>Journal of Biomedicine and Biotechnology</i> 2010. 2. Liang Seng, Manjit Singh, Saravanan Dharmaraj and Lay-Harn Gam. 2010. The PCA and LDA analysis on the differential expression of proteins in breast cancer. <i>Disease Markers</i> 29: 231-242. 3. Seng Liang, Manjit Singh and Lay-Harn Gam. 2010. The differential expression of aqueous soluble proteins in breast normal and cancerous tissues in relation to ethnicity of the patients; Chinese, Malay and Indian. <i>Disease Markers</i> 28: 149-165. 4. Othman, M.I., Majid, M.I., Singh, M., Subathra, S., Seng, L. and Gam, L.H. 2009. Proteomics of grade three infiltrating ductal carcinoma in Malaysian Chinese breast cancer patients. <i>Biotechnology and Applied Biochemistry</i> 52: 209-219. 5. Izani, O., Majid, M.I., Manjit, S., Man, C.N. and Gam, L.H. 2008. Isolation, identification and quantification of differentially expressed proteins from cancerous and normal breast tissues. <i>Annals of Clinical Biochemistry</i> 45: 299-306. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Liang, S. and Gam, L.H. 2008. Identification of differentially expressed aqueous soluble proteins in cancerous and normal breast tissue of infiltrating ductal carcinoma: A proteomics study. <i>Asean Scientific conference in Pharmaceutical Technology</i>, 1-3 Jun 2008, Penang.

	<ol style="list-style-type: none"> 2. Lim, C.A., Khoo, B.Y., Shaharum, S. and Gam, L.H. 2009. Identification and evaluation of protein expression in breast cancer tissue. <i>3rd Regional Conference on Molecular Medicine 2009</i>, 2-4 May 2009, Kelantan. 3. Gam, L.H., Liang, S., Leow, C.H., Izani, M., Lim, C.A. and Yeoh, L.C. 2008. Proteomics of breast cancer tissues amongst malaysian patients. <i>7th Surugadai Symposium</i>, 16-18 Nov 2008, Tokyo, Japan.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	<i>In Situ</i> Expression of Nifh Genes in Natural Microbial Assemblages of Malaysian Soil Using Quantitative PCR
Project Number	02-02-11-SF0005
Project Leader and Team Members	Leader: Choo Quok Cheong Member: Lim Soo Thye
Field of Research	Biotechnology
Project Summary/ Objectives	<i>In situ</i> analysis of microbial community gene expression in their natural habitat of soil environment was determined. The presence of unknown nifH gene sequences which may correspond to previously unidentified diazotrophs of Malaysian soil environment are elucidated. Unknown nifH DNA sequences with the corresponding gene deposited in the database were compared. A phylogenetic tree to determine which diazotrophic nifH genes were preferentially expressed in various natural soil environment were constructed. All the DNA sequencing results that were generated will be deposited in DNA database (GenBank).
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	An Investigation of the Combined Efficacy of LightA Photosensitising Compounds and Chemotherapeutic Agents on Human Cancer Cell Lines
Project Number	02-02-11-SF0008
Project Leader and Team Members	Leader: Anthony Ho Siong Hock Member: Lee Hong Boon
Field of Research	Biotechnology
Project Summary/ Objectives	Evaluation of interaction between hypericin and cisplatin or doxorubicin in three cell lines were successfully completed. The results indicated that synergistic interaction were noted for hypericin in combination with doxorubicin in HSC-4 cells. Other combinations in the other two cell lines showed mainly additive or less than additive interactions suggesting that the genetic background of the cell also influences drug interactions. From isobolographic analysis, we identified the combinations of drugs were synergistic. Investigation of apoptosis showed that increased apoptosis was noted for the synergistic dose of hypericin and doxorubicin in HSC-4 cells only. Other combinations did not show increased apoptosis. This suggested that synergism is related to increased apoptosis in combination treatments. Similarly, increased caspase three and nine and decreased Bcl-2 was most obvious in HSC-4 when treated with the synergistic combined dose. Other combined treatments in the other two cell lines did not have the same magnitude of response. These results suggest that synergistic doses enhances the classical apoptotic pathway. Investigation of global protein changes showed that synergistic doses of hypericin and doxorubicin in HSC-4 cells lead to 14 up- and two down-regulated proteins. These same proteins were also differentially expressed in cells treated with either hypericin or doxorubicin alone but to a much lesser extent. The proteins with significant responses were fumarate hydratase, VDAC1 and CKAP5 which were significantly upregulated and beta tubulin which was downregulated. These proteins could be targets for modulation of cellular response or could help us explain the mechanisms of cell killing.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Teoh Jia Jie, Lee Hong Boon and Anthony Ho Siong Hock. 2008. Hypericin mediated photodynamic therapy (PDT) in combination with doxorubicin exhibits synergistic cell killing on human oral cancer cell lines International PSE Symposium on Natural Products in <i>Cancer Therapy</i> , 23-26 Sept 2008, Naples, Italy.



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of a Brain-Computer Interface System for Control of Prosthetic Arm and Other Devices
Project Number	02-02-11-SF0011
Project Leader and Team Members	Leader: Goh Sing Yau Member: Tan Lee Fan
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	A robust EEG based BCI system to define intent was developed. This equipped with feedback for wheelchair and prototype BCI system. The effect of meditation on the control of EEG signals and as a suitable training for BCI systems was studied. A control trail test was carried out on 24 subjects over a 12 week period. The subjects were randomly split into three groups including a control group. The results showed that subjects who participated in mindfulness meditation improved their BCI performance.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Tan, L.F., Ng, C.S., Ng, J.Q. and Goh, S.Y. 2008. A brain-computer interface with intelligent distributed controller for wheelchair. <i>Biomed 2008</i>. 21: 641–644. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Lee-Fan Tan, Ashok Jansari, Shian-Ling Keng, and Sing-Yau Goh. 2009. Effect of mental training on BCI performance. <i>13th International Conference HCI International 2009</i>. 19-24 Jul. San Diego, CA, USA.
Contact Institution/Entity Address	Universiti Tunku Abdul Rahman (UTAR) Universiti Tunku Abdul Rahman, UTAR Complex, Jalan Genting Kelang, 53300 Setapak, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	An Investigation of the Chemopreventive Mechanisms of Maslinic Acid on PMA-Induced Tumourigenesis
Project Number	02-02-11-SF0028
Project Leader and Team Members	Leader: Lim Yang Mooi Members: Lim Saw Hoon, Yeo Chew Chieng and Khoo Kong Soo
Field of Research	Biotechnology
Project Summary/ Objectives	<p>The suppressive effect of maslinic acid on PMA-induced protein kinase C expression in Raji cells are verified. In addition, the PKC isoforms that involved in the PMA-induced protein kinase C signalling pathway are also identified. Whether the anti-tumour promoting activity of maslinic acid is possibly mediated by modulation of NF-κB and AP-1 transcriptional factors, which triggered by PMA via protein kinase C activation was investigated. The anti-inflammatory effect of maslinic acid on COX-2 expression which transactivated by NFκB and AP-1 transcriptional factors that contribute to tumorigenesis examined. The chemopreventive effect of maslinic acid in modulating other protein changes expressed in Raji cells via proteomic tools explored. Identification of these proteins might reveal other regulatory pathways in tumour promotion particularly induced by PMA. Maslinic acid has been indicated to show effects on PKC, NF-κB, AP 1 and CoX proteins expression in Raji cells. Proteomics analysis also reveal several possible pathway should be regulated by maslinic acid. This preliminary promising results show that maslinic acid is a potent cancer chemopreventive agents, and thus more mechanistic study at molecular levels should be conducted to further justify the chemopreventive properties of maslinic acid.</p>
Publications/Products/ Outcomes	Journal: 1. Yap, W.H., Wong, T.Y., Paul, L.V.H., Khoo, K.S., Lim, S.H., Yeo, C.C. and Lim, Y.M. 2010. Cancer chemopreventive activity of Maslinic acid: suppression of COX-2 expression and inhibition of NF-κB and AP-1 activation in Raji cells. <i>Planta Medica</i> 76: 1-6.

	Proceedings/Conferences/Seminars: 1. Yap, W.H., Wong, T.Y., Paul, L.V.H., Khoo, K.S., Lim, S.H., Yeo, C.C. and Lim Y.M. 2009. Suppressive effects of maslinic acid on COX-2 expression and NF-kB activation in Raji cells. <i>TWAS Regional Young Scientists Conference</i> , 2-5 Nov 2009, Kuala Lumpur.
Contact Institution/Entity Address	Universiti Tunku Abdul Rahman (UTAR) Universiti Tunku Abdul Rahman, UTAR Complex, Jalan Genting Kelang, 53300 Setapak, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Nucleolytic and Anticancer Properties of Insulin-Mimetic Vanadium, Zinc and Cobalt Complexes
Project Number	02-02-11-SF0033
Project Leader and Team Members	Leader: Ng Chew Hee Members: Mohd Jamil Maah, Sit Nam Weng, Lim Soo Thye, Lee Hong Boon and Chye Soi Moi
Field of Research	Biotechnology
Project Summary/ Objectives	The nucleolytic and anticancer properties of known and potential insulin-mimetic vanadium, zinc and cobalt complexes were determined. The factors affecting the efficacy of the metal complexes as nucleolytic and anticancer agents found. The mechanisms of the nucleolytic process and cell death for these complexes were investigated.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	The Effect of Additives and Enrichment Materials in Enhancing the Viability and Efficacy of Formulated Beneficial Microbes
Project Number	02-02-11-SF0037
Project Leader and Team Members	Leader: Adeline Ting Su Yien
Field of Research	Biotechnology
Project Summary/ Objectives	The role of additives and enrichment materials in enhancing cell viability of the two selected bacterial strains were determined. The suitability of these additives and enrichment materials applied either singly or in combinations were identified. The formulation process was optimised to ensure the physical aspects of the resulting formulation is desirable. The efficacy of bacteria in formulations comprising various additives and enrichment materials were determined to select combinations that were beneficial, i.e. good cell viability and good efficacy. Efficacy test was performed in vitro, and results were preliminary and can be further explored in larger scale experiments. This project has the potential for large scale development of ways to immobilise bacterial cells for application. The additives and enrichment materials when incorporated correctly with the clay-based carrier materials, not only helps to maintain cell viability during storage and upon exposure to sunlight, but also aids in their subsequent expression of efficacy.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Ting, A.S.Y., Fang M.T. and Tee C.S. 2010. Evaluation on the efficacy of formulated <i>Pseudomonas</i> cells in degrading the aromatic hydrocarbon toluene. <i>Australian Journal of Basic and Applied Sciences</i>, 4(8):3122-3127. 2. Ting, A.S.Y., Fang, M.T. and Tee, C.S. 2010. An in vitro assessment on the efficacy of clay-based formulated cells of <i>Pseudomonas</i> isolate UTAR EPA2 for petrol degradation. <i>American Journal of Applied Sciences</i> 7: 178-184. 3. Ting, A.S.Y., Fang, M.T. and Tee, C.S. 2009. Assessment on the effect of formulative materials on the viability and efficacy of <i>Serratia marcescens</i>-a biocontrol agent against <i>Fusarium oxysporum</i> f.sp. cubense race 4. <i>American Journal of Agricultural and Biological Sciences</i> 4: 283-288.



	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ting, A.S.Y., Fang, M.T. and Tee, C.S. 2009. Efficacy of formulated cells of <i>Pseudomonas</i> isolate UTAREPA2 in degrading aromatic hydrocarbon (toluene). <i>Proceedings in the International Congress of Malaysian Society for Microbiology (ICMSM)</i>, 1-4 Dec 2009, Penang. 2. Ting, A.S.Y., Fang, M.T. and Tee, C.S. 2009. Characterization and identification of the beneficial endobacterium <i>Serratia marcescens</i> isolated from wild bananas. <i>Proceedings in the Malaysian Biological Symposium: Harnessing the Potential of Biodiversity</i>, 17-18 Nov 2009, Bangi, Selangor. 3. Ting, A.S.Y., Fang, M.T., Tee, C.S. 2009. Efficacy of clay-based formulated <i>Serratia</i> in reducing inoculum of <i>Fusarium oxysporum</i> f.sp. <i>cubense</i> race 4. <i>ISHS/ ProMusa symposium</i>, 14-18 Sept 2009, Guangzhou, China. 4. Fang, M.T. and Ting, A.S.Y. 2008. Biodegradation of petrol by <i>Pseudomonas</i> isolate UTAR EPA2 in various formulations. <i>Proceedings of Malaysian Science and Technology Congress 2008</i>, 16-17 Dec 2008, Kuala Lumpur Convention Centre, Malaysia. 5. Fang, M.T., Tan, C.H.C. and Ting, A.S.Y. 2008. Effect of different formulative materials on the viability and efficacy of a hydrocarbon-degrading bacterium. <i>Proceedings of the 30th Symposium of Malaysian Society for Microbiology</i>, 16-19 Aug 2008, Kuantan Pahang.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Tunku Abdul Rahman (UTAR) Universiti Tunku Abdul Rahman, UTAR Complex, Jalan Genting Kelang, 53300 Setapak, Kuala Lumpur. Office: 03-4107 9802 H/p: 012-330 7493 adeline.ting@sci.monash.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Production of Flavonoid Compounds in Cell Cultures of <i>Ficus deltoidea</i> (Mas Cotek)
Project Number	02-02-11-SF0038
Project Leader and Team Members	Leader: Ramani Poospooragi Member: Anna Ling Pick Kiong
Field of Research	Biotechnology
Project Summary/ Objectives	Callus and cell cultures derived from the leaf of <i>Ficus deltoidea</i> were obtained. Flavonoids compound in the intact leaf, callus and cell cultures were identified. Flavonoids content in the callus and cell cultures were quantified. Cultural condition to enhance the flavonoids production were optimised.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Mathematical Modelling of Splicing Systems on DNA Molecules
Project Number	02-01-06-SF0013
Project Leader and Team Members	Leader: Nor Haniza Sarmin Members: Noor Aini Abdul Rashid and Zuwairie Ibrahim
Field of Research	Natural Sciences, Technologies and Engineering
Project Summary/ Objectives	Various concepts in splicing theory and the special features restriction sites which allow simplification of procedures for the determination of the languages were studied. Encoding of long subwords of strings (or DNA) into single auxiliary symbols in order to make it practical to deal with the thousands of base pairs in naturally occurring DNA molecules has been successful generated. New concepts were introduced in splicing system that can determine recombinant behaviour for system of enzymes on DNA molecules has introduced. Mathematical proofs for propositions related to the new concepts were provided. Laboratory experiments for confirming and illustrating splicing system concepts were performed. All the objectives are successfully achieved.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Fong Wan Heng, Nor Haniza Sarmin and Zuwairie Ibrahim. 2008. Recognition of simple splicing systems using SH-Automaton. <i>Journal of Fundamental Sciences</i> 4: 337-342. 2. Nor Haniza Sarmin, Fong Wan Heng, Noor Aini Abdul Rashid and Mohd Firdaus Abdul Wahab. 2008. Verification of a mathematical model of a splicing system. <i>Matematika, Special Edition</i> 1: 65-70. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Fong Wan Heng, Nor Haniza Sarmin and Yuhani Yusof. 2009. Persistent and permanent splicing system. <i>Second International Conference and Workshops on Basic and Applied Sciences & Regional Annual Fundamental Science Seminar (ICORAFSS) 2009</i>, 2-4 Jun 2009, Johor Bahru. 2. Fong Wan Heng and Nor Haniza Sarmin. 2008. Solid codes in splicing systems. 2008. Conference on <i>Biomathematical Computing: Past, Present and Prospects</i>, 31 Oct - 2 Nov 2008, New York, USA.

	<ol style="list-style-type: none"> Nor Haniza Sarmin, Fong Wan Heng, Noor Aini Abdul Rashid and Mohd Firdaus Abdul Wahab. 2008. Wet splicing system in Universiti Teknologi Malaysia. Conference on <i>Biomathematical Computing: Past, Present and Prospects</i>, 31 Oct - 2 Nov 2008, New York, USA. Fong Wan Heng and Nor Haniza Sarmin. 2008. Solid codes in splicing systems. Conference on <i>Biomathematical Computing: Past, Present and Prospects</i>, 31 Oct - 2 Nov 2008, New York, USA. Fong Wan Heng, Nor Haniza Sarmin, Mohd Firdaus Abd Wahab and Noor Aini Abdul Rashid. 2007. Modelling of splicing system in DNA. <i>International Conference on Mathematical Sciences 2007 (ICMS'07)</i>, 28-29 Nov 2007, Bangi-Putrajaya. Fong Wan Heng, Nor Haniza Sarmin and Zuwairie Ibrahim. 2008. Reduction of splicing systems using solid codes. <i>Symposium Kebangsaan Sains Matematik Ke-16 2008 (SKSM16)</i>, 3-5 Jun 2008, Kelantan.
Awards/Certificates	<ol style="list-style-type: none"> Malaysian Technology Expo 2010:1 Silver Medal 'Output Visualization of Adult and Limit Languages in Splicing System', INATEX 2009:1 Bronze Medal
IP Status	Copyright : Local - Output Visualization of Adult and Limit Languages in a Splicing
Additional Information	Linkages: Bio Labs, KL
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Phytochemicals with Antioxidants and Antityrosinase Activities from Two Melastomataceae
Project Number	02-01-06-SF0014
Project Leader and Team Members	Leader: Hasnah Mohd Sirat Member: Shajarahtunnur Jamil
Field of Research	Chemical Sciences
Project Summary/ Objectives	Phytochemicals from two Melastomaceae family (Melastoma and Tibouchina) were extracted by conventional technique. Bioactive phytochemicals were isolated using several chromatographic methods and recrystallisation technique. The structure of phytochemicals were elucidated spectroscopically and these phytochemicals were modified for their derivatives. Antioxidant and antityrosinase of the extracts and phytochemicals were studied.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Hasnah M. Sirat, Mohd Fazlin Rezali and Zanariah Ujang. 2010. Isolation and identification of radical scavenging and tyrosinase inhibition of polyphenols from Tibouchina semidecandra L. <i>Journal of Agricultural and Food Chemistry</i> 58: 10404-10409. 2. Hasnah M. Sirat, Deny Susanti, Farediah Ahmad, Hiromitsu Takayama, and Mariko Kitajima. 2010. Amides, triterpene, and flavonoids from the leaves of Melastoma malabathricum L.. <i>Journal of Natural Medicines</i> 64: 492-495. 3. Deny Susanti, Hasnah M. Sirat, Farediah Ahmad, Rasadah Mat Ali, Norio Aimi and Mariko Kitajima. 2007. Antioxidant and cytotoxic flavonoids from the leaves of Melastoma malabathricum L.. <i>Food Chemistry</i>. 103: 710-716. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Hasnah M. Sirat, Deny Susanti, Farediah Ahmad and Rasadah Mat Ali. 2007. Chemical and bioactivity studies of Melastoma malabathricum. International Symposium on <i>Natural Products and Medicinal Chemistry, 12th Asian Chemical Congress</i>, 23-25 Aug 2007, Kuala Lumpur.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor. Office: 07-553 4319 hasnah@kimia.fs.utm.my

TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	The Development of Feature Selection Tool for Classification of Microarrays Gene Expression Data Using Statistical and Machine Learning Techniques
Project Number	02-01-06-SF0068
Project Leader and Team Members	Leader: Zuraini Ali Shah Member: Rosli Md Illias
Field of Research	Biological Sciences
Project Summary/ Objectives	Feature selection method improved effectiveness and efficiency from different classification methods have been studied. The selected genes are validated and a tool (software) has been developed.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Zuraini S. Ali, Puteh Saad and Razib M. Othman. 2009. Feature selection and classification of gene expression data. 2009. <i>Proceeding of the 5th Postgraduate Annual Research Seminar 2009 (PARS'09)</i>, 15-19 Jun 2009, Skudai. 2. Zuraini S. Ali and Puteh Saad. 2009. A comparative study on feature ranking filter methods for feature selection. 2009. <i>Proceeding of the 1st Malaysian Joint Conference on Artificial Intelligence (MJCAI'09)</i>, 14-16 July 2009, Kuala Lumpur. 3. Shahreen Kasim, Safaai Deris, Razib M. Othman, Zuraini S. Ali and Rohayanti Hassan. 2009. Gene ontology based biclustering in gene expression data. <i>3rd Proceedings of the International Conference on Chemical & Bioprocess Engineering (ICCBPE'09)</i>, 12-14 Aug 2009, Kota Kinabalu. 4. Zuraini S. Ali and Puteh Saad. 2009. Genetic algorithm based feature selection and unbiased protocol for classification of breast cancer datasets. <i>Proceedings of the 5th International Conference on Information & Communication Technology and Systems (ICTS'09)</i>, 4 Aug 2009, Surabaya, Indonesia.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	DNA Sequence Design for DNA Computing with Length and Taqman Constraints
Project Number	02-01-06-SF0069
Project Leader and Team Members	Leader: Zuwairie Ibrahim Member: Nor Haniza Sarmin
Field of Research	Biotechnology
Project Summary/ Objectives	A set of DNA sequences specifically for direct-proportional length-based DNA computing which considers length constraint has been designed. Along with that, a set of DNA sequences which considers TaqMan constraints for DNA computing and biotechnology applications has been designed. Both of the length and TaqMan constraints in a software platform for multi-purpose applications are combined.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Tri Basuki Kurniawan, Noor Khafifah Khalid, Zuwairie Ibrahim, Marzuki Khalid, and Martin Middendorf. 2008. An ant colony system for DNA sequence design based on thermodynamics. <i>Advances in Computer Science and Technology (ACST08)</i>, 2-4 Apr 2008, Langkawi. 2. Zuwairie Ibrahim, Tri Basuki Kurniawan and Marzuki Khalid. 2007. A DNA sequence design for molecular computation of HPP with output visualization based on real-time PCR. <i>IEEE Congress on Evolutionary Computation 2007</i>, 25-28 Sept 2007, Singapore. 3. Zuwairie Ibrahim, Tri Basuki Kurniawan and Marzuki Khalid. 2007. A DNA sequence design for direct -proportional length-based DNA computing using DNA sequence generator. <i>The 2nd International Conference on Innovative Computing, Information and Control</i>, 5-7 Sept 2007, Kumamoto City International Centre, Japan.
IP Status	<ol style="list-style-type: none"> 1. Malaysian Patent filed (PI2008 1644); An Ant Colony System for DNA Sequence Design Based on Thermodynamics 2. Malaysian Patent filed (PI2009 1031); Systems and Methods for Optimising DNA Sequences Based on Particle Swarm Optimization (PSO)

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Enzymatic Study of the Dehalogenases Involved in Biodegradation of a Herbicide 3-Chloropropionic Acid (3CP) by a Novel Indigenous Bacteria
Project Number	02-01-06-SF0070
Project Leader and Team Members	Leader: Fahrul Zaman Huyop Member: Dayang Fredalina
Field of Research	Chemical Sciences
Project Summary/ Objectives	Microorganisms capable of utilising 3CP as the sole sources of carbon and energy were isolated. The one isolated with the highest potential to biodegrade 3-chloropropionic acid (3CP) using biochemical and 16S rRNA technique were characterised. Molecular and enzymatic properties of the 'dehalogenases' possessed by the isolate were studied.
Publications/Products/ Outcomes	Journal: 1. Ng Hong Jing, Roswanira Ab. Wahab, Aishah Mohd Taha, Noor Aini Abdul Rashid and Fahrul Huyop. 2008. A further characterization of 3-chloropropionic acid dehalogenase from <i>Rhodococcus</i> sp. HJ1). <i>Research Journal of Microbiology</i> 3: 482-488.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Evaluations of Anti-Inflammatory Activities of Phytochemicals from Three Wild Pipers
Project Number	02-01-06-SF0071
Project Leader and Team Members	Leader: Farediah Ahmad Member: Rasadah Mat Ali
Field of Research	Biotechnology
Project Summary/ Objectives	Phytochemicals from 3 wild Pipers (<i>P. manjuscum</i> , <i>P. umbellatum</i> and <i>P. febrifugum</i>) were isolated. Then, the structures of the isolated phytochemicals by spectroscopic methods were characterised. The anti-inflammatory (PAF< TPA mouse ear oedema and lipoxygenase assay) activities of the crude extracts and pure phytochemicals were evaluated.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Emrizal Rajudin, Farediah Ahmad, Hasnah Mohd Sirat, Dayar Arbain and Hassan Aboul-Enein. 2010. Chemical constituents from tiger's betel, Piper porphyrophyllum N.E.Br (Piperaceae). <i>Natural Products Research</i> 24: 387-390. 2. Emrizal, Farediah Ahmad, Hasnah Mohd Sirat, Fadzureena Jamaludin, Nik Musaadah Mustapha, Rasadah Mat Ali and Dayar Arbain. 2008. Anti-inflammatory Activity of Piper magnibacum (Piperaceae). <i>Natural Product Communication</i> 3: 1719-1721. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Emrizal, Farediah Ahmad, Hasnah Mohd Sirat and Dayar Arbain. 2006. Phytochemical investigation and antibacterial activities of Kaduk (Piper sarmentosum Roxb). <i>5th ANRAP international Seminar–MNPS 22nd Annual Seminar 2006</i>, 8-10 Nov, 2006, Kuala Lumpur. 2. Emrizal, Farediah Ahmad, Hasnah Mohd Sirat and Dayar Arbain. 2006. Antimicrobial activity and chemical constituents of Piper porphyrophyllum (Piperaceae). <i>12th Asian Symposium on Medicinal Plants, Spices and Other Natural Products</i>, 13-18 Nov 2006, Indonesia. 3. Emrizal, Farediah Ahmad, Hasnah Mohd Sirat and Dayar Arbain. 2007. Chemical constituents from Piper porphyrophyllum N.E.Br (Piperaceae). <i>12th Asian Chemical Congress</i>, 23-25 Aug 2007, Kuala Lumpur.



	<p>4. Emrizal, Farediah Ahmad, Hasnah Mohd Sirat, Fadzureena Jamaluddin, Nik Musaadah Mustapha, Rasadah Mat Ali and Dayar Arbain. 2008. Phytochemicals and anti-inflammatory activities of Piper magnibacum. <i>2nd Penang International Conference For Young Chemists</i>, 18-20 Jun 2008, USM.</p> <p>5. Emrizal, Farediah Ahmad, Hasnah Mohd Sirat, Fadzureena Jamaluddin, Nik Musaadah Mustapha, Rasadah MatAli and Dayar Arbai. 2008. Phytochemicals and anti-inflammatory activities of three wild Pipers. <i>Conference on Molecular Chemistry</i>, 25-26 Nov 2008, UM.</p>
IP Status	1. Malaysian Patent filed (PI20091713); Phytochemical Compounds From Plant
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Encapsulation of Papain for Edible Cosmeceuticals
Project Number	02-01-06-SF0072
Project Leader and Team Members	Leader: Azila Abd. Aziz Member: Ramlan Abdul Aziz, Mohammad Roji Sarmidi and Nur Zatul Iradah Roslan
Field of Research	Biotechnology
Project Summary/ Objectives	<p>Liposome is a topical delivery system that has evoked a considerable interest in the cosmetic industry as it is biocompatible, biodegradable, exhibits low toxicity and has the ability to entrap both hydrophilic and lipophilic active materials. Papain, a protease, is an exfoliating agent which has also been touted to be able to reduce the signs of aging. In this study, liposome was used to enhance the transdermal penetration of papain into the skin and to stabilize papain and reduce skin damage due to direct exposure to papain. L- -phosphatidylcholine from soybean was used to produce liposome. However, liposome from soybean lecithin can be oxidised easily due to its unsaturated fatty acid chains. To overcome this problem, antioxidant was added to decrease liposome oxidation and thus increase stability. Percutaneous penetration study was conducted to assess the efficacy of the transdermal delivery of the liposome-papain through the skin. Results obtained showed that liposome-papain effectively penetrated the skin. Various studies have suggested that liposome increases percutaneous penetration of compounds through interaction of vesicles with the stratum corneum and that this penetration is responsible for the greater concentration of the active ingredient in the skin.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Roslan, N.Z.I., Aziz, A.A., Sarmidi, M.R. and Aziz, R.A. 2010. Prediction of shelf – life for natural cosmeceutical: accelerated storage and stability test. <i>3rd International Conference on Biotechnology for the Wellness Industry (ICBW) 2010</i>, 8-9 Oct 2010, Putra World Trade Centre, Kuala Lumpur. 2. Azila Abdul Aziz, Nur Zatul Iradah Roslan, Mohammad Roji Sarmidi and Ramlan Abdul Aziz. 2010. Encapsulation of papain for natural cosmeceuticals. <i>National Biotechnology Seminar</i>, 24- 26 May 2010, Kuala Lumpur.



	<ol style="list-style-type: none"> 3. Nur Zatul Iradah Roslan, Azila Abdul Aziz, Mohammad Roji Sarmidi and Ramlan Abdul Aziz. 2010. Anti - oxidant coated liposome as the delivery system for papain based natural cosmetics. <i>International Conference of Enabling Science and Technology (Escinano)</i>, 1-3 Dec 2010, Kuala Lumpur. 4. Azila Abd. Aziz. 2009. Introduction to skincare product formulation, in aromatherapy for wellness and productivity. House short course conducted by CEPP, 28-29 Jan 2009, <i>Forest Research Institute Malaysia (FRIM)</i>, Kepong. 5. Azila Abd. Aziz. 2008. Beauty from within. <i>1st International Conference on Biotechnology for the Wellness Industry 2008</i>, 5-6 Aug 2008, Kuala Lumpur. 6. Nor Irmanuhi Abd Wahab and Azila Abd. Aziz. 2008. Particle size comparisons of liposomes hydrated using different hydrating media. <i>1st International Conference on Biotechnology for the Wellness Industry 2008</i>, 5-6 Aug 2008, Kuala Lumpur. <p>Product:</p> <ol style="list-style-type: none"> 1. Active ingredient for LabiceaTM Revitalizing Moisturizer -The liposome obtained from this work was used to encapsulate Kacip Fatimah extract. Liposome-KF was used as the active ingredient in the LabiceaTM Revitalizing Moisturizer commercialized by Phytobiznet Sdn Bhd since 2010.
Awards/Certificates	<ol style="list-style-type: none"> 1. 11th Malaysian Technology Expo 2011: 1 Bronze Medal 2. 12th Industrial Art and Technology Exhibition 2010: 1 Silver Medal
Additional Information	<p>Linkages: Phytobiznet Sdn. Bhd.</p> <p>Commercialisation: Active ingredient for LabiceaTM Revitalizing Moisturizer</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Institute Bioproduct Development, Universiti Teknologi Malaysia, 81310 Skudai, Johor Office: 07-553 6485/03-2615 4406 azila@cheme.utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Metabolic Modelling Software for Metabolic Assessment of Diabetic Patients
Project Number	02-01-06-SF0073
Project Leader and Team Members	Leader: Lee Chew Tin Member: Mohamad Roji Sarmidi
Field of Research	Biotechnology
Project Summary/ Objectives	A software which includes algorithm for metabolic modelling and metabolic control analysis to assess the metabolic profile for diabetic patients has been developed. Effectiveness of the developed software in differentiating the metabolic profiles between the healthy and the diabetic individual has been assessed. The developed software is able to produce graphical metabolic profile for both normal and diabetic patients when input such as body weight, glucose load and duration of simulation are provided.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Chew, Y. H., Shia, Y. L., Lee, C.T., Majid F. A. A., Chua L. S., Sarmidi, M. R., and Aziz, R. A. 2009. Modelling of glucose regulation and insulin signalling pathways. <i>Molecular and Cellular Endocrinology</i> 303: 13–24. 2. Y.H. Chew, Y.L. Shia, C.T. Lee, F.A.A. Majid, L.S. Chua, M.R. Sarmidi, and R.A. Aziz. 2009. Modeling of oscillatory bursting activity of pancreatic beta-cells under regulated glucose stimulation. <i>Molecular and Cellular Endocrinology</i> 307: 57-67. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Chew, Y.H., Shia, Y.L., and Chew, T.L. 2008. Modelling of bursting activity of pancreatic beta-cells during insulin secretion. <i>1st International Conference and Exhibition on Biotechnology for the Wellness Industry 2008</i>, 5-6 Aug 2008, Putra World Trade Centre, Kuala Lumpur. 2. Chew, Y.H., Shia, Y.L. and Chew, T.L. 2008. Modeling of insulin signalling pathways as a potential assessment of Type 2 diabetic patients. <i>1st International Conference and Exhibition on Biotechnology for the Wellness Industry 2008</i>, 5-6 Aug 2008, Putra World Trade Centre, Kuala Lumpur.



Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Production of Biofuels from Empty Fruit Bunch (EFB) via Integrated Catalytic Process
Project Number	02-01-06-SF0074
Project Leader and Team Members	Leader: Nor Aishah Saidina Amin Member: Farid Nasir Ani
Field of Research	Agricultural Sciences
Project Summary/ Objectives	Empty fruit bunch (EFB) using enzymes (e.g. ligninase or cellulase) were pre-treated. New stable and selective catalysts for the conversion of EFB to biofuels were determined. System for integrated catalytic process to produce biofuels at high yields has been developed.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mailin Misson, Roslindawati Haron, Mohd Fadhzir Ahmad Kamaroddin and Nor Aishah Saidina Amin. 2008. Pyrolysis of lignin degraded empty palm fruit bunch to important chemicals. <i>Bioresource Technology, Elsevier</i> 100: 2867-2873. 2. Mailin Misson, Roslindawati Haron, Mohd Fadhzir Ahmad Kamaroddin and Nor Aishah Saidina Amin. 2008. Pre-treatment of empty palm fruit bunch for degradation of lignin. <i>Jurnal Teknologi</i> 50: 89-98. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mailin Misson, Roslindawati Haron, Zaki Yamani Zakaria and Nor Aishah Saidina Amin. 2008. Bio-oil from pyrolysis of pre-treated empty palm fruit bunch (EPFB). <i>Regional Symposium Chemical Engineering (RSCE) 2008</i>, 2-3 Dec 2008, Kuala Lumpur. 2. Mailin Misson, Roslindawati Haron, Mohd Fadhzir Ahmad Kamaroddin, Zaki Yamani Zakaria and Nor Aishah Saidina Amin. 2008. Conversion of chemically treated empty palm fruit bunch (EPFB) to important chemicals. <i>Regional Symposium Chemical Engineering (RSCE) 2008</i>, 2-3 Dec 2008, Kuala Lumpur. 3. Mohd-Aminudin, M., Mailin, M., Roslindawati, H. and Nor-Aishah, S.A. 2008. Delignification of empty palm fruit bunches by lignin peroxidase for biofuel production. <i>2nd South East Asian Technical University Consortium (SEATUC) Symposium</i>, 27-28 Feb 2008, Bandung Indonesia.



Awards/Certificates	1. Malaysia Technology Expo 2009: 1 Silver Medal
IP Status	1. Malaysia Patent filed (PI 20084539); A Process For Converting Empty Palm Fruit Bunch (EPFB) To Biodiesel, Gas Fuel And Char 2. Malaysia Patent filed (PI 20092119); Upgrading Biooil
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor Office: 07-553,5579 H/p: 012-716 5490 noraishah@fkkksa.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Ecofriendly Aromatic Mosquito Repellents from <i>Pelargonium radula</i> (jeremin) Styptic Oil
Project Number	02-01-06-SF0075
Project Leader and Team Members	Leader: Ramlan Abdul Aziz Members: Syalwati Asnawi and Azila Abdul Aziz
Field of Research	Biotechnology
Project Summary/ Objectives	The physico-chemical characterisation of <i>Pelargonium radula</i> aromatic styptic oil were investigated. Environment-friendly aromatic mosquito repellent formulation from <i>Pelargonium radula</i> styptic oil was produced. The effectiveness (ED50 and repellency) of formulated products against all types of mosquito-borne diseases was determined.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Asnawi, S., Mohd Zaki, Z., Abdul Aziz, A.A., Khamis, K. and Abdul Aziz, R. 2008. Evaluation of the potential of <i>Pelargonium radula</i> extract in repelling <i>Aedes aegypti</i>. <i>Journal of Chemical and Natural Resources Engineering: Productivity Improvement through Optimization</i> 2: 11-19. 2. Asnawi, S., Abdul Aziz, A.A. Khamis, K. and Abdul Aziz, R. 2008. Formulation of geranium oil loaded solid lipid nanoparticles for mosquito repellent application. <i>Journal of Chemical and Natural Resources Engineering: Productivity Improvement through Optimization</i> 2: 90-99. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Syalwati Asnawi, Azila A. Aziz and Ramlan A. Aziz. 2009. Effect of variable solvents on particle size of geranium oil-loaded solid lipid nanoparticle (Ge-SLN) for mosquito repellent applications. <i>International Conference on Nanoscience and Nanotechnology 2008 (NANO-SciTech)</i>, 18-20 Nov 2008, Shah Alam. 2. Syalwati Asnawi, Azila A. Aziz and Ramlan A. Aziz. 2010. Skin permeation of geranium oil-solid lipid particles: Effect of particle size. <i>Proceeding in 3rd International Conference on Biotechnology for the Wellness Industry</i>, 8–9 Oct 2010, Kuala Lumpur.



Awards/Certificates	<ol style="list-style-type: none"> 1. Malaysian Technology Expo 2011: 1 Gold Medal 2. Industrial Art & Technology Exhibition, UTM 2010: 1 Gold Medal 3. Bio Malaysia 2010: 1 Gold Medal 4. Industrial Art & Technology Exhibition, UTM 2010: Best Poster Award
Additional Information	Commercialisation: Phyto Biznet Sdn.Bhd.
Contact Institution/Entity Address Phone Number e-Mail	Institute of Bioproduct Development (IBD) Universiti Teknologi Malaysia, 81310 Skudai, Johor. Office: 07- 553 6475/76 ramlan@lojipandu.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Modelling and Simulation of a Biological Process for the Production of Lactic Acid
Project Number	02-01-06-SF0076
Project Leader and Team Members	Leader: Roslina Rashid Member: Ani Idris
Field of Research	Biotechnology
Project Summary/ Objectives	This project summarises a model that is able to predict the lactic acid concentration. Models are acquired to measure variables. Independent variables were used to validate the model.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor.
Phone Number e-Mail	Office: 07-553 5477 roslina@fkkksa.utm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Production of Thermostable Pullulanase from Locally Isolated <i>Bacillus flavothermus</i> Using Fed-Batch Culture
Project Number	02-01-06-SF0097
Project Leader and Team Members	Leader: Madihah Md Salleh Member: Rozaimi Abu Samah
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	Thermostable pullulanase production by <i>Bacillus thermoflavus</i> in batch culture using experimental design were characterised, optimised and purified. The mechanism of pullulanase reaction was identified.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor.
Phone Number e-Mail	Office: 07-553 4320 madihah@fs.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Laboratory Scale Cyclic Activated Sludge Bioreactor (CASBIO) to Enhance Aerobic Sludge Granulation (AGS) and Polyhydroxyalkanoates (PHA) Recovery
Project Number	02-01-06-SF0125
Project Leader and Team Members	Leader: Mohd Razman Salim Member: Zaini Ujang
Field of Research	Agricultural Sciences
Project Summary/ Objectives	Laboratory scale of Cyclic Aerobic Granular Sludge Bioreactor (CAGSBio) has been designed and developed. Together with that, procedures for aerobic sludge granulation processes, as well as methods to enhance PHA accumulation in mixed culture microbes in CAGSBio were produced. Lastly, extraction procedure of PHA from mixed culture microbes in CAGSBio have been developed and optimised.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Salmiati, Zaini Ujang, Mohd Razman Salim, Mohd Fadhil Md Din, Mohd Azlan Ahmad. 2007. Intracellular biopolymer production using mixed microbial cultures from fermented POME. <i>Water Science Technology</i> 56: 179-185. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nor-Anuar, A., Ujang, Z., Van Loosdrecht, M.C.M., Olsson, G., De Kreuk, M.K. and Salim, M.R. 2008. Determination of aerobic granular sludge physical strength for wastewater treatment. <i>6th Proceedings of Seminar on Advance Water and Wastewater Treatment Technologies (JSPSVCC) 2008</i>, 17-18 July 2008, Kota Kinabalu. 2. Mohd Razman Salim, Zaini Ujang, Salmiati, Mohd Fadhil Md. Din and Moh Azlan Ahmad. 2006. Biodegradable polymer production from POME using activated sludge by coupled aerobic and anaerobic system. <i>4th Seminar on Water Management (JSPS-VCC)</i>, 11-13 Jul 2006, Johor. 3. Salmiati, Zaini Ujang, Mohd Razman Salim, Mohd Fadhil Md Din and Mohd Azlan Ahmad. 2006. Recovery technology for renewable organic-based products from palm oil mill effluent (POME). <i>Asia Water 2006</i>, 21-22 Mar 2006, Kuala Lumpur.



	<p>4. Salmiati, Zaini Ujang, Mohd Razman Salim, Mohd Fadhil Md Din and Mohd Azlan Ahmad. 2006. Study on physical strength of AGS using shear sensitivity analysis. <i>International Conference on Environment (ICENV) 2006</i>, 13-15 Nov 2006, Pulau Pinang.</p>
IP Status	<ol style="list-style-type: none"> 1. Malaysian Patent filed (PI 20082734); Process of Aerobic Granular Sludge (AGS) Development for Domestic Wastewater Treatment in Hot Climates 2. Malaysian Patent filed (PI 20082928); Technical Design of Cyclic Aerobic Granular Sludge Bioreactor(CAgSBio) as a Compact, Slender and High Vertical Reactor for Domestic Wastewater Treatment in Hot Climates 3. Malaysian Patent filed (PI 20082929); Mixing Criteria Development for Aerobic Granular Sludge (AGS) Bioreactor Operation 4. Malaysian Patent filed (PI 20082930); Procedure Development for Evaluation of Aerobic Granular Sludge (AGS) Physical Strength 5. Malaysian Patent filed (PI 20083142); An Extraction Method for Recovering Polyhydroxyalkanoates 6. Malaysian Patent filed (PI 20082899); A System for Obtaining Biodegradable Polymer
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor. Office: 07-553 1723 razman@fka.utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Hybrid Membrane Bioreactor (MBR) for Biotransformation and Biomineralisation of Palm Oil Mill Effluent (POEM)
Project Number	02-01-06-SF0136
Project Leader and Team Members	Leader: Zaini Ujang Member: Azmi Aris
Field of Research	Biotechnology
Project Summary/ Objectives	The project involved design, development and evaluation of the effectiveness of a novel hybrid MBR in terms of process dynamics effluent treatment and biofouling control. The objectives were to observe and enhance the biotransformation process from slowly biodegradable substrates to easily biodegradable substrates using respirometric analysis; to observe and control biofouling of soluble substrates on the membrane surface in order to optimise the critical permeate flux; to observe and enhance the biomineralisation of soluble matters and colour using sequential anaerobic, anoxic and aerobic bioprocesses and to develop a substrate-based activated sludge model to simulate the performance and control of hybrid MBR.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Application of Biofilm Technology for the Treatment of Styrene-Rich Wastewater
Project Number	02-01-06-SF0169
Project Leader and Team Members	Leader: Zaharah Ibrahim Member: Zaiton Abdul Majid
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The styrene degrading microorganisms from styrene-rich wastewater were isolated and characterised. Biofilm-forming styrene degrading microorganisms for wastewater treatment using lab-scale biofilter was developed. These biofilm-forming styrene degrading bacteria were applied for on-site wastewater treatment using biofilter prototype.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor.
Phone Number	Office: 07-557 6160 H/p: 019-789 8226
e-Mail	zaharah@kimia.fs.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	The Development of Automata Learning and Stochastic Modelling for Biosequence Analysis
Project Number	02-01-06-SF0230
Project Leader and Team Members	Leader: Zuraini Ali Shah Member: Muhamad Razib Othman
Field of Research	Biological Sciences
Project Summary/ Objectives	A computational model and an intelligent algorithm for the model was developed, tested and verified.
Publications/Products/ Outcomes	Journal: 1. Hassan, K.U., Othman, R.M., Shah, Z.A., Hassan, R., Taliba, J., Rahim, S.M.M., Asmuni, H. and Zakaria, Z. 2009. An algorithm to reduce the misleading and increase the strength of domain signal. <i>Journal of Computers in Biology and Medicine (Elsevier)</i> 39: 1013-1019.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor.
Phone Number	Office: 07-553 2434 H/p: 019-799 8943
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Phytochemicals with Cytotoxic Activity from Four Rare Malaysian Artocarpus Plants (Moraceae)
Project Number	02-01-06-SF0233
Project Leader and Team Members	Leader: Shajarahtunnur Jamil Member: Muhammad Taher
Field of Research	Biotechnology
Project Summary/ Objectives	Total of 25 compounds were successfully isolated and characterised from three different species of Malaysian <i>Artocarpus</i> (<i>A. fulvicortex</i> , <i>A. lanceifolius</i> and <i>A. anisophyllus</i>). Several compounds showed significant cytotoxic activity against different cancer cell lines.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Bacteria as Rapid Sensors of Biochemical Oxygen Demand (BOD) in River Water
Project Number	02-01-06-SF0235
Project Leader and Team Members	Leader: Shafinaz Shahir Member: Zaharah Ibrahim
Field of Research	Biotechnology
Project Summary/ Objectives	Several bacteria were selected and characterised for their ability to oxidise biodegradable organics. Efficient techniques were used to immobilise the selected bacteria (either as single or mixed culture) onto an oxygen electrode for BOD sensing. The performance factors (i.e. sensitivity, lifetime, reproducibility, response time) of the developed BOD biosensor were optimised. This optimised biosensor is used for rapid determination of BOD in river water compared to conventional methods.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> Hussin, S., Shahir, S. and Ibrahim, Z. 2008. Immobilized cells as sensing material for rapid biochemical oxygen demand (BOD) detection. <i>International Conference and Expo on Environmental Management and Technologies (ICEEMAT'08)</i>, 10-12 Dec 2008, Kuala Lumpur. Hussin, S., Shahir, S. and Ibrahim, Z. 2008. Immobilized cells as sensing material for rapid biochemical oxygen demand (BOD) detection. <i>17th Scientific Meeting of MSMBB</i>, 23-25 Jun 2008, Kuala Lumpur. Chun, S.L., Shahir, S. and Ahmad, R. 2008. A biochemical mediator demand biosensor for environmental monitoring. <i>International Conference and Expo on Environmental Management and Technologies (ICEEMAT'08)</i>, 10-12 Dec 2008, Kuala Lumpur.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Process Intensification for the Recovery of Self-Assembling Peptides Using an Integrated Microfiltration Unit
Project Number	02-01-06-SF0290
Project Leader and Team Members	Leader: Lee Chew Tin Member: Firdausi Razali
Field of Research	Biotechnology
Project Summary/ Objectives	Integrated microfiltration unit (IMU) was set up. Test runs conducted for the recovery of self-assembling peptides using the IMU with 0.2 micron hollow fibre polysulfone membrane. Optimisation of the cross-flow velocity of IMU to increase product yield was conducted.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of a Structural Bioinformatics Tool Using Intelligent Technique for Protein Secondary Structure Analysis
Project Number	02-01-06-SF0302
Project Leader and Team Members	Leader: Mohd Shahir Shamsir Omar Member: Zeti Azura Mohamed Hussein, Siti Zaiton Mohd Hashim and Safaai Deris
Field of Research	Biotechnology
Project Summary/ Objectives	A web server on Protein SMS was developed. Protein SMS, a protein short motif search that allows users to simultaneously search for protein sequence motif and its secondary structure assignments. Protein SMS web server is able to perform searches against PDB structural data from the RCSB Protein Databank with the users defining the type of secondary structures of the amino acids in the sequence motif. It is able to search for very short motifs not catered by many current motifs search tools and databases. Protein SMS has embedded visualisation ability that displays its result in three dimensional (3D) visualisation that highlights the position of the motif on the structure and on the corresponding sequence. Researchers can easily observe the locations and onformation of multiple motifs among the results. It also has an application programming interface (API) for interfacing with other bioinformatics tools.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Development of Granular Sludge System Containing Specialized Dye Degrading Microbes for Textile Wastewater Treatment
Project Number	02-01-06-SF0310
Project Leader and Team Members	Leader: Azmi Aris Members: Zaharah Ibrahim, Razman Salim and Khalida Muda
Field of Research	Biotechnology
Project Summary/ Objectives	<p>This study looked at the possibility of developing and applying facultative anaerobic granular sludge (FAnGS) in treating the wastewater in a single reactor under intermittent anaerobic and aerobic conditions. Synthetic textile wastewater was used in the study and the development was carried out using mixture of sewage sludge, anaerobic granule with the addition of specialized dye degrader microbes. Mature granules were developed after about 70 days with average size of 2.3 ± 1.0 mm and average settling velocity of 80 ± 8 m/h resulting in properties that were observed to be beneficial to the performance of the system. At the end of the development process, the biogranules were able to achieve 94% of COD, 95% of ammonia and 62% of color removal. The oxygen uptake rate (OUR) /specific oxygen uptake rate (SOUR) and specific methanogenic activity (SMA) indicate the presence of facultative, anaerobic and aerobic bacteria within the granules. Six bacteria were identified within the FAnGS which include <i>Bacillus cereus</i>, <i>Pseudomonas veronii</i>, three species of <i>Pseudomonas</i> genus and <i>Enterobacter</i> sp., all are considered in the literature as dye degrader microbes. With the aid of statistical experimental design, subsequent studies show that the microbial activity of the FAnGS and their performance in removal of organics (in terms of COD) and color were affected by several factors which include substrate concentration, pH, temperature and concentration of redox mediator. Interaction effects between the factors were also observed. Several statistical models describing the relationship between some of the variables were developed. From the study, the highest removal of color (87%) and COD (86%) were achieved by the FAnGS biomass within 24 hours HRT with an intermittent of 12 hours of anaerobic and aerobic reactions.</p>

<p>Publications/Products/ Outcomes</p>	<p>Journals:</p> <ol style="list-style-type: none"> 1. Muda, K., Aris, A., Salim, M.R., Ibrahim, Z., Yahya, A., Ahmad, A. and Nawahwi, M.Z. 2010. Development of granular sludge for textile wastewater treatment. <i>Water Research</i> 44: 4341-4350. 2. Amin, M.F.M., Ibrahim, Z., Yahya, A., Aris, A. and Muda, K. 2010. Characteristics of the developed granules containing selected decolourising bacteria for the degradation of textile wastewater. <i>Water Science Technology</i> 61: 1279-1288. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Muda, K., Aris, A., Salim, M.R., Ibrahim, Z., Yahya, A., Ahmad, A., Nawahwi, Z. 2010. Granular sludge as compact treatment system for textile wastewater treatment. <i>IWA Young Water Professionals Conference (IWAYWP) 2010</i>, 2-4 Mar 2010, Kuala Lumpur. 2. Amin, M.F.M., Ibrahim, Z., Yahya, A., Aris, A. and Muda, K., 2010. Potential application of developed granules containing decolourising bacteria for treatment of raw textile wastewater. <i>30th Symposium of Malaysian Society for Microbiology – Microbes: Biotechnology Engine for Health and Wealth Creation</i>, 16-19 Aug 2008, Kuantan.
<p>Awards/Certificates</p>	<ol style="list-style-type: none"> 1. 10th Malaysia Technology Expo (MTE) 2011: 1 Gold Medal. 2. 10th Malaysia Technology Expo (MTE) 2011: Green Technology of the Year Award. 3. 12th at Industrial Art & Technology Exhibition (INATEX), Universiti Teknologi Malaysia, 2010: 1 Silver Medal.
<p>IP Status</p>	<ol style="list-style-type: none"> 1. Malaysian Patent filed (PI 20092163); Bacteria Granules For Treating Wastewater. 2. Malaysian Patent filed (PI 20092162); A Process For Treating Wastewater
<p>Additional Information</p>	<p>Linkages: Department of Biotechnology, Delft University of Technology, Julianalaan 67, 2628BC Delft, The Netherlands (Prof. Mark C.M. van Loosdrecht). Ramatex. Bhd., Batu Pahat, Johor (Mr. Zaiton Samad)</p>



Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Biodegradation of Selected Azo Dyes by Bacterial Consortium Entrapped Onto Surfactant Modified Zeolites
Project Number	02-01-06-SF0320
Project Leader and Team Members	Leader: Noor Aini Abdul Rashid Member: Alias Mohd Yusof
Field of Research	Engineering Sciences
Project Summary/ Objectives	Synthetic zeolites by cationic surfactant were prepared and modified. The optimum condition for the adsorption of bacterial consortium onto the surfactant modified zeolite were studied. Effectiveness of the zeolite-microbe complex in the degradation of azo dye in batch experiments were also studied.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Alias Mohd Yusof, Nik Ahmad Nizam and Noor Aini Abd Rashid. 2010. Hydrothermal conversion of rice husk ash to faujasite-types and NaA-type of zeolites. <i>Journal of Porous Material</i> 17: 39-47. 2. Giek Far Chan, Noor Aini Abdul Rashid, Lee Lan Koay, Siaw Yen Chang and Wan Leng Tan. 2011. Identification and optimization of Novel NAR-1 bacterial consortium for the degradation of Orange II. <i>Insight Biotechnology</i> 1: 7-16. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nik Ahmad Nizam Nik Malek, Nur Hidayani Shaffe, Noor Aini Abd Rashid and Alias Mohd Yusof. 2008. Effect of Zeolite Na X on the decolourization of Amaranth by bacterial consortium. <i>17th Scientific Meeting of the Malaysian Society for Molecular Biology and Biotechnology (MSMBB)</i>, 23-25 Jun 2008, Kuala Lumpur. 2. Noor Aini Abdul Rashid, Alias Mohd Yusof, Nik Ahmad Nizam Nik Malek and Nur Hidayani. 2008. Interfacing inorganic chemistry with biotechnology: current trends and challenges. <i>30th Symposium of Malaysian Society for Microbiology</i>, 16-19 Aug 2008, Pahang. 3. Nur Hidayani Shaffe, Noor Aini Abd Rashid, Alias Mohd Yusof and Nik Ahmad Nizam Nik Malek. 2009. Decolourisation of Amaranth azo dye by bacteria consortium immobilized onto zeolite NaX and surfactant



Publications/Products/ Outcomes	<p>modified zeolite NaX (oral presentation). <i>2nd International Conference of Workshops on Basic and Applied Sciences and Regional Annual Fundamental Science Seminar (ICORAFFS)</i>, 3-4 Jun 2009, Johor Bahru.</p> <p>4. Nur Hidayani Shaffe, Noor Aini Abd Rashid and Alias Mohd Yusof. 2009. Optimization involving response surface methodology for decolourisation of Acid Red 27 by novel bacterial consortium. <i>International Congress of Malaysian Society for Microbiology (ICMSM) 2009</i>, 1-4 Dec 2009, Penang.</p>
Awards/Certificates	<p>1. Industrial Art and Technology Exhibition (INATEX 2010): 1 Gold Medal.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor. Office: 07-553 4495 H/p: 019-728 2311 nooraini09@gmail.com/ nooraini_nar@utm.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Potential of Tissue Cultured <i>Melastoma malabathricum</i> L. for Production of Secondary Products
Project Number	02-01-06-SF0331
Project Leader and Team Members	Leader: Azman Abd Samad Members: Siti Pauliena Mohd Bohari and Salehuddin Hamdan Maaruf Abd Ghani
Field of Research	Biotechnology
Project Summary/ Objectives	This research objective was to regenerate <i>Melastoma malabathricum</i> plant using tissue culture technique. Flavonoids content in all parts of regenerated and wild-type plants of <i>M. malabathricum</i> were determined. Regenerated plants with high flavonoids content and anti-cytotoxic activity were isolated.
Publications/Products/ Outcomes	<p>Book:</p> <ol style="list-style-type: none"> 1. Azman Abd Samad, Fadilah Mis and Nur Amanina Shahabuddin. 2008. <i>Melastoma decemfidum</i> Roxb. Ex Jack: Botanical aspects and in vitro propagation. In: Zaharah Ibrahim, Haryati Jamaluddin, Shaza Eva Mohammad, Azman Abd Samad, Goh Kian Mau, Razauden Mohamed Zulkifli and Shahir Shamsir. (Eds). <i>Advances in Biosciences and Bioengineering</i> Vol 2. (pp. 63-71). Universiti Teknologi Malaysia. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Noraslamiah Sarju, Maaruf Abd Ghani and Azman Abd Samad. 2009. Detection and quantification of <i>Melastoma decemfidum</i> Roxb. Ex. Jack flavonoids with antioxidant and anticancer properties. <i>Second International Conference and Workshops on Basic and Applied Sciences & Regional Annual Fundamental Science Seminar</i>, 2-4 Jun 2009, Johor Bahru. 2. Mis, F. and Samad, A.A. 2009. Plant regeneration of <i>Melastoma decemfidum</i> Roxb. Ex. Jack. <i>2nd International Conference and Workshops on Basic and Applied Sciences & Regional Annual Fundamental Science Seminar</i>, 2-4 Jun 2009, Johor Bahru. 3. Noraslamiah Sarju, Maaruf Abd Ghani, Salehuddin Hamdan and Azman Abd Samad. 2010. Antioxidant activity and cytotoxicity of the leaves of <i>Melastoma decemfidum</i> Roxb. Ex. Jack. <i>National Biotechnology</i>



Publications/Products/ Outcomes	<p>4. Nur Amanina Shahabuddin and Azman Abd Samad 2008. The descriptions of <i>Melastoma malabathricum</i> L. and <i>Melastoma decemfidum</i> Roxb ex. Jack. <i>Proceedings of the 10th Malaysian Society and Applied Biology (MSAB) Symposium</i>, 6-8 Nov 2008, Sarawak.</p> <p>5. Fadilah Mis, Nurul Syifa Ismail and Azman Abd Samad. 2008. Shoot induction of <i>Melastoma decemfidum</i> Roxb. Ex. Jack. <i>Proceedings of the 10th Malaysian Society and Applied Biology (MSAB) Symposium</i>, 6-8 Nov 2008, Sarawak.</p>
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor. Office: 07-553 4344 H/p: 019-734 0629 azman@fbb.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Biomechanical Analyses and Design Optimisation Using the Bone Remodelling Potential (BRP) for Hip Joint Arthroplasty
Project Number	02-01-06-SF0351
Project Leader and Team Members	Leader: Nazri Kamsah Member: Mohammed Rafiq
Field of Research	Biotechnology
Project Summary/ Objectives	A biomimetic hip stem for semi-hip arthroplasty with unique emphasis to Asian population was designed. A specialised code to biomechanically utilise the Bone Remodelling Potential (BRP) for design optimisation was developed. Biomimetic hip stem prototype using Solid Free Form Fabrication technique was fabricated.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor.
Phone Number	Office: 07-553 4749 H/p: 012-700 6088
e-Mail	nazrikh@fkm.utm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	The Use of Adenovirus in Gene Transfer to Pancreatic Tumour Cells
Project Number	02-01-06-SF0379
Project Leader and Team Members	Leader: Salehhuddin Hamdan Member: Siti Pauliena Mohd Bohari
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The feasibility of adenovirus as a vector for gene transfer to pancreatic tumour cells was determined. Adenovirus basically able to act as a vector for gene transfer to pancreatic tumour cells.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Salehhuddin, H., Pandha, H. S. and Blair, G. E. 2008. Expression of surface Coxsackie B and Adenovirus Receptor Fusion Protein (CAR-EGFP) in various cancer cells. <i>Advances in Biosciences and Bioengineering</i> 2: 62-72. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Hamdan, S., Pandha, H.S. and Blair, G.E. 2009. Susceptibility of pancreatic tumour cells to adenovirus. <i>Proceedings of the International Congress of Malaysia Society For Microbiology</i>, 1-4 Dec 2009, Penang. 2. Sayang Baba, Junaidah Mohamat, Samsul Draman and Salehhuddin Hamdan. 2009. Engineered chinese hamster ovary cell lines expressing human coxsackie and adenovirus receptor. <i>Proceedings of the International Congress of Malaysia Society For Microbiology</i>, 1-4 Dec 2009, Penang 3. Salehhuddin Hamdan and Sayang Baba. 2009. Susceptibility of ad vector to infect pancreatic cell lines is depend crucially on the presence of the expression of surface coxsackie B and adenovirus receptor. <i>18th Malaysian Society of Molecular Biology and Biotechnology</i>, 18-20 Aug 2009, Kuala Lumpur. 4. Junaidah, M., Sayang, B. and and Salehhuddin, H. 2009. Cloning and expression of human CAR into CAR-negative CHO cells. <i>2nd International Conference and Workshops on Basic and Applied Sciences and Regional Annual Fundamental Science Seminar 2009 (ICORAFSS)</i>, 2-4 Jun 2009, Johor Bahru.

Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia, 81310 Skudai, Johor.
Phone Number	Office: 07-553 4348 H/p: 016-731 4086
e-Mail	bmbsha@yahoo.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (BIOTECHNOLOGY)

Project Title	Prevalance Study and Development of Improved Detection Method for Controlling Caseous Lymphadenetis (CLA) in Goats
Project Number	02-03-07-SF0001
Project Leader and Team Members	Leader: Ramlan Mohamed Members: Roseliza Roslee, Sharifah Hamidah Syed Mohd, Rahmat S.M. Sheriff, Komala a/p Thiruvanackan and Chandraw
Field of Research	Material Sciences
Project Summary/ Objectives	The result from this study showed that the prevalence of Caseous Lymphadenetis (CLA) in the country is high whereby more than 20% of visited farms were positive with the disease. About 2 – 5% of the animals were clinically CLA positive. Gene of PLD protein was successfully cloned into E. coli expression system. Overexpression and purification of PLD protein were conducted for development of detection method for CLA. Comparison was made between two antigens (whole cell and rPLD) and the result showed that whole cell antigen was more sensitive and specific. In this study, the growth of Corynebacterium pseudotuberculosis in iron-regulated media (RPMI and BHI) was difficult due to clamping problem. It can be solved by using 0.1% glycerol. Analysis of iron-regulated proteins was done using SDS-PAGE of ironically and covalently bound cell wall proteins. At least 4 proteins were iron-regulated and the N-terminal sequence analysis was conducted by UiTM research group.
Contact Institution/Entity Address	Institut Penyelidikan Haiwan (VRI) Pengarah Penyelidik, Institut Penyelidikan Haiwan, Jalan Sultan Azlan Shah, 31400 Ipoh, Perak.
Phone Number	Office: 05-545 7166 H/p: 012-462 4351
e-Mail	ramlan_mohamed@yahoo.co.uk

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF (AGRICULTURE)

Project Title	Project for the Production of Y Modular Fiberglass Mould and Prototype for Marine Aquaculture Cage
Project Number	E0167
Project Leader and Team Members	Leader: Azhar Ariffin
Field of Research	Agricultural sciences
Project Summary/ Objectives	Project objective was to build a marine aquaculture fiberglass cage that is cost effective, flexible, robust and affordable for aquaculture farmers. The unique hexagonal shape of Y modular cage would allow the size of the cage to be modified easily in the modular basis according to the requirement size, budget and location. In addition, the used tyre was successfully applied as low cost and effective connecting material for the cage construction. The parameter of surface tension was also considered for the floating effect of the constructed cage. Six modular units are required for the construction of Y modular cage that could be connected together by elastic rubber pad that would allow flexibility and absorption of the cage movement.
Publications/Products/ Outcomes	A cost effective, flexible, robust and affordable marine aquaculture fiberglass cage has been developed for aquaculture farmers
Awards/Certificates	1. National Innovation Conference and Exhibition (NICE) 2009: National Innovation Award for Community Category
IP Status	1. Malaysia Patent filed (PI 20082312); Modular Y – Shaped Platform 2. Industrial Design: MY-08-00515-0101; Aquaculture Platform Modular Y
Contact Institution/Entity Address	Azhar Ariffin No. 31, Jalan Hijau 11/3, Blok 16, Bandar Tasik Puteri, 48020 Rawang, Selangor.
Phone Number e-Mail	H/p: 016-629 3742 azhardguinee@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF (AGRICULTURE)

Project Title	Production of Mineral Block for Ruminant
Project Number	E0186
Project Leader and Team Members	Leader: Abdul Rahman Yunus
Field of Research	Agricultural sciences
Project Summary/ Objectives	Project objective was to manufacture and produce mineral blocks using semi mechanisation process. The quantity of mineral blocks produced was much higher compared to the conventional method. In addition, the quality of the mineral block was more uniform than before. The workers were also happier to adopt the newly developed technology for mineral block production, where the working environment was much more healthier and cleaner than the previous technology. The semi mechanisation process also could generate better and steady income in the production of the mineral block, which would help Malaysian government to reduce the importation bill of foreign mineral block.
Publications/Products/ Outcomes	The semi mechanization process of mineral block production is able to meet high demand and compete well with imported mineral block, where comparable cost and quality mineral block could be supplied to ruminant livestock farmers.
Contact Institution/Entity Address	Espek Livestock Sdn. Bhd. 332-10A, Tingkat 10, Plaza Ampang City, Jalan Ampang, 50450 Kuala Lumpur.
Phone Number	Office: 03-4256 9688 livestock@espek.com.my
e-Mail	rahman@espek.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF (AGRICULTURE)

Project Title	Micropropagation of Fast Growing Tree, Herbal and Ornament Plants Species
Project Number	E0109
Project Leader and Team Members	Leader: Chua Soon Ann
Field of Research	Biotechnology
Project Summary/ Objectives	Project objective was to use micropropagation as a technique to mass produce genetically identical plants. Micropropagation holds tremendous potential for the production of high quality plants. The plants that identified and micropropagated in this project were: a) tree plantation species of Laran (<i>Anthocephalus chinensis</i>); Binuang (<i>Octomeles sumatrana</i>) and Kayu Machis (<i>Albizia falcataria</i>); b) herbal plant species such as neem (<i>Azadirachta indica</i>); and c) ornamental plant species like pitcher plant and orchids.
Publications/Products/ Outcomes	BLUETECH VENTURES is able to produce a high number of genetically identical (high-quality) tree plant species of Laran, Binuang, Kayu Machis in 18 months, herbal plant species of neem in 7 months, and ornamental plant species of pitcher plant in 12 months and orchids in 5 months.
Contact Institution/Entity Address	Bluetech Ventures Sdn. Bhd. 2nd Floor, Lot V, Arked Khidmat Lorong Pokok Seraya 5 Taman Khidmat, Jalan Bukit Padang 88450 Kota Kinabalu Sabah
Phone Number	Office: 088-383 197 H/p: 014-652 9143
e-Mail	Bluetech_lab@yahoo.com Edelwa_2020@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – EIF (AGRICULTURE)

Project Title	Development of High-Throughput Real-Time Multiplex Polymerase Chain Reaction for Large-Scale Rapid Screening of Methicillin-Resistant <i>Staphylococcus aureus</i> (MRSA) and Vancomycin-Resistant Enterococci (VRE) from Livestock and Related Food Products
Project Number	E0205
Project Leader and Team Members	Leader: Tan Do Yew
Field of Research	Biotechnology
Project Summary/ Objectives	Project objective was to develop a technique that is able to perform large scale rapid screening of methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) and vancomycin-resistant Enterococci (VRE) from livestock and related food products. Advanced bioinformatics algorithm was used to design the primers for multiplex real-time PCR to ensure the success of the detection assay. The multiplex real-time PCR assay was optimised for full compatibility to high-throughput screening (HTS) robotic liquid handling technology. The newly developed diagnostic kit could be used for field trial and validation on the basis of criteria recommended by ISO/IEC 17025 as a testament of its superior sensitivity and specificity in comparison to conventional cumbersome bacteriology culture method.
Publications/Products/ Outcomes	A high-throughput compatible validated real-time multiplex PCR kit that can simultaneously detect MRSA and VRE which is highly sensitive and specific, cost-effective and time-saving solution for the industry of agriculture, food, and healthcare.
Contact Institution/Entity/ Address	Vet Food Agro Diagnostics (M) Sdn. Bhd. Lot 18B, Jalan 241, Sekysen 51A, 46100 Petaling Jaya, Selangor.
Phone Number	Office: 03-7873 6405 / 7873 7355 H/p: 012-259 7695
e-Mail	doyew.tan@merial.com



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND-NOD (NOD)

Project Title	Ekspedisi Oseanografi NOD-UMT
Project Number	NOD/R&D/03/006
Project Leader and Team Members	Leader: Noor Azhar Mohamed Shazili Members: Syalindran Sevasamgaran and Joseph anak Bidai
Field of Research	Chemical Oceanography
Project Summary/ Objectives	This project was carried out to monitor the current status of major and minor elements in the sediment of southern Terengganu coastal waters and to identify the potential sources and the locations of anthropogenic metals as well as to study the sediment characteristics, organic carbon content and minerals composition in relation to seasonal changes (pre- and post-Northeast Monsoon periods). This study investigated the geo-chemical properties in sediment of southern Terengganu coastal waters with respect to changes in seasonal environmental conditions in southern Terengganu waters.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Nor Antonina, A., Noor Azhar, M.S. and Siti Waznah A 2009. Mineralogical study of Kemaman coastal sediments off Terengganu, Malaysia. <i>Journal of Sustainability Science and Management</i>, 4 (2): 157-162. 2. Syalindran S., Shazili N.A.M. and Kamaruzzaman B.Y. 2010. The distribution of Co, Pb and Zn in the bottom sediment offshore of Kemaman, Terengganu, Malaysia during pre- and post-monsoon periods. <i>Journal of Sustainability Science and Management</i>, 5, 106-115. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Syalindran, S, Shazili, N.A.M., Kamaruzzaman, B.Y. and Antonina, A. 2008. Physico-chemical features of water and sediment at Kemaman near-shore area. <i>The Conference on the South China Sea: sustaining ocean productivities, maritime communities and the climate (SCS2008)</i>, 24-28 Dec 2008, Pahang. 2. Syalindran, S, Shazili, N.A.M., and Kamaruzzaman, B.Y. 2008. The concentration of cobalt, lead and zinc in the sediment of Kemaman offshore during pre-monsoon and post-monsoon season. <i>7th UMT International Symposium on Sustainability Science and Management</i>, 7-9 Jun 2008, Terengganu.

	<p>3. Syalindran, S., Shazili, N.A.M., and Kamaruzzaman, B.Y. 2008. Heavy metals distribution in the near-shore sediment of Southern Terengganu waters. <i>IOC/ WESTPAC 7th International Scientific Symposium</i>, 21-25 May 2008, Sabah.</p> <p>Others:</p> <p>1. Syalindran Sevasamgaran (2011). The Spatial and Temporal Distribution of Some Major and Minor Elements in Sediment of Southern Terengganu Coastal Water. M.Sc. Thesis Universiti Malaysia Terengganu.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Malaysia Terengganu (UMT) Pejabat Timbalan Naib Canselor (Akademik dan Antarabangsa), Universiti Malaysia Terengganu (UMT), 21030 Kuala Terengganu, Terengganu. Office: 09-668 3101/3241 nazhar@umt.edu.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND-NOD (NOD)

Project Title	Marine Resources Study of Batuan Tengah (Middle Rocks), Johor
Project Number	NOD/R&D/03/007
Project Leader and Team Members	Leader: Yusri Yusuf Members: Affendi Yang Amri, Lee Choon Weng, Badrul Huzaimi Tajuddin, Mohd Hanafi Idris, Baharim Mustapha, Faedzul Rahman Rosman, Lau Chai Ming and Abdul Manap Abdullah
Field of Research	Marine Sciences
Project Summary/ Objectives	There were 203 species of hard corals from 43 genera and 14 families identified from the survey at Middle Rocks (Batuan Tengah), Johor. From the results of reef check substrate and LIT, Middle Rocks were found to be dominated by rocky substrates; coral reefs at Small Rock sites (North and South) were considered to be in fair condition with a total coral percentage cover of 38.8% and 37.5%, respectively. All three sites at Big Rock, viz. North, South and West coral reefs, were considered to be in good condition with total coral percentage cover of 65.0%, 59.9% and 59.4%, respectively. A total of 35 species of invertebrates comprising five major phyla identified around the Batuan Tengah areas were dominated by Mollusca (15 species) and Echinodermata (12 species). Three species were consistently found at the Middle Rocks waters, viz. <i>Diadema setosum</i> , <i>Iconaster longimanus</i> and <i>Pedum spondylioides</i> . The number of coral reef fish species observed in the area was generally low when compared to other coral reef areas in Peninsular Malaysia. It was shown that the Middle Rocks is a significantly important reef area for Malaysia. We strongly suggest that Middle Rocks be sustainably managed and considered as a Marine Protected Area (MPA).
Contact Institution/Entity Address	Universiti Malaysia Terengganu (UMT) Institut Oseanografi, Universiti Malaysia Terengganu, Mengabang Telipot, 21030 Kuala Terengganu, Terengganu.
Phone Number	Office: 09-6683195 H/p: 012-575 8665
e-Mail	yusriyusuf@umt.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND-NOD (NOD)

Project Title	Development of Cyst from Marine Harpacticoid
Project Number	NOD/R&D/03/005
Project Leader and Team Members	Leader: Zaleha Kassim Member: Azmi Ambak
Field of Research	Marine Sciences
Project Summary/ Objectives	The study investigated on how manipulation of environmental parameters such as pH, salinity and temperature could potentially force several species of marine harpacticoid copepods to prepare themselves to enter the resting stage or cyst stage. An early indication of this response was the increased amount of oil droplets found in their inner and outer body surface. The laboratory investigation was compared with the species condition found in the natural habitat with the same environmental stress.
Publications/Products/ Outcomes	<p>Books:</p> <ol style="list-style-type: none"> 1. Zaleha, K. 2009. Ekologi Meiobentos dan Harpacticoida di Hutan Paya Laut, Semenanjung Malaysia. Penerbit Universiti Malaysia Terengganu. 2. Zaleha, K. 2008. A Pictorial Guide to Some Marine Harpacticoid Copepod of Malaysia. Penerbit Universiti Malaysia Terengganu. <p>Journals:</p> <ol style="list-style-type: none"> 1. Zaleha, K. and Farahiyah, I.J. 2010. Culture and growth of a marine harpacticoid, <i>Pararobertsoniasp.</i> in different salinity and temperature. <i>Sains Malaysiana</i> 39(1): 137-141. 2. Zaleha, K. and Farah Diyana, M.F. 2010. Spatial range of meiobenthic faunal density in intertidal zone of Port Dickson, Malaysia. <i>Journal of Sustainability Science and Management</i> 5(1): 94-105. 3. Zaleha, K., Nazia, A.K. and Nurul Huda A.I. 2010. Species assemblages of benthic harpacticoid copepods on tide rock pool seaweeds of Pulau Besar, Melaka. <i>Journal of Tropical Biology and Conservation</i> 7: 1-10. 4. Zaleha, K., Farah Diyana, M.F., Amira Suhaili, R. And Amirudin, A. 2009. Benthic community of seagrass bed, Sungai Pulai, Malaysia. <i>Malaysian Journal of Science</i>, 28(2): 143-159.



Proceedings/Conferences/Seminars:

1. Zaleha, K. and Sellinna, Mohd. Zaki Tan. 2009. Growth Performance of Some Tropical Marine Harpacticoids in Laboratory Condition. In: Mohd. TalibLatif et al. (eds.). *Proceedings of the International Conference on Marine Ecosystem 2009*. 24-26 May 2009, Langkawi.
2. Farah Diyana, M. F. and Zaleha, K. 2009. Chlorophyll-a Concentration and Total Organic Carbon in Sediment at Setiu Lagoon, Terengganu. Managing Human, environment and natural resources for sustainability. *Proceeding of Universiti Malaysia Terengganu 8th International Annual Symposium on Sustainability Science and Management (UMTAS 2009)*, 3-4 May 2009, Terengganu.
3. Busra, I., Zaleha, K. and Masduki, M.M. 2009. Generation time for Paradactylopodiaoculata in Laboratory Culture. *Proceedings National Fisheries Symposium (NaFiS) 2008*. 14-16 July 2008. Terengganu.
4. Norshida, I. and Zaleha, K. 2009. Development of Harpacticoid Copepod, Robertsoniaknoxi Fed with Navicula sp. *Proceedings National Fisheries Symposium (NaFiS) 2008*. 14-16 July 2008. Terengganu.
5. Zaleha, K., AbangJefriAbangMansor and Hasimah Mohd. Said. 2008. Species diversity of Porcellidiidae Sars, 1860 (Copepoda: Harpacticoida) from seagrass bed of Sungai Pulau, Malaysia. *10th Symposium of The Malaysian Society of Applied Biology*, 6-8 Nov. 2008, Kuching Sarawak.

Products:

1. Prototype: Flex-seed for aquaculture
2. Prototype: Bio-stimulant Substrate for benthic live feed and Bioaquadrop Plus
3. Prototype: Vital Copepod Production Process

Others:

1. Busra Ibrahim, 2010. Reproductive biology of Pararobertsonia sp. and potential development of harpacticoid cyst in laboratory, M.Sc. Thesis. University of Malaysia Terengganu.
2. Farah Diyana A. Fathi, 2010. Ecology of meiobenthic copepods and distribution of potential copepod cyst harpacticoids in Peninsular Malaysia. M.Sc. Thesis. University of Malaysia Terengganu.

	3. Ahmad Wafi Anan, 2010. Trial culture of a benthic harpacticoid copepod, <i>Paramphiascella</i> sp. under simulated condition. M.Sc. Thesis. University of Malaysia Terengganu.
Awards/Certificates	<ol style="list-style-type: none"> 1. MTE2011: 1 Bronze Award 2. MTE 2009: 1 Silver Award 3. 37th International Exhibition of Inventions New Techniques and Products, Geneva 2009: 1 Bronze Award 4. 20th International Invention, Innovation, Industrial Design and Technology, ITEX09 2009: 1 Silver Award 5. BioMalaysia 2009: 1 Silver Award
Additional Information	<p>International Linkages: Soka University, Japan</p> <p>Industrial Linkages: Pertubuhan Peladang Negeri Terengganu (PPNT)</p> <p>Technology Licensing:</p> <p>Commercialisation: Techno-Fund Grant from MOA (RM1million)</p>
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaysia Terengganu (UMT) Institute Of Tropical Aquaculture, Universiti Malaysia Terengganu, 21030 Kuala Terengganu, Terengganu. Office: 09-668 3235 H/p: 019-914 6212 zaleha@umt.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S2S)

Project Title	Establishment of Anthropogenic Radioactivity Concentration in Peninsular Malaysia Marine Environment
Project Number	04-03-01-SF0020
Project Leader and Team Members	Leader: Zaharudin Ahmad Members: Che Abd. Rahim Mohamed, Noor Azhar Mohamed Shazili, Mohd Izwan Abdul Adziz, Yii Mei Wo, Abdul Kadir Ishak, Nita Salina Abu Bakar, Norfaizal Mohamed@Muhammad, Ahmad Sanadi Abu Bakar and Hidayah Shahar
Field of Research	Marine Sciences
Project Summary/ Objectives	This project generates baseline data for concentrations of anthropogenic radionuclides released from regional nuclear power generating activities. This is in line with the objectives of Malaysia's impending nuclear power programme. This project involves determination of the present status of radioactive contaminants in the marine environment of Peninsular Malaysia and establishing the distribution of the radionuclides through grid sampling within the Exclusive Economic Zone (EEZ).
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Zaharudin Ahmad, Zal U'yun Wan Mahmood, Hidayah Sahar, Yii Mei Wo and Ahmad Sanadi Abu Bakar. 2011. Radioactivity in the Exclusive Economic Zone of east coast Peninsular Malaysia: distribution trends of ¹³⁷Cs in surface seawater. <i>Journal of Radioanalytical and Nuclear Chemistry</i> 287(1):329-334. 2. Zaharudin Ahmad, Yii Mei-Wo, Ahmad Sanadi Abu Bakar and Hidayah Shahar. 2010. Spatial distributions of ¹³⁷Cs and ²³⁹⁺²⁴⁰Pu in surface seawater within the Exclusive Economic Zone of East Coast Peninsular Malaysia. <i>Applied Radiation and Isotopes</i>, 68(9): 1839-1845. 3. Yii Mei-Wo, Hidayah Shahar and Zaharudin Ahmad. 2010. ²⁴¹Am levels in surface sediment of East Coast Peninsular Malaysia. <i>Jurnal Sains Nuklear Malaysia</i>, 1(2):67-76. 4. Zal U'yun Wan Mahmood, Hidayah Shahar, Zaharudin Ahmad, Yii Mei Wo and Ahmad Sanadi Abu Bakar. 2010. Behavior and distribution of ²³⁹⁺²⁴⁰Pu and ²⁴¹Am in the east coast of Peninsular Malaysia marine environment. <i>Journal of Radioanalytical and Nuclear Chemistry</i>, 286:265-272.

	<p>5. Ahmad Sanadi Abu Bakar, Zaharudin Ahmad and Zaini Hamzah. 2010. Spatial distribution of 210Pb activity concentrations in marine surface sediments within East Coast Peninsula Malaysia Exclusive Economic Zone (EEZ). <i>Malaysian Journal of Analytical Sciences</i> 14(2), 56-62.</p> <p>Proceeding/Conference/Seminar:</p> <p>1. Zaharudin Ahmad, Yii Mei Wo and Ahmad Sanadi Abu Bakar. 2009. Distribution of 137Cs in Surface Seawater within the Exclusive Economic Zone of East Coast Peninsular Malaysia, <i>Proceedings International Conference on the Marine Ecosystems</i>, 26-28 May 2009, Universiti Kebangsaan Malaysia.</p> <p>Products/Technique/Methodology:</p> <p>1. In-house technique development for determination of 241Am in environment sample using Alpha Spectrometry System.</p> <p>2. In-house technique development for determination of 243Cm in environment sample using Alpha Spectrometry System.</p>
Additional Information	<p>Commercialisation: Analytical services on determination of 241Am and 243Cm in environment samples using developed in-house techniques have been commercialised.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Malaysian Nuclear Agency (Nuclear Malaysia) Waste Technology and Environmental Division, Malaysian Nuclear Agency Bangi, 43000 Kajang, Selangor. Office: 03-8928 2974 zahar@nuclearmalaysia.gov.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S2S)

Project Title	Application of Nuclear Techniques to Study Bioaccumulation and Transfer Factor for Marine Biota
Project Number	04-03-01-SF0022
Project Leader and Team Members	Leader: Norfaizal Mohamed@Muhammad Members: Abdul Kadir Ishak, Nita Salina Abu Bakar, Zaharudin Ahmad, Khairul Nizam Razali, Yii Mei Wo, Zal U'yun Wan Mahmood, Hidayah Shahar and Nurul Assyikeen Md Jaffary
Field of Research	Environment and Natural Resources
Project Summary/ Objectives	Malaysians are heavy consumer of seafood and seafood is the main source of protein for the population. Seafood is mainly sourced from fishing and marine aquaculture. Data from FAO shows that Malaysia is the third heaviest consumer of seafood among APEC countries by consuming an average of 55 kg per capita every year. Marine organisms can accumulate certain amount of toxic elements through continuous exposure to pollutants present in seawater. However, there is no available data on bioaccumulation and transfer factors of these toxic elements by Malaysian marine organism to be correlated to human health. This project establishes dose response and transfer factors of appropriate marine biota found in the region, which can be used to estimate health risk to human through the consumption of contaminated seafood.
Publications/Products/ Outcomes	Proceedings/Conference/Seminars: 1. Nur Hidayah Dmulyany, Norfaizal Mohamed, Nita Salina Abu Bakar dan Khairul Nizam Razali. 2009. Kajian pengambilan dan penyingkiran Cs-134 dan Cd-109 oleh Ikan Siakap: Cabaran, Masalah dan Penyelesaian, <i>Konvensyen Teknikal Nuklear Malaysia</i> , 6 - 8 Oktober 2009, Nuklear Malaysia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S2S)

Project Title	Identification of Sources of Petroleum Hydrocarbons in Marine Environment of Sabah and Sarawak Coastal Area
Project Number	04-03-01-SF0026
Project Leader and Team Members	Leader: Md Suhaimi Elias Members: Ab. Khalik Wood, Mohd Suhaimi Hamzah, Zaleha Hashim, Ariffin Talib, Eewiat Endin Put, Mohd Khairu Azhar Harun and Mohd Khushairi Awang
Field of Research	Environment and Natural Resources
Project Summary/ Objectives	Environmental pollution due to urbanisation, industrialisation and agricultural activities has become a major issue and concern. Marine environmental pollution especially by petroleum hydrocarbon is one major aspect of environmental pollution, and the sources of petroleum hydrocarbon pollution are mainly from natural sources and human activities. The petroleum hydrocarbon contamination can be determined by analysing marine sediment samples, which involves extraction, fractionation using silica/alumina and analysing by gas chromatography mass spectrometer (GC-MS). The data obtained indicates the distribution, level and origin of the source of petroleum hydrocarbon contamination.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Md Suhaimi Elias, Ab Khalik Wood, Zaleha Hashim, Mohd Suhaimi Hamzah, Shamsiah Ab Rahman and Nazaratul Ashifa Abdullah Salim. 2008. Polycyclic Aromatic Hydrocarbons (PAHs) pollution in Sediment from Sabah Coastal Area. <i>21th Malaysian Analytical Chemistry Symposium (SKAM)</i>, 25 - 27 Nov 2008, Kota Kinabalu. 2. Zaleha Hashim, Md Suhaimi Elias, Ab. Khalik Wood, Eewiat A/P Endin Put dan Ariffin Talib. Latihan perbandingan antara makmal bagi penentuan petroleum hidrokarbon dalam sampel biota. <i>Konvesyen Teknikal Nuklear Malaysia 2009</i>, 6-8 Oktober 2009, Kuala Lumpur. 3. Md Suhaimi Elias, Ab Khalik Wood, Zaleha Hashim, Mohd Suhaimi Hamzah, Shamsiah Ab Rahman and Nazaratul Ashifa Abdullah Salim. 2010. Levels and Sources of Polycyclic Aromatic Hydrocarbons (PAHs) in Sediment from Tuanku Abdul Rahman National Park, Sabah. <i>23rd Regional Malaysian Symposium of Analytical Science (SKAM-32)</i>, 4 - 6 Oct 2010, Kuala Terengganu.



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S2S)

Project Title	Study of the Factors Regulating the Bloom Mechanisms of Harmful Algal Species in Sabah
Project Number	04-01-10-SF0001
Project Leader and Team Members	Leader: Ann Anton Members: Abentin Estim, Md Azharul Hoque, Sitti Raehanah Muhamad and Ejria Saleh
Field of Research	Environment and Natural Resources
Project Summary/ Objectives	This study aims to quantify the physical and chemical parameters influencing an increase in HAB populations which triggers a “bloom” event and to study the functional relationships of these parameters with the cell densities in an attempt to understand HAB bloom dynamics. The statistical analysis and modeled relationships will provide useful tools for predicting the red-tide events under the specific coastal climate as well as physical and chemical properties of coastal waters in red-tide hotspots. Moreover the findings of this study can be used to accurately mitigate and manage the blooms, thus, reducing their impacts on living marine resources, public health and aquaculture activities.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ann Anton, Teoh Peik Lin, Sitti Raehanah Muhd. Shaleh, Normawaty Mohammad Noor. 2008. First occurrence of <i>Cochlodinium</i> blooms in Sabah, Malaysia. <i>Harmful Algae</i> 7(3): 331 – 336. 2. Iwataki M., H. Kawami, K. Mizushima, C.M. Mikulski, G. J. Doucette, Juan R. Relox Jr., A. Anton, Y. Fukuyo, K. Matsuoka. 2008. Phylogenetic relationships in the harmful dinoflagellate <i>Cochlodinium polykrioides</i> (Gymnodiniales, Dinophyceae) inferred from LSU rDNA sequences. <i>Harmful Algae</i> 7(3):271-277. <p>Others:</p> <ol style="list-style-type: none"> 1. Joanna W. Doinsing, Sitti Raehanah Muhd. Shaleh and Ann Anton, 2009. The effect of light, temperature and salinity on the growth of <i>Cochlodinium polykrioides</i>. M. Sc. Thesis. Universiti Malaysia Sabah. 2. Weliyadi Anwar, Ann Anton and Sujjat Al-Azad, 2009. Effect of Nutrient Dynamic on cell density of <i>Cochlodinium polykrioides</i> at Sepanggar & Likas Bay. M. Sc. Thesis. Universiti Malaysia Sabah.



	3. Aimimuliani Adam, Normawaty Mohammad Noor and Ann Anton, 2009. Effect of physico chemical factory on <i>Cochlodinium polyrikoides</i> blooms in Kota Kinabalu Costal Water Sabah. M. Sc. Thesis. Universiti Malaysia Sabah.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S2S)

Project Title	Coastal Processes and Geomorphologic Characteristics of Major Coastal Towns in east Sabah for Assessment of Tsunami Impacts
Project Number	04-01-10-SF0008
Project Leader and Team Members	Leader: Felix Tongkul Members: Ejria Saleh, Noor Farasaliza Sakhon and Ahmad Khairut Termizi
Field of Research	Environment and Natural Resources
Project Summary/ Objectives	The study aims to identify areas which are at risk from potential tsunami inundation and also propose appropriate plans for tsunami hazard mitigation and emergency evacuations. Tsunami-N2 method by Imamura (1996) is used for this study. High risk areas in Sandakan, Lahad Datu, Semporna and Tawau have been identified and a general tsunami hazard map has been produced for each town. Some general plans for tsunami hazard mitigation and emergency evacuation are being proposed.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Felix Tongkul, Ejria Saleh, Ahmad Khairut Termizi and Noor Farasaliza Sakhon. 2009. Tsunami hazard assessment for coastal areas in Eastern Sabah. <i>Proceedings of 3rd Malaysia-Japan Symposium on Geohazards and Geoenvironmental Engineering</i>, 27-28 October 2009, Kyoto, Japan. 2. Felix Tongkul, Ejria Saleh, Noor Farasaliza Sakhon and Ahmad Khairut Termizi, 2009. Tsunami inundation modeling for Eastern Sabah. <i>Extended abstract of 11th Regional Congress on Geology, Mineral and Energy Resources of Southeast Asia (GEOSEA 2009)</i>, 8-10 June 2009, Kuala Lumpur. 3. Felix Tongkul. 2008. Threat of tsunami on east coast of Sabah. <i>Poster presentation at 7th IOC/WESPAC International Symposium 2008</i>, 21-25 March 2008, Kota Kinabalu, Sabah. 4. Ejria Saleh, Felix Tongkul, Noor Farasaliza Sakhon and Talib Hassan. 2009. Potential impact of water propagation due to tsunami on mariculture in Darvel Bay, Sabah. <i>Annual Seminar on Marine Science and Aquaculture</i>, 11-13 Mac 2009, Kota Kinabalu, Sabah.



	5. Noor Farasaliza Sakhon, Ejria Saleh and Felix Tongkul. 2008. Public awareness survey on natural disaster in Lahad Datu area, Sabah. <i>Proceedings of Seminar on S&T</i> , 29-30 October 2008, Labuan.
IP Status	Copyright
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S2S)

Project Title	A Tool for Predicting Seawater Intrusion into Manukan Island's Aquifer
Project Number	04-01-10-SF0065
Project Leader and Team Members	Leader: Mohd Harun Abdullah Member: Baba Mustapha
Field of Research	Environment and Natural Resources
Project Summary/ Objectives	This study aims to identify the hydrochemical facies of the groundwater as a chemo-indicator to seawater intrusion into an island's aquifer. The project also constructs a water balance budget model that can influence the recharge of an island's aquifer. It also proposes an appropriate mathematical model for understanding of the movement of freshwater-seawater interface - thus, it predicts seawater intrusion into a small island's aquifer.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Praveena, S.M., Abdullah, M.H., Aris, A.Z. and Bidin, K. 2010. Recharge and Aquifer Response: Manukan Island's Aquifer, Sabah, Malaysia. <i>Environment Asia</i> 3: 72-81. 2. Praveena, S.M., Abdullah, M.H. and Aris, A.Z. 2010. Modeling for Equitable Groundwater Management: Application to Manukan Island, Malaysia. <i>International Journal of Environment Resource</i> 4(3):415-426. 3. Aris, A. Z., Harun Abdullah, M. H. and Praveena, S.M. 2009. Evolution of groundwater chemistry in the shallow aquifer of a small tropical island, North Borneo. <i>Sains Malaysiana</i> 38: 805-812. 4. Ahmad Zaharin Aris, Mohd Harun Abdullah, Amran Ahmed and Kim Kyoung Woong. 2007. Controlling factors of groundwater hydrochemistry in a small island's aquifer. <i>International Journal of Environment Science Technology</i> 4 (4): 441-450. 5. Ahmad Zaharin Aris, Mohd Harun Abdullah and Kim Kyoung Woong. 2006. Hydrogeochemistry of groundwater in Manukan Island, Malaysia. <i>Malaysia Journal of Analytical Sciences</i> 11(2): 407 – 413.



	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Praveena, S.M., Abdullah, M.H., Aris, A.Z. and Bidin, K. 2010. Simulation and prediction of seawater intrusion in a small island's aquifer. First International Conference on Managing Ecosystem Health of Tropical Seas: <i>Environmental Management in Coastal Ecosystems</i>, 19 - 21 October 2010. Kuala Lumpur. 2. Abdullah, M.H., Praveena, S.M., Aris, A.Z., Yik, L.C. and Bidin, K. 2010. Assessment of Seawater Intrusion in a Small Tropical Island's Aquifer, Malaysia. <i>Proceedings of the 3th International Conference on Southeast Asian Natural Resources and Environmental Management (SANREM)</i>, 3-5 August 2010, Kota Kinabalu. 3. Praveena, S.M., Aris, A. Z. and Abdullah, M.H. 2009. Modelling of seawater intrusion for a small tropical island aquifer in East Malaysia. <i>International Conference on Chemical, Biological & Environmental Engineering (CBEE 2009)</i>, 9-11 October 2009, Singapore. 4. Praveena, S.M., Abdullah, M.H., Aris, A.Z. and Bidin, K. 2009. Numerical Assessment of Seawater Intrusion in Manukan Island, Malaysia. The First Asia-Pacific Coastal Aquifer Management Meeting (APCMM): <i>Mapping for Synergy in the Twenty-First Century</i>, 9-11 December 2009, Thailand. 5. Sarva Mangala Praveena, Mohd Harun Abdullah, Ahmad Zaharin Aris and Lin Chin Yik. 2008. A brush up on seawater intrusion models. <i>Third Regional Symposium on Environment and Natural Resources</i>, 5-6 August 2008, Kuala Lumpur.
Awards/Certificates	<ol style="list-style-type: none"> 1. Research and Innovation Carnival & PEREKA Competition 2009, Universiti Malaysia Sabah: Bronze Place 2. Research & Innovation Awards 2010, Universiti Malaysia Sabah: Silver Place
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S2S)

Project Title	The Spatial and Temporal Change of Heavy Metals Concentration in Sediment of Southern Terengganu Waters
Project Number	04-01-12-SF0008
Project Leader and Team Members	Leader: Noor Azhar Mohamed Shazili Members: Kamaruzzaman Yunus, Syalindran Sevasangaram and Joseph anak Bidai
Field of Research	Environment and Natural Resources
Project Summary/ Objectives	The purpose of this study is to determine the distribution of metal in core sediment and its relation to organic carbon in the coastal areas of Terengganu. The spatial and temporal distribution of major and minor elements, particle size and organic carbon content in sediment of Southern Terengganu coastal waters were determined. Al, Fe, Na, Mg, Mn, Cu, Co and Be were found to be distributed in concentrations lower than average shale value during all the sampling periods. Zn and Cd were distributed in concentrations higher than the average shale during all the sampling periods. Distribution of each of the other elements such as Ba, Ga, Ca, Cr, Ni, Li and Pb changed temporally during all the sampling periods in which the distribution is either higher than the average shale value or lower than the average shale value depending on the climate.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Nor Antonina, A., Noor Azhar, M.S. and Siti Waznah, A. 2009. Mineralogical study of Kemaman coastal sediments off Terengganu, Malaysia. <i>Journal of Sustainability Science and Management</i>. 4 (2):157-162. 2. Syalindran, S., Shazili, N.A.M. and Kamaruzzaman, B.Y. 2009. The distribution of cobalt, lead and zinc in the sediment of Kemaman Offshore during Pre-monsoon Season. <i>Journal of Sustainability Science and Management</i>. 5(1):106-115. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Syalindran, S., Shazili, N.A.M., Kamaruzzaman, B.Y. and Antonina, A. 2008. Physico-chemical features of water and sediment at Kemaman near-shore area. <i>The Conference on the South China Sea: Sustaining Ocean Productivities, Maritime Communities and the Climate(SCS2008)</i>, 25-29 Nov 2008, Kuantan.



	<p>2. Syalindran, S., Shazili, N.A.M. and Kamaruzzaman, B.Y. 2008. The Concentration of cobalt, lead and zinc in the sediment of Kemaman Offshore during Pre-Monsoon and Post-Monsoon Season. <i>7th UMT International Symposium on Sustainability Science and Management</i>, 7-9 June 2008, Kuala Terengganu.</p> <p>3. Syalindran, S., Shazili, N.A.M. and Kamaruzzaman, B.Y. 2008. Heavy Metals distribution in the near-shore sediment of Southern Terengganu Waters. <i>IOC/ WESTPAC 7th International Scientific Symposium</i>, 21-25 May 2008, Sabah.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Assessment of Wave Attenuation Ability of Selected Mangrove Vegetations
Project Number	04-01-12-SF0022
Project Leader and Team Members	Leader: Mohd Lokman Husain Members: Razak Zakariya, Mohd Suffian Idris, Sulong Ibrahim and Mohammad Fadhli Ahmad
Field of Research	Environment and Natural Resources
Project Summary/ Objectives	This project puts forth a scheme to quantify the ability of the commonly available mangrove vegetation to attenuate wave energy generated by oncoming natural waves and those generated by boat wakes. The densities of the different mangrove vegetation patches were measured and calculated in order to study the linkages between density and wave attenuation capability. Field data to verify the theoretical models proposed earlier are analysed and an empirical model is developed.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Isfarita Ismail, Mohd Lokman Husain, Sinha, P.C. 2010. Wave attenuation ability of <i>Rhizophora</i> species at Kemaman, Terengganu. <i>First International Conference on Managing in Coastal Ecosystem</i> , 19 – 21 October 2010, Kuala Lumpur.
Contact Institution/Entity Address	Universiti Malaysia Terengganu (UMT) Pusat Pengurusan Penyelidikan, Universiti Malaysia Terengganu (UMT), Mengabang Telipot, 21030 Kuala Terengganu, Terengganu.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Dissolved and Particulate Trace Metal Distribution in the South China Sea off the Kemaman Coast: Seasonal and Monsoon Effects
Project Number	04-01-12-SF0026
Project Leader and Team Members	Leader: Noor Azhar Mohamed Shazili Member: Kamaruzzaman Yunus
Field of Research	Environment and Natural Resources
Project Summary/ Objectives	The aim of this research is to study the distribution of dissolved, particulate and total trace metals in the South China Sea off the southern Terengganu coast in relation to seasonal changes and monsoon season. It involves the determination of dissolved and particulate concentrations of the trace metals: Cd, Cu, Pb, Zn, Cr, Mn and Al in the water column of the South China Sea off Dungun – Kemaman region besides providing efficient and reliable methods for trace metals on-line preconcentration study from the seawater. The study also includes determination of seasonal changes in these metal concentrations,- including the effects of the Northeast monsoon on metal concentrations off Kemaman coast (in the South China Sea) and on the effects of anthropogenic input on the proportions of metals in the dissolved and particulate phases.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> Adiana, G., Shazili, N.A.M.and Ariffin, M.M. 2009. Cadmium, copper and lead distribution in the seawater in the South China Sea off the South Terengganu Coast, Malaysia. <i>International Conference on Marine Ecosystem</i>, 26-28 May 2009, Kedah. Shazili, N.A.M., Adiana, G. and Marinah, A. 2008. Trace metal distribution in seawater in the South China Sea off the South Terengganu coast, Malaysia. <i>IOC/WESTPAC 7th International Scientific Symposium – Natural Hazards and Changing Environment in the Western Pacific</i>, 21-25 May 2008, Sabah. Adiana, G., Shazili, N.A.M. and Ariffin, M. 2008. Trace metal distribution in seawater in the South China Sea off the South Terengganu coast, Malaysia. <i>SCS 2008 – The South China Sea: Sustaining Productivities, Maritime Communities and the Climate</i>, 25-29 Nov 2008, Kuantan.

	Others: 1. Adiana, G. 2010. Distribution of dissolved & articulate trace metals in South China sea of the southern Terengganu coast: Seasonal & monsoon effects. M.Sc. Thesis. Universiti Malaysia Terengganu.
Contact Institution/Entity Address	Universiti Malaysia Terengganu (UMT) Pusat Pengurusan Penyelidikan, Universiti Malaysia Terengganu (UMT), Mengabang Telipot, 21030 Kuala Terengganu, Terengganu.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	The Ecological and Productivity Contribution of Replanted <i>Rhizophora</i> Communities of Different Age Groups to the Kelantan Delta, Tumpat, Kelantan
Project Number	04-01-12-SF0035
Project Leader and Team Members	Leader: Sulong Ibrahim Members: Mohd Lokman Husain, Rosnan Yaacob and Zaleha Kassim
Field of Research	Environment and Natural Resources
Project Summary/ Objectives	<p>This study aims to plug the gap of knowledge concerning the ecology of replanted mangrove area, especially in Malaysia. Ecological information is important to provide a guideline to any replanting activities, as the information is needed to know the impacts of the artificially regenerated mangrove forest. Moreover, in most cases of artificial mangrove reforestation, post-replanting assessment of the replanted mangrove area are rarely conducted. This project consists of five studies which involve ecological and productivity contribution of replanted <i>Rhizophora</i> communities which are: i) Primary productivity – above ground biomass, ii) Secondary productivity – Benthos, iii) Growth of replanted <i>Rhizophora</i> communities of different ages, iv) Total Organic Carbon (TOC), and v) Fish</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Sulong Ibrahim. 2009. Study on The Physical Characteristic and Aboveground Biomass at 7 Year's Old of Replanted Mangroves at Kelantan Delta, Tumpat. <i>UMT 8th Symposium On Sustainability Science And Management (UMTAS 2009)</i>, 3-4 May 2009, Terengganu. <p>Others:</p> <ol style="list-style-type: none"> 1. Mohd Yunus Bin Ibrahim. 2010. Taxonomy of mangrove polychaeta annalide different mangrove age stand in Kelantan Delta. M. Sc. Thesis. Universiti Malaysia Terengganu. 2. Hasnorhisyam Bin Shahuddin. 2010. A Study On Macrobenthic Community And Biomass In Different Mangrove Age Stand In Kelantan Delta. M. Sc. Thesis. Universiti Malaysia Terengganu.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Beach Cycle and Sediment Distribution Along the East Coast of West Malaysia as Reference for Extreme Storm Effect
Project Number	04-01-12-SF0039
Project Leader and Team Members	Leader: Rosnan Yaacob Members: Abdul Kadir Ishak, Mohd Lokman Husain and Noor Azhar Mohamed Sazili
Field of Research	Environment and Natural Resources
Project Summary/ Objectives	The purpose of this study is to describe and determine the beach cycle and sedimentation processes by using beach profile and sets of sediment data. The use of different sets of sediment data is discussed through indicators such as beach slope, width and morphology. These data will serve as reference or baseline data and could be used for modelling of any storm events such as monsoon and tsunami. These data could also be used to forecast disaster along the coast.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Rosnan Yaacob and Mohd Zaini Mustapa. 2010. Grain-size distribution and subsurface mapping at the Setiu wetlands, Setiu, Terengganu. <i>Environmental Earth Science Journal</i> 60(5):975. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Rosnan Yaacob, Effi Helmy Ariffin, Nor Antonina Abdullah and Mohd Lokman Husain. 2010. Effects of sedimentology and beach morphology on tourism at Terengganu Beach. <i>UMT 9th International Symposium on Sustainable Science and Management (UMTAS) 2010</i>, 8-11 May 2010, Terengganu. 2. Rosnan Yaacob, Mohd Zaini Mustapa and Noraisyah Sapon. 2009. Beach Dynamic and Geomorphology Changes of Pahang Beach. <i>UMT 8th International Symposium on Sustainable Science and Management (UMTAS) 2009</i>, 3-4 May 2009, Terengganu. 3. Rosnan Yaacob, Mohd Lokman Husain, Noraisyah Sapon and Mohd Zaini Mustapa. 2009. Temporal beach Changes and Sediment Characteristic along Terengganu Coastline. <i>UMT 8th International Symposium on Sustainable Science and Management (UMTAS) 2009</i>, 3-4 May 2009, Terengganu.

	4. Mahamad Nasir Abdullah, Norita Abdul Shukor and Rosnan Yaacob.2008.The Type of Particles, Morphology Surface and Elemental Analysis of Sediments in Bidong Island. <i>South China Sea 2008 Conference</i> , 25 – 29 Nov 2008, Kuantan.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	A Study on the Heavy Metals and Hydrocarbons (Aliphatics and PAHs) in the Biota (Fishes, Crabs) and Ambient Environment of the Coral Reefs Ecosystem of Redang Island, Terengganu
Project Number	04-01-12-SF0062
Project Leader and Team Members	Leader: Nor Antonina Abdullah Members: Mohamed Kamil Abdul Rashid, Noor Azhar Mohamed Shazili, Norhayati Mohd Tahir and Siti Zauyah Darus
Field of Research	Environment and Natural Resources
Project Summary/ Objectives	This study aims to investigate the distribution of heavy metals and PAHs in biota and ambient environment of the coral reefs ecosystem of Pulau Redang, Terengganu and their relationship to concentrations of flora and fauna. Pulau Redang is chosen because this island has unique and diverse marine and coastal ecosystems such as mangroves, coastal forests, sandy beaches, mudflats and coral reefs. The ecosystems especially the coral reefs are rich in habitats and species. In determining the level of hydrocarbon (aliphatic and PAHs) compounds in Redang Island, biota samples were taken for analysis and quantified for their concentration. The samples were extracted using soxhlet extraction with dichloromethane:hexane (50:50 v/v) and were fractionated on silica alumina column. Identification and quantification of aliphatic hydrocarbons and PAHs compounds were carried out using Shimadzu-QP2010 GC-MS.
Publications/Products/ Outcomes	Journals: 1. Nor Antonina binti Abdullah, Noor Azhar Mohd Shazili, Norhayati binti Mohd Tahir and Siti Zauyah binti Darus. 2010. Sedimentology of the Redang Island Coral Reefs Environment. <i>Journal of Chemistry and Chemical Engineering</i> 4 (2): 41-47. Proceedings/Conferences/Seminars: 1. Nor Antonina Abdullah. 2009. Preliminary Assessment of Sources and Distribution of Organic Compounds in Pulau Redang Sediments, Terengganu. <i>10th Asian Conference on Analytical Sciences 2009</i> , 11-13 August 2009, Kuala Lumpur.

	<ol style="list-style-type: none"> 2. Nor Antonina Abdullah. 2009. Sedimentology of the Redang Island Coral Reefs Environment. <i>8th International Annual Symposium on Sustainability Science and Management (UMTAS 2009)</i>, 3-4 May 2009, Kuala Terengganu. 3. Nor Antonina Abdullah. 2009. Elemental Geochemistry of the South China Sea Sediments of Redang Island Coral Reefs Environment, Terengganu, Malaysia. <i>Taibah International Chemistry Conference (TICC) 2009</i>, 22-25 Mar 2009, Madinah. 4. Nor Antonina Abdullah. 2010. Heavy Metals Study on the Redang Island's Coral Reef Environment. <i>9th International Annual Symposium on Sustainability Science and Management (UMTAS 2010)</i>, 8 – 11 May 2010, Kuala Terengganu.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Hydrosystems for Integrated Control of Flood and Low Flow for a River Basin in Sarawak
Project Number	04-01-09-SF0004
Project Leader and Team Members	Leader: Charles Bong Hin Joo Members: Salim Said, Frederik Josep Putuhena and Rosmina Ahmad Bustami
Field of Research	Environment and Natural Resources
Project Summary/ Objectives	It is important to develop a mechanism that can estimate frequency of low flows of a river basin in order to establish a framework for storing excess water that can be used during dry season. Low flow and high/flood flow analyses had been well-documented in several water resources projects locally. However, what is lacking is an integrated-form of those data that can be “plug-and-play” by stakeholders. The aim of this project is therefore to develop interface-based low flow and high flow frameworks to support decision making. By using regionalisation technique, Sarawak is sub-divided into 5 flood frequency regions (FFR) and two Objective (1) is fully achieved as planned with the development of regional dimensionless flood frequency curve and regional mean annual flood equation that could help with flood estimation for any area in the basin. Objective (2) is only partially achieved. Water demand and supply analysis is only done of one year (2001) and no long-term and future projection being done. This is due to lack of data and the extensive time needed for more detailed study. However, a suitable site have been identified and a preliminary design has been proposed for a long storage should the need arise in the future. Objective (3) is achieved where the 7 computer models developed have helped in understanding the hydrological characteristics of the basin and thus in decision making through the input in the proposed Logical Framework for Integrated Flood Management.
Publications/Products/ Outcomes	Journal: 1. Bong, C.H.J., Putuhena, F.J., Said, S.Bustami, R.A. 2009. Adopting integrated hydrosystem approach in the management and development of Sarawak River Basin. The Icfai University Journal of Soil and Water Sciences II(1): 63 - 78.

	<p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. Bong, C.H.J., Bustami, R.A., Hii, C.P., Yusuf, Z.A. 2008. Hydraulic modeling of levee system adjacent to the Sungai Sarawak. <i>Proceedings of the 2nd Engineering Conference (EnCon 2008)</i>, 18-19 Dec 2008, Sarawak. <p>Others:</p> <ol style="list-style-type: none"> 1. Bong, C.H.J. and Putuhena, F.J. 2008. Logical framework for managing Sarawak river basin through integrated hydrosystem approach. <i>Bulletin of the Institution of Engineers, Malaysia</i>, Bil.20086:16-18. 2. Bong, C.H.J., Hii, C.P. and Putuhena, F.J. 2011. InfoWorks RS Model as Supporting Tools for Managing Sarawak River Basin. <i>Bulletin of the Institution of Engineers, Malaysia</i>, Bil.2011 1: 10-13.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Malaysia Sarawak (UNIMAS) Timbalan Naib Canselor (Penyelidikan dan Inovasi), Universiti Malaysia Sarawak (UNIMAS), 94300, Kota Samarahan, Sarawak. Office: 082-581000 H/p: 013-808 9042 bhjcharles@feng.unimas.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Development of Rainfall Model from Incomplete Hydrological Data in Malaysia
Project Number	04-02-03-SF0022
Project Leader and Team Members	Leader: Marlinda Abd. Malek Members: Siti Zaiton Mohd Hashim, Sobri Harun, Siti Mariyam, Azizah Suliman and Ismail Mohamad
Field of Research	Environment and Natural Resources
Project Summary/ Objectives	This study aims to explore and identify new methods in forecasting historical missing rainfall data in Malaysia. Two new rainfall-data infilling models are developed: 1. model based on Expectation Maximization (EM) Algorithm and Nearest Neighbour (NN) Imputation and, 2. model based on Artificial Neural Network (ANN). Both methods are tested for feasibility and accuracy.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Marlinda Abdul Malek, M. A., Harun, S., Shamsuddin, S.M. and Mohamad, I. 2008. Imputation of Time Series Data via Kohonen Self Organising Maps in the Presence of Missing Data. <i>International Journal of Computer System Science and Engineering, World Academic of Science, Engineering and Technology</i> 41:501-506. 2. Marlinda Abdul Malek, Ismail Mohamad and Sobri Harun. 2008. Correction and Preparation of Continuously Measured Rain Gauge Data in Malaysia. <i>Matematika, Mathematics Journal Universiti Teknologi Malaysia</i> 2: 567-571. <p>Products:</p> <ol style="list-style-type: none"> 1. Method and System of Missing Data Imputator 2. Rainfall Missing Data Imputator (RaMeDy)
Awards/Certificates	<ol style="list-style-type: none"> 1. National Intellectual Property Award 2008: Third Prize Winner 2. Inventions & New Products Exposition (INPEX) 2007: Silver Medal 3. Malaysia Technology Expo (MTE) 2007: The Very Best Award 4. Malaysia Technology Expo (MTE) 2007: Gold Medal 5. Best PhD Thesis Award- Institutional of Higher Learning at National Level: Gold Medal

IP Status	<ol style="list-style-type: none">1. Patent filed (PI 20080706); Method and System of Missing Data Imputator, Malaysia2. Copyright obtained from SIRIM : Rainfall Missing Data Imputator (RaMeDy). Version 1.0.
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) Civil Engineering Department, Universiti Tenaga Nasional (UNITEN), KM7, Jalan Kajang-Puchong, 43009 Kajang, Selangor.
Phone Number	Office: 03-8928 7303 H/p: 019-332 2775
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Study on Magnetic Field Shielding Techniques for Extremely Low Frequency Applications
Project Number	04-02-03-SF0050
Project Leader and Team Members	Leader: Ismail Said Members: Muhamad Mansor and Halil Hussain
Field of Research	Electrical and Electronic
Project Summary/ Objectives	<p>This project involves studying possible techniques of field reductions by considering different magnetic field shielding materials, classifying the rate of reduction for various types of shielding materials and evaluating the shield design geometry under different types of electrical sources. The economical impact for selecting various designs and material specifications are also being considered. Experiments are done on copper, aluminium, galvanised iron, silicon steel, Netic and Co-Netics as shielding material. The different shielding geometries under consideration are; cylindrical, planar, U and five sided box. Different electrical sources producing magnetic field are Helmholtz coils, single-phase coils and three-phase coils. Shielding effectiveness of each configuration is evaluated. However, since magnetic permeability of material depends on several factors including fabrication techniques and due to unavailability of direct measurement of magnetic permeability of the materials, accurate determination of shielding effectiveness cannot be done and economic impact cannot be evaluated.</p>
Publications/Products/ Outcomes	<p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> Ismail Said. 2008. Computation of magnetic field from quadruple tower transmission lines in Malaysia. <i>Universities Power Engineering Conference</i>, 1-4 September 2008, Italy. <p>Product:</p> <ol style="list-style-type: none"> Test rigs, results of experimental data and simulation studies <p>Others:</p> <ol style="list-style-type: none"> Ismail Said. 2008. Study on cylindrical shield for extremely low frequency magnetic field area shielding. <i>Student Conference on Research and Development</i>, 19–20 August 2008, Universiti Tenaga Nasional.

	2. Ismail Said. 2008. Development of test rig for the study of extremely low frequency magnetic field shielding. <i>National Postgraduate Conference</i> , 31 March 2008, Universiti Teknologi Petronas.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Tenaga Nasional (UNITEN) Universiti Tenaga Nasional (UNITEN), College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03-8928 7530 H/p: 012-290 7943 ismails@uniten.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Satellite Attitude Determination and Control Back-up Module
Project Number	04-04-01-SF0003
Project Leader and Team Members	Leader: Warren Soh Kay Hoh Members: Mohamad Nazree, Mohd Effandi Mohd and Syaifuldeen Muda@Yusof
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	The functionality and operation of the Satellite Altitude Determination and Control Back-Up Module in a Hardware in the Loop test with Satellite Simulator is successfully demonstrated via simulations. Functionality of CAN bus architecture, sensor signal processing and actuator operability (Magnetic Torque Coils) are verified via respective stand-alone tests. Measurements done on back-up Module low power utilisation shows that it meets the requirements.
Publications/Products/ Outcomes	Conference: 1. Warren, S. K. H. 2009. <i>The 7th International Conference on Robotics, Vision, Signal Processing & Power Applications (RoViSP 2009)</i> , 19-20 Dec 2009, Langkawi.
Contact Institution/Entity Address	Astronautic Technology (ATSB) Astronautic Technology (M) Sdn. Bhd., No 2, Jalan Jururancang U1/21, Section U1 Hicom-Glenmarie Industrial Park, 40000 Shah Alam,
Phone Number	Selangor.
e-Mail	Office: 03-5569 0100 warren.soh@atsb.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Innovative Satellite Platform and Experimental Payloads
Project Number	04-05-07-SF0004
Project Leader and Team Members	Leader: Aziz Yusoff Members: Mohd Effandi Mohds, Nur Fadzillah Abd Isa, Syaifuldeen Muda@Yusof, Khairul Barri Che, Hafizah Mohd. Nasir, Wan Nur Fairuz Wan Idris, Mohamad Nazree Dol, Mohd Amir Iskandar Mazlan, Warren Soh Kay Hoh, Shamsul Azwan Samsuddin, Kamal Irfan Ahmad Shakir, Salahuddin Shuard@ Adrian and Sim Tze Shiang
Field of Research	Engineering Sciences
Project Summary/ Objectives	<p>An experimental system consisting of spaceborne platform, ground station, and payloads (involving technology demonstration of local innovative technology in space) is successfully developed jointly by Universiti Sains Malaysia (USM), Universiti Kebangsaan Malaysia (UKM), Universiti Malaysia Perlis (UNIMAP) and Universiti Teknologi Malaysia (UTM). The Structure Mechanical and Thermal (SMT) assembly; Command and Data Handling (C&DH) system; Electrical Power System (EPS); Telecommand, Telemetry and Control (TT&C) system; and, Altitude Determination and Control System (ADCS) for a space platform are developed. This project also includes a Ground Station Communication System with redundant backup capable of telecommand, telemetry and control of the satellite and provides proof-of-concept via space demonstration of the experimental payloads. Successful design, manufacturing and tests are performed at various sites: at ATSB, USM, UNIMAP, UTM and UKM. However, development of payloads: spaceborne GPS Receiver Module for Orbit Determination by UTM and spaceborne Payload Processor and Inertial Navigation Unit by UKM were unsuccessful and were unable to clear the Critical Design Phase.</p>
Publications/Products/ Outcomes	Conferences: <ol style="list-style-type: none"> 1. Aziz Yusoff, Mohd Suhaimi Ibrahim, Norhizam Hamzah and Ahmad Sabirin Arshad. 2007. Development of a Malaysian pico-satellite platform. <i>Earth Observation Small Satellite for Remote Sensing Applications 2007 (eoss 2007)</i>, 20-27 Nov 2007, Kuala Lumpur.



	<ol style="list-style-type: none"> 2. Yusoff, A. 2008. Development of magnetic torque driver and printed circuit board (PCB) air coil attitude control subsystem cube satellites. <i>Curtin University of Technology Science and Engineering International Conference (CUTSE 2008)</i>, 24-27 Nov 2007, Miri. 3. Yusoff, A. 2008. Development of ATSB® CubeSAT power system. <i>Curtin University of Technology Science and Engineering International Conference (CUTSE 2008)</i>, 24-27 Nov 2007, Miri. 4. Yusoff, A. 2008. Pico-satellite thermal system characterization -challenges in thermal control design of CubeSAT small satellite platform. <i>Microwaves, Radar and Remote Sensing Symposium (MRRS 2008)</i>, 22-24 Sept 2008, Ukraine.
Additional Information	<p>Linkages: Stellenbosch University, South Africa Systems, Preliminary and Critical Design external Reviewer; ANGKASA facilities was used electro optical illumination testing; SIRIM facilities was used Satellite bus vibration testing</p>
Contact Institution/Entity Address Phone Number e-Mail	Astronautic Technology (ATSB) Astronautic Technology (M) Sdn. Bhd., No 2, Jalan Jururancang U1/21, Section U1 Hicom-Glenmarie Industrial Park, 40000 Shah Alam, Selangor. Office: 03-5569 0100 H/p: 012-235 7764 ayusoff@atsb.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (\$2S)

Project Title	The Development of a Novel Non-destructive Testing System Automated Classification on Timber and Timber-based Products-a Malaysian Innovation
Project Number	04-03-10-SF0015
Project Leader and Team Members	Leader: Mohamad Omar Mohamad Khaidzir Members: Hamdan Husain and Rahim Sudin
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	A prototype system that includes system hardware and software is successfully developed to evaluate the physical and mechanical properties of timber and timber based products, especially products from lesser known species. The prototype system is being used to classify timber and timber based products into their appropriate strength groups. The dynamic elastic properties are determined without causing any permanent damage to the specimens.
Publications/Products/ Outcomes	Proceeding/Conference/Seminar: 1. Mohamad Omar-Khaidzir and HamdanHussain. 2008. Neuro-fuzzy Inference of Sound Response of Timber for Non-destructive Determination of Strength Groups. <i>World Conference On Timber Engineering (WCTE 2008)</i> , 2-5 June 2008, Japan. Product: 1. Software for Modulus of Elasticity prediction
Additional Information	Commercialisation: The prototype will be used to promote the non-destructive evaluation of timber in construction. Collaboration with JKR, CIDB, PAM, IEM and building authorities will be done to promote NDT in evaluation of timber materials in construction.
Contact Institution/Entity Address	Institut Penyelidikan Perhutanan Malaysia (FRIM) Forest Research Institute Malaysia (FRIM), 52109 Kepong, Selangor.
Phone Number	Office: 03 - 6279 7377
e-Mail	omarkh@frim.gov.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Real Time Target Classification by a Polarimetric FMCW Imaging Radar
Project Number	04-02-01-SF0081
Project Leader and Team Members	Leader: Chan Yee Kit Members: Mohammad Tariqul Islam, Koo Voon Chet, Gan Che Sheng and Oliver Ang Chin Yang
Field of Research	Engineering Sciences
Project Summary/ Objectives	A polarimetric FMCW imaging radar is being designed and constructed. The image acquired can be displayed in real time basis once the data is recorded into the personal computer. The technology gained can be used for future development of airborne and spaceborne radar sensor.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ang, C.Y., Chan, Y.K., Koo, V.C. and Gan, C.S. 2009. The Design and Development of an FMCW Imaging Radar. <i>IEEE International Conference on Antennas, Propagation And Systems</i>, 3–5 Dec 2009, Johor Bahru. 2. Chan Y.K., Ang C.Y., Koo V.C. and Gah C.S.2009). Design and development of A FMCW ground based imaging radar system. <i>Proceedings of Progress In Electromagnetics Research Symposium 2009 (PIERS 2009)</i>, 23-27 Mar 2009, China. <p>Product: A working ground base FMCW Imaging Radar</p>
Contact Institution/Entity Address	Universiti Multimedia Malaysia (MMU) Multimedia University Melaka Campus, Jalan Ayer Keroh Lama, 75450 Bukit Beruang, Melaka.
Phone Number	Office: 06-252 3795 H/p: 013-368 0616
e-Mail	ykchan@mmu.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Development of Rice Field Radar and Yield Prediction Models Using Mobile Scatterometer Measurement and Satellite Image Data
Project Number	04-02-01-SF0131
Project Leader and Team Members	Leader: Koo Voon Chet Members: Saiful Bahari Abu Bakar, Koo Voon Chet, Chung Boon Kuan and Ewe Hong Tat
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	A theoretical model was developed to enable calculation of radar returns of rice fields at different stages of growth. Only one season of ground truth and radar measurements was conducted, for verification purposes, due to weather conditions and hardware malfunction. An operational model for rice yield prediction and monitoring was also developed. Further testing of the operational model for yield prediction needs to be conducted before the technique can be applied in the agricultural sector.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Lim K. S., Koay J. Y., Koo V. C., Ewe H. T. and Kung W. L. 2009. High angular resolution measurements of the monostatic backscattering coefficient of rice fields. <i>Journal of Electromagnetic Waves and Applications</i> 23:1-10. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Koay J. Y., Ewe H. T. and Chuah H. T. 2008. Multitemporal backscattering behavior of rice crop canopies based on dense medium model simulations. <i>Proceedings of the Progress in Electromagnetics Research Symposium</i>, 24-28 Mar 2008, China. 2. Koay J. Y., Ewe H. T. and Chuah H. T. 2007. Effects of fresnel corrections in the scattered field of general ellipsoids. <i>Proceedings of the Progress in Electromagnetics Research Symposium</i>, 26-30 Mar 2007, China.
Contact Institution/Entity Address	Universiti Multimedia Malaysia (MMU) Multimedia University Melaka Campus, Jalan Ayer Keroh Lama, 75450 Bukit Beruang, Melaka.
Phone Number e-Mail	Office: 06- 252 3004 vckoo@mmu.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Geochemical and Sedimentological Characteristics Studies of Pahang Estuary, Malaysia
Project Number	04-01-08-SF0053
Project Leader and Team Members	Leader: Kamaruzzaman Yunus Members: Ahmed Jalal Khan Chowdhury, Noor Azhar Mohamed Shazili and Shahbudin Saad
Field of Research	Earth Sciences
Project Summary/ Objectives	This project's objectives are: i. to determine the degree of heavy metal contamination in sediment and in water column in the estuary; ii. to study the distribution of heavy metals in relation to sediment and water physical characteristics; iii. to identify and construct a suitable method for the determination of the proposed study; iv. to estimate sediment accretion and accumulation rates in estuary, and v. to estimate sediment mixing rates in seawater intrusion in the estuary. All objectives except the 5th objective were achieved and the 5th objective was not achieved due to breakdown of equipments during the final period of the project.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Kamaruzzaman, B.Y., SitiWaznah, A., Shahbudin, S., Jalal, K. C. A. and Ong, M.C. 2010. Spatial and Temporal Bottom Sediment Characteristics of Pahang River-estuary, Pahang, Malaysia. <i>Oriental Journal of Chemistry</i> 26 (1): 39 – 44. 2. Kamaruzzaman, B.Y., SitiWaznah, A., Shahbudin, S. and Ong M.C. 2008. Variability of Organic Carbon Content in Bottom Sediment of Pahang River-estuary, Pahang, Malaysia. <i>Journal of Applied Sciences</i> 9 (24): 4253-4257. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Kamaruzzaman, B.Y., Rina, S.Z., Jalal, K.C.A., Shahbudin, S. and Ong, M.C. 2008. Accumulation of Zn, Cu and Pb in Some Selected Fishes from Pahang Estuary, Malaysia. <i>Simposium Kimia Analisis Malaysia ke- 21 (SKAM- 21)</i>, 25-27 Nov 2008, Kota Kinabalu. 2. Jalal, K.C.A., Azfar, A.M., Kamaruzzaman, B.Y. and Shahbudin, S. 2008. Fish Assemblages in Sand Mining Areas of Pahang Estuary, Pahang, Malaysia. <i>South China Sea Conference</i>. 25-29 Nov 2008, Kuantan.

3. Jalal, K.C.A., Azfar, A.M., Kamaruzzaman, B.Y. and Shahbudin, S. 2009. Diversity of Phytoplankton Communities in Pahang Estuary, Pahang, Malaysia. *International Conference on Marine Ecosystem (INCOMES)*, 26-28 May 2009, Langkawi.
4. Kamaruzzaman, B.Y., Rina, S.Z., Jalal, K.C.A., Shahbudin S. and Ong M.C. 2009. Accumulation of Zn, Cu and Pb in Some Selected Fishes from Pahang Coastal Water, Pahang, Malaysia. *International Conference on Marine Ecosystem (INCOMES)*. 26-28 May 2009, Langkawi.
5. SitiWaznah, A., Kamaruzzaman, B.Y., Shahbudin, S., Jalal, K. C. A., and Ong, M.C. 2009. The Temporal Variation of Organic Carbon During the Pre-monsoon and Post-monsoon Seasons in Pahang River-estuary, Pahang, Malaysia. *The 3rd Regional Conference on Natural Resources in the Tropics (NRTrop3)*, 3-5 Aug 2009, Kuching.
6. Kamaruzzaman, B.Y., SitiWaznah, A., Mohd. Zahir, M. S., Ong, M.C. Shahbudin, S., Jalal, K. C. A. and Joseph, B. 2009. Distribution of Selected Heavy Metals in Bottom Sediment of Pahang River-estuary, Pahang, Malaysia. *10th Asian Conference on Analytical Sciences (ASIANALYSIS X)*. 11-13 Aug 2009, Kuala Lumpur.

Others:

1. Kamaruzzaman, B.Y., SitiWaznah, A., Ong, M.C. and Joseph, B. 2010. Distribution of Lead and Copper in the Bottom Sediment of Pahang River-estuary, Pahang, Malaysia. *Sains Malaysiana (In Press)*.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Chemical Speciation and Toxicological Evaluation of Malaysian Water Resources
Project Number	04-01-02-SF0109
Project Leader and Team Members	Leader: Md. Pauzi Abdullah Members: Jumat Salimon, Ab. Khalik Haji Wood, Lee Yook Heng and Mohamed Rozali Othman
Field of Research	Chemical Sciences
Project Summary/ Objectives	An analytical method based on SPME-GC-MS and SPE-GC-MS has been developed and validated for the analysis of main disinfection by-products (DBPs) in drinking water such as trihalomethanes, haloacetic acids and haloacetonitriles. The status of volatile organic compounds (including trihalomethanes) and haloacetic acids in water sources (raw and treated water) at selected catchments and water treatment plants was determined. A study was done for a water treatment plant in Putrajaya to evaluate the efficiency of the treatment process used to minimise the production of disinfection DBPs and to assess the impact of various raw water quality parameters on the chlorine demand and the production of DBPs. A study was made to assess the risk of consuming drinking water containing trihalometahnes in terms of toxicity.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Sadia, W. and Pauzi, A. 2009. SPE-GC-MS-SIM method for determination of halogenated acetic acids in drinking water system, <i>Chromatographia</i> 69(11-12): 1435-1456. 2. Md. Pauzi Abdullah, Lim Fang Yee, Sadia Ata, Abass Abdullah, Basar Ishak and Khairul Nidzam Zainal Abidin. 2009. The study of interrelationship between raw water quality parameters, chlorine demand and the formation of disinfection by-products, <i>Physics and Chemistry of the Earth</i> 34: 806-811. 3. Lim Fang Yee, Md. Pauzi Abdullah, Abas Abdullah, Basar Ishak and Khairul Nizam Zainal Abidin. 2009. Hydrophobicity characteristics of natural organic matter and the formation of trihalomethanes. <i>Malaysian Journal of Analytical Science</i> 13 (1): 94-99.

	<p>4. Md. Pauzi Abdullah, Sadia Wassem, Ramani Bai and Ijaz-il-Mohsen. 2008. Development of new water quality model using Fuzzy logic system for Malaysia. <i>Open Environmental Journal</i>, 2: 101-106</p> <p>5. Lim Fang Yee, Md. Pauzi Abdullah, Sadia Ata, Abas Abdullah, Basar Ishak and Khairul Nidzham. 2008. Chlorination and chloramines formation. <i>Malaysian Journal of Analytical Science</i> 12 (3): 528-535.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM) School of Chemical Science and Food Technology, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor. Office: 03-8921 5447 H/p: 019-329 5636 mpauzi@pkriscc.cc.ukm.my/mpauzi@ukm.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Marine Transboundary Pollution is a National Security Issue
Project Number	04-01-02-SF0117
Project Leader and Team Members	Leader: Che Abd. Rahim Mohamed Members: Noor Azhar Mohamed, Mohamad Pauzi Zakaria, Zaharudin Ahmad and Masni Mohd Ali
Field of Research	Marine Sciences
Project Summary/ Objectives	The distribution, sources and transport of radioisotopes and non-radioisotopes in some Malaysian waters were determined and the flux and inventory of contaminants in water during the monsoon period were calculated. A suitable transport model of radioisotopes and non-radioisotopes at selected study sites was successfully predicted. Currently, graduate and undergraduate students are using this analytical techniques to study natural radionuclides in marine systems.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Enviromental and Natural Resources Sciences, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number	Office: 03-8921 4618/03-8921 3209 H/p: 013-359 7635
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Assessment of the Malaysian Mangrove Ecosystem through Resistance and Resilience of Coastal Marine Fishes and Associated Fauna
Project Number	04-01-02-SF0124
Project Leader and Team Members	Leader: Mazlan Abd. Ghaffar Members: Abdullah Samat and Aziz Arshad
Field of Research	Biological Sciences
Project Summary/ Objectives	The status of common Ichthyo fauna diversity, their distribution and connectivities and their associated prey was analysed and presented according to habitat classification/type and elevation. Detail biology of selected species of fish, in particular, the resilience of the species covering the morphosystematic, feeding and reproductive biology and analysis of trophic dynamic of the fishes is reported. The impacts of exploitation and development on natural resources of the mangrove ecosystems in the forest reserve in Kuala Sepetang, Taiping, Perak and the Sg. Santi mangrove reserve in east Johore was studied. The resiliency of the fish in the respective ecosystem is highlighted. The potential gain as a result of good management practice as in Matang mangrove reserve was examined.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Simon, K.D., Mazlan, A.G. and Gires Usup.2009. Toxicity of Puffer Fishes (<i>Lagocephalus wheeleri</i> Abe, Tabeta and Kitahama, 1984 and <i>Lagocephalus sceleratus</i> Gmelin, 1789) from the East Coast Waters of Peninsular Malaysia. <i>Journal of Biological Sciences</i> 9(5):482-487. 2. Mazlan, A.G. and Rohaya, M. 2008. Size, growth and reproductive biology of the giant mudskipper, <i>Periophthalmodon schlosseri</i> (Pallas, 1770) in Malaysian Waters. <i>Journal of Applied Ichthyology</i> 24(3): 290-296. 3. Simon, K.D, Mazlan, A.G. 2008. Length-weight and length-length relationships of archer and puffer fish species. <i>Open Fish Science Journal</i> 1: 19 – 22. 4. Simon, K.D., Mazlan, A.G., Cob, Z.C, Samat, A and Arshad, A. 2008. Age determination of archer fishes (<i>Toxotes jaculatrix</i> and <i>Toxotes chatareus</i>) inhabiting Malaysian estuaries. <i>Journal of Biological Science</i> 8(6) 1096-1099.



Additional Information	Linkages: Inst. Of East China Sea, Univ. of Nagasaki (research visit and research collaboration); Queensland University (research meeting); Australia Museum, Australia (research meeting on Archer fish bio-ecology)
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Enviromental and Natural Resources Sciences, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number	Office: 03-8921 3202 H/p: 019-326 6263/013-343 6263
e-Mail	magfish05@yahoo.com/mag@ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Development of Low Cost Aero-platform Airborne Testing of Avionics System
Project Number	04-01-02-SF0134
Project Leader and Team Members	Leader: Norbahiah Misran Members: Mohd. Marzuki Mustafa and Hilmi Sanusi
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	An innovative aero-platform for airborne testing of avionics system in real flight situation is developed. A ground station is also developed to communicate with the aero-platform. This project has the potential to support Malaysian SMI aerospace companies since this is a low-cost system to facilitate testings of avionic systems in airborne condition.
Publications/Products/ Outcomes	Proceeding/Conference/Seminar: 1. Mohammad Tariqul Islam, Mohammed NazmusShakib, Norbahiah Misran, BaharudinYatim. 2009. Modify EH microstrip patch antenna for Wireless Communications.2009 <i>IEEE International Conference on Networking, Sensing and Control (IEEE ICNSC 2009)</i> , 26-29 March, 2009, Japan.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Electrical, Electronic & Systems Engineering, Faculty of Engineering & Built Environment, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Distribution and Diversity of NRPS and PKS-I Genes in Marine Actinomycete Isolates from Malaysia
Project Number	04-01-02-SF0144
Project Leader and Team Members	Leader: Asmat Ahmad Members: Mohd Noor Mat Isa and Gires Usup
Field of Research	Marine Sciences
Project Summary/ Objectives	Marine Actinomycete isolates have been screened for the presence of NRPS and PKS-1 genes. Variability of the NRPS and PKS-1 genes among the marine Actinomycetes have been detected. Marine Actinomycete Isolates which carried the NRPS and PKS-1 genes have been identified.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Development of Advanced Pulse Jet Heating System Aerospace Applications
Project Number	04-01-02-SF0165
Project Leader and Team Members	Leader: Rozli Zulkifli Members: Shahrir Abdullah, Kamaruzzaman Sopian and Mohd. Zaki Nuawi
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	The performance and efficiency of the pulse air jet heating system was studied and evaluated. The experimental results were compared with the theoretical models and to further optimise the system.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Zulkifli,R., Sopian,K., Abdullah, S. and Takriff, M.S. 2009. Experimental study of flow structures of circular pulsating hot air jet. <i>American Journal of Engineering and Applied Sciences</i> 2(1): 171-175. 2. Zulkifli,R., Sopian,K., Abdullah, S. and Takriff, M.S. 2009. Comparison of local nusselt number steady and pulsating circular jet at reynolds number of 16000. <i>European Journal of Scientific Research</i> 29(3): 369-378. 3. Zulkifli,R., Sopian,K., Abdullah, S. and Takriff, M.S. 2009. Comparison of local nusselt number between steady and pulsating jet at different jetreynolds number. <i>WSEAS Transactions on Environment and Development</i> 5(5): 384- 393. 4. Zulkifli,R., Sopian,K., Abdullah, S. and Takriff, M.S. 2008. Effect of pulsating circular hot air jet frequencies on local and average nusselt number. <i>American Journal of Engineering and Applied Sciences</i> 1(1): 58-62. 5. Rozli Zulkifli and Kamaruzzaman Sopian. 2007. Studies on pulse jet impingement heat transfer: Flow profile and effect of pulse frequencies on heat transfer. <i>International Journal of Engineering and Technology</i> 4(1): 86-94. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Zulkifli,R., Sopian,K., Abdullah, S. and Takriff, M.S. 2009. Flow structures of circular air jet at steady and different pulsating frequency.<i>Proceeding International Engineering Convention (INTEC 2009)</i>, 11-13 May 2009, Syria.



	2. Zulkifli,R., Sopian,K., Abdullah, S. and Takriff, M.S. 2009. Correlations between local nusselt number and reynolds number steady and pulsating circular jet. <i>Proceeding International Engineering Convention (INTEC 2009)</i> , 11-13 May 2009, Syria.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (\$2S)

Project Title	Biodiversity and Ecology of Invertebrate Fauna Associated with Seagrass Beds at Pulau Tinggi, Mersing, Johor and Adjacent Waters
Project Number	04-01-02-SF0172
Project Leader and Team Members	Leader: Ramlan Omar Members: Wan Mohd Lotfi Wan Muda and Che Abd. Rahim Mohamed
Field of Research	Marine Sciences
Project Summary/ Objectives	The biodiversity of the invertebrate community associated with different microhabitats in seagrass ecosystem was determined. Since little study has been done on recent distribution patterns of aminifera and ostracoda in this region, this research contributes to the documentation of the species under study in Malaysia. The bioiversity data generated from this project would be useful to many geologists, environmentalplanners and petroleum agencies among others. In addition, the data may be useful for the management and implementation objectives of the international conventions and also in the exploration of gas and petroleum. It will also be very useful to the government in formulating conservation and management plans for the coastal areas.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Innovative Identification of Soniferous Fishes Spawning Habitat using Passive Hydroacoustic Technique
Project Number	04-01-02-SF0180
Project Leader and Team Members	Leader: Mazlan Abd. Ghaffar Members: Shahriman Mohd Ghazali and Abdullah Samat
Field of Research	Marine Sciences
Project Summary/ Objectives	Several fish sound were successfully characterised and catalogued. The spawning habitats of two major fish species have been identified based on bioacoustic sound produced by crockers and cat fish in Port Klang and Matang Mangrove forest. This project has the potential to be commercialised through the development of fish sound detection kits that will eventually identify the species of fishes in the study areas.
Publications/Products/ Outcomes	Proceeding/Conferences/Seminars: <ol style="list-style-type: none"> 1. Shahriman, M.G., Nurulhuda, M.P. and Mazlan A.G. 2008. Underwater ambient biological sounds from the larut matang mangrove est reserve. <i>Proceeding IOC/ WESTPAC International Scientific Symposium</i>, 21-23 May 2008, Kota Kinabalu. 2. Nurulhuda, M.P. Suhaila, I., Shahriman, M.G. and Mazlan A.G. 2008. Sound production and characterization of the estuarine catfish <i>Arius sagor</i>. <i>Proceeding IOC/ WESTPAC International Scientific Symposium</i>, 21-23 May 2008, Kota Kinabalu.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Modelling and Determination of Ionospheric Effects on GNSS Measurements
Project Number	04-01-02-SF0191
Project Leader and Team Members	Leader: Mardina Abdullah Members: Hafizah Husain, Mahamod Ismail and Norbahiah Misran
Field of Research	Engineering Sciences
Project Summary/ Objectives	This project studies the ionospheric effects on GNSS measurements/positioning through ray-tracing and involves parametric identification. The ionospheric effects, in terms of signal delay/advance, on both stand-alone and relative GPS measurement globally are determined. An ionospheric error-correcting model is developed for GPS measurements using a dual frequency receiver with several single frequency (L1) receivers. Results show some improvement in carrier phase ambiguity resolution and data processing quality.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. NorsuzilaYa'acob, Mardina Abdullah and Mahamod Ismail. 2009. GPS Vertical Total Electron Content (TEC) Dual Frequency Technique and TEC Map at Ionosphere Layer Using Malaysian Data. <i>International Conference on Future Computer and Communication (ICFCC 2009)</i>, 3-5 April 2009, Kuala Lumpur. 2. NorsuzilaYa'acob, Mardina Abdullah and Mahamod Ismail. 2009. Multipath Mitigation of Global Positioning System (GPS) Signal Using Wavelet Technique. <i>International Conference on Digital Image Processing (ICDIP 2009)</i>, 7-9 Mar 2009, Bangkok. <p>Journals:</p> <ol style="list-style-type: none"> 1. NorsuzilaYa'cob, Mardina Abdullah and Mahamod Ismail. 2008. Determination of GPS total electron content using single layer model (SLM) ionospheric mapping function. <i>International Journal of Computer Science and Network Security</i> 8(9):154-160. 2. Abdullah, M., Strangeways, H.J. and Zulkifli, S.S.N. 2010. Ionospheric differential error determination using ray tracing for a short baseline. <i>Advances in Space Research</i> 46:1326-1333.



Awards/Certificates	1. 4th Malaysian International Seminar on Antarctica (MISA) 2008 : Third prize in poster Field of Research
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Tracing Anthropogenic Contamination in the Malaysian Estuarine and Marine Environment Using Sewage Derived Sterols
Project Number	04-01-02-SF0193
Project Leader and Team Members	Leader: Masni Mohd Ali Member: Che Abd. Rahim Mohamed
Field of Research	Marine Sciences
Project Summary/ Objectives	Research of anthropogenic contamination in an area of Kuala Selangor (the chosen study area), Selangor was carried out using lipid biomarkers which are sewage derived sterols. All of the objectives have been achieved which included determination of the horizontal and vertical distribution of sewage derived sterols and assessment of the anthropogenic impact towards the study area. Two types of samples were collected from the study area: surface sediment samples (34 sampling stations) and core sediment samples (4 sampling stations). Research done in the laboratory involved two main steps; samples extraction, which includes the process of reflux, liquid-liquid separation and derivatisation; and then followed by the sterols quantification using GC-MS. 4 main sewage derived sterols have been quantified; cholesterol, coprostanol, epicoprostanol and cholestanol. The data obtained in the form of concentrations for each compound were analysed using sewage contamination indexes. However, based on the concentration of each sterol and index calculated, the study area is deemed not contaminated with sewage even though sewage derived sterols were present in the area.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Ali, M.M., Humrawali, N. and Latif, M.T. 2010. Variation and Sources of Sterols in Kuala Selangor, Selangor. <i>SainsMalaysiana</i>39(3):377-385. 2. Humrawali, N., Kwan, Y.L., Latif, M.T., Zakaria, M.P. and Ali, M.M. 2010. Composition and Sources of Fatty Alcohols in Estuarine Sediments of Sungai Kapar, Selangor. <i>SainsMalaysiana</i>39(1):21-30. 3. Humrawali, N., Latif, M. T. and Ali, M.M. 2010. Coprostanol as Sewage Indicator: A Case Study in Kuala Selangor, Selangor. <i>Health and the Environment Journal</i> 1(1):46-50.



4. Ali, M.M., Humrawali, N. and Latif, M. T. 2009. Phytosterols Composition in Surface Sediment of Kuala Selangor, Selangor, Malaysia. *European Journal of Scientific Research* 33(1):187-194.
5. Humrawali, N., Lee Kwan, L., Latif, M. T., Mohamed, C.A.R. and Ali, M.M . 2009. Taburan alkohol lemak di dalam sampel sedimen muara Sungai Kapar, Selangor. *The Malaysian Journal of Analytical Sciences* 13(1):36-43

Proceedings/Conferences/Seminars:

1. Humrawali, N., Ali, M.M. and Latif, M. T. 2009. Peranan sterol sebagai penunjuk bio-lipid bagi bahan organik di Kuala Selangor, Selangor, Malaysia. *Prosiding Seminar Kimia Bersama UKM-ITB VIII*, 9-11 Jun 2009, Bangi.
2. Humrawali, N. and Ali, M.M. 2009. Kenalpastian sumber bahan organik menggunakan sebatian sterol di Kuala Selangor, Selangor. *Prosiding Kolokium Siswazah Ke-9*, Fakulti Sains dan Teknologi, UKM, 24-25 Jun 2009, Bangi.
3. Humrawali, N., Ali, M.M. and Latif, M. T. 2009. Sewage derived sterols in Kuala Selangor, Selangor, Malaysia. *Proceedings of The Second UKM-UI Joint Seminar 2009*, 22-23 Jun 2009, Bangi.
4. Humrawali, N., Latif, M. T. and Ali, M.M. 2008. Coprostanol as sewage indicator: A case study in Kuala Selangor, Selangor. *Proceedings of the National Conference on Environment & Health 2008*, 29-30 Oct 2008, Kota Bharu.
5. Humrawali, N., Latif, M. T. And Ali, M.M. 2008. Distribution of Phytosterols (sitosterol, stigmasterol and campesterol) in sediment samples of Kuala Selangor, Selangor. *Proceedings of the 10th MSAB Symposium*, 6-8 Nov 2008, Kuching.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Implementing Integrated Water Resources Management (IWRM) in Malaysia: Multistakeholder and Multidisciplinary Approach
Project Number	04-01-02-SF0343
Project Leader and Team Members	Leader: Mazlin Mokhtar Members: Mohd Talib Latif, Tan Kok Weng, Mohd. Ekhwan Toriman, Lee Yook Heng and Abdul Hamid Jaafar
Field of Research	Environmental Sciences
Project Summary/ Objectives	In this study, the findings of earlier researches on water resources management of the Pahang River Basin and Langat River Basin were successfully consolidated. The findings are utilised in the proposed IWRM strategic plan. This strategic plan is developed based on SWOT analysis and 16 activities are being proposed for the Pahang River Basin. In addition, the Langat River Basin social learning concept towards IWRM approach is developed based on the Langat community background. An IWRM indicator system and monitoring manual consisting of 13 indicators is developed. These indicators are for measuring the level of achievement in the implementation of the IWRM strategic plan for the Pahang River Basin.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Tan Kok Weng and Mazlin Mokhtar. 2009. An appropriate institutional framework towards integrated water resources management in Pahang River Basin, Malaysia. <i>European Journal Of Scientific Research</i> 27(4) : 536-547. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Tan Kok Weng and Mazlin Mokhtar. 2009. Issues and challenges towards integrated river basin management in Cameron Highlands, Malaysia. <i>Proceeding Paper On International Conference on Water Resources</i>, 26-27 May 2009, Langkawi. 2. Tan Kok Weng, Mazlin Mokhtar and Mazlina Mahmud. 2009. Challenges towards sustainable challenges towards sustainable water resources management in Cameron Highlands. <i>Proceeding Paper On 1st Conference On Water Chemistry and Health</i>, 24-25 Nov 2009, Putrajaya.



	3. Rahmah Elfithri, Mazlin B. Mokhtar, Abdul Hadi Harman Shah and Shaharudin Idrus. 2008. Collaborative decision making within the context of integrated water resources management in Langat River Basin, Malaysia. <i>7th World Wide Workshop Young Environmental Scientists</i> , 13 -16 May 2008. Créteil. (Val-de-M).
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Groundwater Ecosystem: The Impact of Groundwater Abstraction to Land Stability in Langat Basin
Project Number	04-01-02-SF0377
Project Leader and Team Members	Leader: Jasni Yaakub Members: Habibah Jamil, Marlinda Abd. Malek and Rohayu Che Omar
Field of Research	Environmental Sciences
Project Summary/ Objectives	The regional variation in ground settlement in the Langat Basin was measured and monitored. The relationship between groundwater abstraction and land subsidence in the study area was determined. A simulation model of the relationship (reduction in groundwater level and land subsidence) is developed. A strategic plan managing the potential impact of groundwater exploitation on land subsidence was proposed. Outputs of this study (groundwater – land subsidence model and recommended strategic plan to manage the impacts of groundwater exploitation) should be utilised and considered by the relevant agencies (such as JMG, SYABAS and the Department of Town and Country Planning) in their plan to develop the area.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Jasni Yaakub. 2009. Environmentally sensitive areas groundwater resources. International Conference on Sustainability 2009, 5-7 January 2009, Mauritius. 2. Jasni Yaakub and Marlinda Abd Malek. 2008. <i>Impact of groundwater abstraction to land stability in the Langat Basin, IEM Monthly Meeting</i>, 25-28 June 2008, Kuala Lumpur. 3. Jasni Yaakub and Farah Edziani Miasin. 2007. Groundwater recharge in Sungai Semenyih, <i>Seminar on Bio-Engineering, Ecosystem and Species Assessment</i>, 8-9 December 2007, Bangi 4. Jasni Yaakub. 2009. Ground settlement due to groundwater exploitation in Langat Basin Aquifer. <i>International Conference Science and Natural Resources</i>, 23-24 November, Bali. 5. Jasni Yaakub. 2010. Groundwater water flow and land subsidence in Langat Basin Aquifer. <i>Seminar on Environment and Geophysics</i>, 6 Jan 2010, Bangi.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Landscape Ecological Assessment of Protected Areas in Peninsular Malaysia Sustainable Management Planning
Project Number	04-01-02-SF0378
Project Leader and Team Members	Leader: Saiful Arif Abdullah Members: Abdul Malek Mohd Yusof, Shukor Md.Nor, Mohd Hasmadi Ismai and Norhayati Ahmad
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	Data on spatial distribution, composition and configuration of landscape elements of each protected area studied in three years; 1988, 1996 and 2005 (2007 Krau Wildlife Reserve) were established. The fragmentation level and spatial processes in each study site were also developed based on landscape metrics (indices) calculated using FRAGSTAT 3.3 software. Current conservation status of protected areas was reviewed. The reviewed outcome was synthesised and is in the process to be published in Research Monograph. The classification of the sixteen sites was achieved based on data obtained in this studies. The results of this project will be made available to the main stakeholders i.e. Department of Wildlife and National Park, Malaysia via planned seminars and series of discussions between researchers and the Department's personnel. Through these activities, the Department's personnel will gain better understanding about the importance of the results and how it can be incorporated and accommodated into planning and management of the protected areas.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Mohamad Imam Hasan Reza and Saiful Arif Abdullah. 2011.Regional Index of Ecological Integrity: A need for sustainable management of natural resources. <i>Journal of Ecological Indicators</i> 11(2):220-229. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Abdullah,S.A. 2009. Conservation Status of Wildlife Protected Area in Peninsular Malaysia: An Assessment Based on Landscape Approach. <i>CDU-UKM-UNIMAS Regional Symposium and Workshop on Sustainable Natural Resource Management</i>, 23-24 April 2009, Bali.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Development of Robust Single Outlier Detection Procedure Non-linear Time Series Data
Project Number	04-01-02-SF0407
Project Leader and Team Members	Leader: Azami Zaharim Members: Zulkifli Mohd Nopiah, Haliza Othman, Ibrahim Mohamed, Mohamad Said Zainol and Mohd Sahar Yahya
Field of Research	Mathematical Sciences
Project Summary/ Objectives	The characteristics of the different types of outliers in non-linear time series data were identified and determined. The test statistics of the different types of outliers was formulated and derived. The performance and robustness of the procedure for detecting the outliers was evaluated. The procedure that has been developed was validated applying and comparing simulated data with actual environmental data.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Azami Zaharim, Rafizah Rajali, Raden Mohamad Atok, Ibrahim Mohamed and Khamisah Jafar. 2009. A Simulation Study of Additive Outlier in ARMA (1,1) Model. <i>International Journal of Mathematical Models and Methods in Applied Sciences</i> 2(3): 162-169. 2. Azami Zaharim, Ibrahim Ahmad, Ibrahim Mohamed and Mohd Sahar Yahaya. 2007. Detection Procedure for a Single Additive Outlier and Innovational Outlier in a Bilinear Model. <i>Pakistan Journal.stat.oper.res.</i> 3(1):1-5. 3. Azami Zaharim, Siti Meriam Zahid, Mohammad Said Zainol, Ibrahim Mohamed and Kamaruzaman Sopian. 2009. Modeling the Kuala Lumpur Composite Index (KLCI). <i>European Journal of Scientific Research</i> 25(3): 499-512. ISSN 1450-216X 4. Zaharim, A., Abdullah, S., Ibrahim, M. & Yahya, M.S. 2008. An evaluation of test statistics for detecting level change in BL (1,1,1,1) models. <i>WSEAS Transactions on Mathematics</i> 2(7): 67-70. 5. Azami Zaharim, Rafizah Rajali, Raden Mohamad Atok, Kamarulzaman Ibrahim, Ahmad Mahir Razali. 2009. A Study on the Nature of an Additive Outlier in ARMA(1,1) Models. <i>European Journal of Scientific Research</i> 32(3):362-368



	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Azami Zaharim, Siti Meriam Zahid, Mohammad Said Zainol and Ibrahim Mohamed. 2008. Modeling Volatility of the KLCI Daily Returns. <i>Communications & Information Technology 2008, Circuits, Systems and Signals 2008, Applied Mathematics, Simulation, Modelling 2008</i>, 1-3 June 2008, Greece. 2. Azami Zaharim, Siti Meriam Zahid, Mohammad Said Zainol, Ibrahim Mohamed. 2008. Finding Critical Region for Testing the Presence of Additive Outlier (AO) in GARCH (1,1) Processes by the Method of Simulation. <i>Selected Papers from: Communications & Information Technology 2008, Circuits, Systems and Signals 2008, Applied Mathematics, Simulation, Modelling 2008</i>, 1-3 June 2008, Greece. 3. Azami Zaharim, Siti Meriam Zahid, Mohammad Said Zainol and K. Sopian. 2009. Detection of Level Change (LC) Outlier in GARCH (1,1) Processes. <i>Proceedings of the 8th WSEAS Int. Conf. On Non-Linear Analysis, Non-Linear Systems and Chaos</i>, 1-3 Jul 2009, Spain. 4. Azami Zaharim, Rafizah Rajali and Kamarulzaman Ibrahim. 2008. Using Robust Outlier Detection To Identify Possible Flood Events. <i>Proceedings of the 7th WSEAS International Conference on System Science and Simulation In Engineering (ICOSSSE '08)</i>, 21-23 Nov 2008, Venice. 5. Kamarulzaman Ibrahim, Rafizah Rajali, Azami Zaharim. 2008. On the Detection of Outliers for Water Levels of Langat River. <i>The 1st WSEAS International Conference on Multivariate Analysis and its Application in Science and Engineering (MAASE '08)</i>, 27-30 May 2008, Turkey. <p>Others:</p> <ol style="list-style-type: none"> 1. Siti Meriam Zahid, 2009. Development of Test Statistics for Detecting Outliers in GARCH (1,1) Processes. PhD. Thesis. Universiti Kebangsaan Malaysia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Development of High Resolution 3D Hydrodynamic Model of Water Circulation and Oceanographic Conditions along Peninsular Malaysia's Eastern Continental Shelf
Project Number	04-01-02-SF0412
Project Leader and Team Members	Leader: Fredolin Tangang@Tajudin Mahmud Members: Liew Ju Neng and Mohd Salmi Md Noorani
Field of Research	Marine Sciences
Project Summary/ Objectives	3D Model of the southern part of South China Sea was developed. Climatological features and oceanographic processes were also simulated. This project provides understanding of the various oceanographic processes such as insight on the mixing process and roles of tides. Some knowledge and understanding on the response of the ocean during extreme condition, i.e. during cold surges when surface winds are higher is gained.
Publications/Products/ Outcomes	Journal: 1. Liew Juneng, Mohd Talib Latif, Fredolin T. Tangang and Haslina Mansor. 2009. Spatio-temporal characteristics of PM10 concentration across Malaysia. <i>Atmospheric Environment</i> 43(30): 4584-4594.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Investigation of the Relative Influence of ENSO and Indian Ocean Dipole (IOD) Phenomena on Inter-annual Climate Variability in Malaysia
Project Number	04-01-02-SF0413
Project Leader and Team Members	Leader: Fredolin Tangang@Tajudin Mahmud Member: Liew Ju Neng
Field of Research	Marine Sciences
Project Summary/ Objectives	The relative influence of IOD and ENSO phenomena on inter-annual climate variability in Malaysia and the mechanisms and roles of regional ocean-atmosphere interaction in these phenomena were successfully investigated. Studies were also done on the predictability of anomalous rainfall and temperature in Malaysia associated with ENSO and IOD.
Publications/Products/ Outcomes	Article: 1. Juneng, L. and Tangang, F. T. 2010. Long-term trends of winter monsoon synoptic circulations over the maritime continent: 1962–2007. <i>Atmospheric Science Letters</i> 11: 199–203.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	New Techniques Rapid Toxicity Evaluation and Bioassay of Wastewater
Project Number	04-01-02-SF0418
Project Leader and Team Members	Leader: Salmijah Surif Members: Mazlin Mokhtar and Lee Yook Heng
Field of Research	Environmental Sciences
Project Summary/ Objectives	Bioassay method for the evaluation of toxicity of wastewater was successfully developed using multispecies approach. Fish, prawn, higher plants, lower plant (algae) and bacteria were utilised to assess wastewater toxicity. Biosensors using algae and genetically modified bacteria device were also developed. The blue green algae <i>Anabaena toluosa</i> and <i>Selenastrum capricornutum</i> and genetically modified <i>E. Coli</i> were successfully immobilised on to suitable matrices and tested for their effectiveness to measure the toxicity of the wastewaters. Collection of data on environmental toxicity of wastewater in Malaysia has been initiated after the detection system was optimised. The knowledge obtained in this project will be beneficial to the Department of Environment as an enforcement body for regulation of toxic wastewaters, as well as to industrial partners who may be interested to take up the technology if regulatory enforcements of wastewater toxicity are put in place.
Publications/Products/ Outcomes	Journal: 1. Jaffar Y. M. Alkassasbeh, Lee Y. Heng and Salmijah Surif. 2009. Toxicity Testing and the Effect of Landfill Leachate in Malaysia on Behavior of Common Carp (<i>Cyprinus carpio</i> L., 1758; Pisces, Cyprinidae). <i>American Journal of Environmental Sciences</i> 5(3): 209-217.
Awards/Certificates	International Invention, Innovation and Technology Exhibition 2008 (ITEX) KLCC, Malaysia : 1 Gold Award
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	New Derivation on Classical Problems of Analytic Univalent Functions via Operator Defined on Hilbert Space
Project Number	04-01-02-SF0425
Project Leader and Team Members	Leader: Maslina Darus Members: Abd Ghafur Ahmad, Suzeini Abdul Halim, Alawiah Ibrahim and Ahamad Shabir Saari
Field of Research	Mathematical Sciences
Project Summary/ Objectives	The connection between an analytic univalent function and functional analysis is successfully defined. The appropriateness/uniqueness of embedding the class univalent/multivalent functions in functional analysis is identified. The properties and sharp growth operators defined on Hilbert space is determined. However the application of Hilbert space in energy and electronics is not attempted.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. K. Al-Shaqsi and M, Darus. 2007. On certain class of analytic functions with negative coefficients for operator on Hilbert space. <i>Far East Journal of Math. Sciences</i> 26(3): 737-747. 2. F, Ghanim and M, Darus. 2008. On new subclass of analytic p-valent functions. <i>International Journal Contemp. Math Sciences</i> 3(3): 119-129. 3. F, Ghanim and M, Darus. 2008. On new subclass of analytic p-valent functions with negative coefficients for operator on Hilbert space. <i>International Math Forum</i> 3(2): 69-77. 4. Alawiyah Ibrahim, Shigeyoshi Owa, Maslina Darus and Yayoi Nakamura. 2008. Generalization of Salagean Operator for certain analytic functions. <i>Banach J. Math. Analytic</i> 2(2): 16-22. 5. Maslina Darus and Khalifa Al-Shaqsi. 2008. Differential Sandwich theorems with generalised derivatives operator. <i>International J Computational and Mathemics Sciences</i> 2(2): 75-78. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Maslina Darus and Khalifa Al-Shaqsi. 2008. Certain problems on Hilbert space_ICMS 2008. <i>International Conference on Mathemics and Statistics</i>, 25-27 April 2008, Italy.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	An Innovative Biomarker Technique Aquatic Pollution Assessment Using Freshwater Chironomid
Project Number	04-01-02-SF0428
Project Leader and Team Members	Leader: Ahmad Abas Kutty Members: Mohammad Shuhaimi Othman and Salmijah Surif
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	One of the most potential agent bioindicators is identified as <i>Chironomus javanus</i> and has been cultured in the laboratory. In order to determine various chironomids biomarker response to heavy metal contaminations, three metals (Pb, Zn and Ni) were used and a chironomid's response to each metal at different concentrations was successfully recorded. Chironomid was found only to be very sensitive to nickel (Ni) and specific response was developed for Ni contamination assessment. It was found that biomarker species did not produce an appropriate signal response to lead (Pb) and copper (Cu). The outcome of this work can be used to develop a fast heavy metal contamination assessment technique to help control water pollution. Chironomids are expected to produce very fast response signal to recognise metal pollution and the signal can be translated into alarm signal and create warning. This approach will be useful for water quality monitoring such as in water intake management and industrial wastewater management.
Publications/Products/ Outcomes	Journal: 1. Ahmad Abas Kutty, Mohd Shuhaimi Othman, Mohd Barzani Ghasim and Sambau Dugat. 2009. <i>Kepelbagaian ikan di Tasik Chini, Pahang, Malaysia. Sains Malaysiana</i> 35 (8): 625-630. 2. Ahmad, A.K., M. Shuhaimi-Othman and S. Sarif. 2011. Determination of <i>Chironomus javanus</i> behavior using multifreshwater biomonitor (MFB). <i>Asian Journal of Water and Environmental Pollution</i> 8(1): 33-40.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Investigation of Maritime Weather System and Development of High-resolution Rainfall Prediction System in Malaysia Regions Based on the PSU/NCAR 5th Generation Mesoscale Model
Project Number	04-01-02-SF0437
Project Leader and Team Members	Leader: Liew Ju Neng Members: Fredolin Tangang@Tajudin, Mastura Mahmud and Abdul Ghapor Hussin
Field of Research	Marine Sciences
Project Summary/ Objectives	Studies have shown that the characteristics of Borneo vortex and northeasterly cold surge wind during the winter monsoon have changed over, approximately, the last 50 years. This will have great impact on our winter monsoon rainfall behaviour. The proposed NWP prototype was developed and run in our own computing cluster as opposed to the suggestion of running it on the MIMOS supercomputer facilities due to a temporary offline of the MIMOS supercomputer facilities for hardware upgrading. convenience consideration, we decided to develop and test the NWP prototype on our own small cluster computer. In addition, we had also developed a statistical winter rainfall forecasting scheme in collaboration with researchers from Asia-Pacific Climate Center (APCC). The MM5 modeling system is already running and is used by MMD to guide the daily weather prediction. As for the statistical prediction scheme, an effort is currently being undertaken by APCC and UKM to transfer the GCM forecast values to UKM to be stored and be used to drive the statistical scheme.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Juneng, Liew, Fredolin T. Tangang, Hongwen Kang, Woo-Jin Lee, Yap Kok Seng, 2010. Statistical downscaling forecasts for winter monsoon precipitation in Malaysia using multimodel output variables. <i>J. Climate</i> 23: 17–27. 2. Liew Juneng and Fredolin T. Tangang. 2010. Long-term trends of winter monsoon synoptic circulations over the maritime continent: 1962–2007. <i>Atmospheric Science Letters</i> 11(3): 199-203. 3. Juneng, L. and Tangang, F.T. 2008. Level and source of predictability of seasonal rainfall anomalies in Malaysia using canonical correlation analysis. <i>International Journal of Climatology</i> 28(9): 1255-1267.



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Biogeographic Analysis of Marine Macrophytes Using Geographic Information Systems (GIS)
Project Number	04-01-03-SF0177
Project Leader and Team Members	Leader: Jillian Ooi Lean Sim Members: Wong Ching Lee , Phang Siew Moi and Rosmadi Fauzi
Field of Research	Marine Sciences
Project Summary/ Objectives	In order to develop marine biogeography in Malaysia, sea grass and seaweed records were georeferenced and analysed geographically. The maps for seaweeds and sea grasses in Malaysia was successfully produced. The ArcGIS database containing spatial reference and attribute data of all marine macrophytes from the 1980s to 2009 was developed. Based on the distribution patterns of seaweeds in Malaysia, it appears that Pulau Pinang, Pulau Redang and Pulau Tioman are high diversity areas for seaweeds. Furthermore, cluster analysis indicates a limited exchange of seaweed species between the east and west coast of Peninsular Malaysia, and also between Peninsular Malaysia and East Malaysia. New seagrass and seaweed records were also found during field surveys in Pulau Tioman and Pulau Tinggi.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Du Hai Lian, Jillian Ooi Lean Sim, Rosmadi Fauzi and Phang Siew Moi. 2008. Spatial patterns of seaweed distribution in Malaysia using GIS. <i>Sun Yat-sen University- University of Cincinnati Geoinmatics'2008</i>, 28-29 June 2008, China. 2. Rosmadi Fauzi, Jillian Ooi Lean Sim, Phang Siew Moi and Wong Ching Lee. 2008. Seaweed Mapping of Pulau Tioman using GPS Survey Data and GIS Techniques, AWI Exhibition– climate change mitigation & adaptation strategies (CCMAS) in conjunction with the International Year Planet Earth (IYPE) 3. Rosmadi Fauzi, Jillian Ooi Lean Sim, Du Hai Lian & Phang Siew Moi. (2008). Mapping the Spatial Distribution of Seaweed in Malaysia Using Geographic Information System, The South China Sea, Sustaining Ocean Productivities, Maritime Communities and The Climate 25-29 November 2008



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Study on Seawater Intrusion and Evolution of Protection Strategies Coastal Erosion
Project Number	04-01-03-SF0181
Project Leader and Team Members	Leader: Ramani Bai V. Members: Faisal Ali and Ahmad Jamaluddin Shaaban
Field of Research	Environmental Sciences
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ramani Bai, V, P, Sumiani Yusoff and S. Mohan (2007). Groundwater resource management by Hydraulic simulation of groundwater flow using Visual Modflow. Land-use & natural resources: context of disaster reduction and sustainability, National Institute Of Disaster Management, Ministry of Home Affairs. 2. Ramani Bai, V and Mohan, S (2007). Conjunctive use in operation of reservoir Irrigation using Artificial Neural Networks. Proc. of International Conference on Water Resource Management: Challenges and Opportunities in the 21st Century, 23-25 Apr'07, Department of Ecology & Environmental Science <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ramani Bai. V, Faisal Haji Ali Alhaj and Zamin Jumaat Alhaj (2007). Nonlinear parameter estimation technology to detect seawater intrusion into the West Malaysian groundwater aquifers. International PECIPTA'07, KLCC, Malaysia, Aug 10-12. 2. Ramani Bai, V, S. K. Pramada and Faisal Haji Ali Alhaj (2007). An improved method of prediction of seawater intrusion using Visual Modflow. Proc. of Bicentennial International conference of the Geological Society of London, 10-12 Sep'07, Queen Elizabeth II Conference Centre, London, UK.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	A study on the Carbon-sulphur-nitrogen Fluxes During Experimental Burning of Tropical Biomass
Project Number	04-01-03-SF0187
Project Leader and Team Members	Leader: Nik Meriam Nik Sulaiman Member: Mohamed Kheireddine Aroua
Field of Research	Environmental Sciences
Project Summary/ Objectives	The original objective of the project is to determine the carbon-sulphur-nitrogen fluxes during the burning of biomass commonly found in the tropics and in Malaysia. The results obtained will be used to develop an inventory and model the emission of greenhouse gases during periods of natural burning of biomass such as mass clearing of ests/peat land that can lead to episodes of haze, particularly under favourable dry meterological condition.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nasrin Aghamohammadi, Nik Meriam Nik Sulaiman, and Mohamed Kheireddine Aroua "Impacts of biomass burning, regional haze episode on the South East Asia: A Review Study" <i>International conference on natural resources and environmental management and environmental safety and health (NREM & ESH)</i>. 27-29. 2. Nasrin Aghamohammadi, Nik Meriam Nik Sulaiman, and Mohamed Kheireddine Aroua (2009) "Characteristic of volatile organic carbon emission from open burning of tropical biomass" <i>15th regional symposium on chemical engineering in conjunction with 22nd symposium of Malaysian chemical engineers</i> 2 - 3 December 2009. <p>Journals:</p> <ol style="list-style-type: none"> 1. Baroutian S., Aroua M.K, Raman, A.A., Sulaiman N.M.M. 2009. Viscosities and Densities of Binary and Ternary Blends of Palm Oil + Palm Biodiesel + Diesel Fuel at Different Temperatures. <i>Journal of Chemical and Engineering Data (ISI/SCOPUS Cited Publication)</i> 2. Baroutian S, Aroua M.K, Raman, A.A., Nik Sulaiman N.M. (2009). RBD Palm Oil-Based Methyl/Ethyl Esters. Accepted for publication in <i>Journal of Palm Oil Research</i>. (ISI-Cited Publication)

	3. Gulnaziya, A. Aroua, M. K. and Sulaiman, N. M. (2010). Study on palm shell activated carbon adsorption capacity to remove copper ions from aqueous solutions. Desalination, Vol. 262, Issues 1-3, Nov 2010, pp. 94-98.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Reconstruction of Paleoclimate in Malaysia and Its Surrounding from Late Pleistocene to Present: Speleothem, Karst Landscape and Cave Waters from the Peninsular
Project Number	04-01-03-SF0192
Project Leader and Team Members	Leader: Ros Fatihah Muhammad Members: Ismail Yusoff, Lee Chai Ping, Mohd. RaihanTaha, NurBakhiahBaharim, Nor HidayahMasuari, YasaminKh Ibrahim and Kevin Cannariato
Field of Research	Earth Sciences
Project Summary/ Objectives	The objective of the project includes construction of quantitative high resolution and well-dated records of atmospheric variability in Peninsular Malaysia and its immediate surroundings over the course of Late Pleistocene by analysing speleothems and to determine the controlling factors on the monsoon precipitation variation using high-resolution 230Th-dated stalagmites oxygen isotope record from caves and comparing it with current precipitation using rainwater and cave waters. Besides, it was also intended to determine if major climatic events such as the ElNino Southern Oscillation and other events during the Late Pleistocene to the present are recorded inPeninsular Malaysia's stalagmites as well as to identify and ecast future climatic changes by studying the local climatic change and compare it globally.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Investigating Bacteria Mediated Carbon Fluxes in Tropical Coastal Waters
Project Number	04-01-03-SF0194
Project Leader and Team Members	Leader: Lee Choon Weng Member: Ng Ching Ching
Field of Research	Marine Sciences
Project Summary/ Objectives	Studies were successfully made to determine the factors affecting marine bacterial growth efficiency and the significance of grazing and viral lysis towards marine bacterial mortality. The prevalence of grazing resistant bacteria i.e. culturable bacteria in coastal waters.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Lee, C.W., Ng, A.Y.F., Narayanan, K., Sim, E.U.H. and Ng, C.C. 2009. Isolation and characterization of culturable bacteria from tropical coastal waters. <i>Ciencias Marinas</i> 35(2): 153-167. 2. Bong, C.W. and Lee, C.W. 2008. Nearshore and offshore comparison of marine water quality variables measured during SESMA 1. <i>Malaysian Journal of Science</i> 27(3): 25-31. 3. Lee, C.W. and Bong, C.W. 2008. Bacterial abundance and production and their relation to primary production in tropical coastal waters of Peninsular Malaysia. <i>Marine and Freshwater Research</i> 59(1): 10-21. 4. Lee, C.W., Bong, C.W. and Hii, Y.S. 2009. Temporal variation of bacterial respiration and growth efficiency in tropical coastal waters. <i>Applied and Environmental Microbiology</i> 75(24): 7594-7601.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	1.4 GHz Hydrogen Line Radio Astronomical Survey
Project Number	04-01-03-SF0198
Project Leader and Team Members	Leader: Zamri Zainal Abidin Member: Zainol Abidin Ibrahim
Field of Research	Physical Sciences
Project Summary/ Objectives	Ten brightest radio sources in the Milky Way were observed and their dynamics were measured. It was found that the 21cm emission between sources was apparent and the top 3 sources were the most Hydrogen dense objects. In an attempt to study the interference, 5 main sites were evaluated and the best site was found to be Langkawi. Some aspects of the telescope building was learned from collaboration and purchase/installation of the main instruments.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Zamri Zainal Abidin, Patrick Leahy and Althea Wilkinson. 2008. The Cross Polarization Analysis of the Planck Satellite Main Beam. <i>Jurnal Sains</i> 16(1): 23. 2. Zamri Zainal Abidin and Zainol Abidin Ibrahim, 2008. Radio Astronomy in Malaysia. <i>Thai Journal of Physics Series</i> 3:198. 3. Abidin Z.Z., Ibrahim Z.A., Syed Adnan S.B.R. and Anuar, N.K. 2009. Investigation of Radio Astronomical Windows Between 1 Mhz - 2060 Mhz In Universiti Malaya, Malaysia. <i>New Astronomy</i> 14: 579-583. 4. Abidin Z.Z., Bahari S.B.R.S and Ibrahim Z.A. 2010. RFI Profiles of prime candidate sites for the first radio astronomical telescope in Malaysia. <i>New Astronomy</i> 15:307-312. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Zamri Zainal Abidin and Zainol Abidin Ibrahim. 2007. Radio Astronomy in Malaysia. <i>Thai Physics Congress</i>, 23-24 April 2007, Bangkok. 2. Z.Z. Abidin, R.A. Battye, R.D. Davies and J.Weller. 2008. Virialized Dark matter Halos Study with the First Malaysian Radio Astronomical Telescope. <i>Konvensyen Astronomi</i>, 18-21 July 2008, Pulau Pinang.

	<ol style="list-style-type: none"> 3. Zamri Zainal Abidin, Zainol Abidin Ibrahim, Syed Bahari Ramadan, Norwati Khairul Anuar, Noor Hafizah Khairul Anuar, Richard Battye, Rod Davies and Jochen Weller. 2009. Radio Astronomy in Malaysia with UMRT-1 and UMRT-2. <i>International Meeting on Frontiers of Physics</i>, 12-16 Jan 2009, Genting Highland. 4. Zamri Zainal Abidin and Zainol Abidin Ibrahim. 2009. Radio Astronomy in Malaysia: Past, Present and Future. <i>South East Asian Astronomy Meeting for Working Group Radio Astronomy</i>, 2-3 June 2009, Thailand.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Runge-Kutta Nystrom Method Solving Higher Order Ordinary and Delay Differential Equations Directly
Project Number	04-01-04-SF0024
Project Leader and Team Members	Leader: Fudziah Ismail Member: Norazak Senu
Field of Research	Mathematical Sciences
Project Summary/ Objectives	Two new Runge-Kutta Nystrom methods solving special second order differential equations were derived. Computer programming (Codes) based on the methods were developed and used to validate the methods using a standard set of test equations. Stability polynomials and stability regions of the methods were also obtained.
Publications/Products/ Outcomes	Journals: 1. Jawias, NIC., Ismail. F, Suleiman.M, and Jaafar.A, 2009. Diagonally implicit runge-kutta fourth order four-stage method linear ordinary differential equations with minimized error norm. <i>Journal of Fundamental Sciences</i> 5:69-78. 2. Ismail.F. 2009. Sixth order singly diagonally implicit runge-kutta nystrom method with an explicit first stage solving second order ODEs. <i>European Journal of Scientific Research</i> 26:470-479.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Determination of Persistent Organic Pollutants (POPs) in Malaysian sedimentary environments and development of Sediment Quality Criteria (SQC) hydrocarbons coastal waters
Project Number	04-01-04-SF0092
Project Leader and Team Members	Leader: Mohamad Pauzi Zakaria Members: Salmijah Surif and Mohd. Bakri Ishak
Field of Research	Environmental Sciences
Project Summary/ Objectives	The persistent organic pollutants (POPs) concentrations in Malaysian sedimentary environment were successfully determined. The POPs concentrations in Malaysian aquatic environment with global standards were compared and a special molecular technique in tracing pollution in marine environment was developed.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Bakhtiar, A.R., Zakaria, M.P., Yazis, M.I., Lajis, M.N., Xinhui, B. and Rahim, M.C.A. 2009, Vertical Distribution and Sources Identification of Polycyclic Aromatic Hydrocarbon in Anoxic Sediment Cores of Chini Lake, Malaysia: Perylene as Indicator of Land Plant-derived Hydrocarbons, <i>Applied Geochemistry</i> 24 (9): 1777-1787. 2. Bakhtiar, A. R., Zakaria, M. P., Yazis, M. I., Lajis, M. N., Xinhui, B. and Rahim, M. C. A. (2008), Spatial distribution of petroleum hydrocarbons in sediments of major rivers from East Coast of Peninsular Malaysia. <i>Coastal Marine Science</i>, 2008, 32 (1) : 9-18. <p>Postgraduate Proceedings:</p> <ol style="list-style-type: none"> 1. Distribution of alkanes, hopanes and polycyclic aromatic hydrocarbons (PAHs) in selected sediments in Sarawak River and Kota Kinabalu River, East Malaysia. <i>Proceedings of postgraduate colloquium semester 2 2008/2009</i>, 13-16 April 2009. 2. Distribution of linear alkylbenzenes (LABS) in selected sediments of Sarawak River Kuching and Kota Kinabalu River. <i>Proceedings of postgraduate colloquium semester II 2008/2009</i>, 13-16 April 2009.



	<p>3. Distribution and sources of polycyclic aromatic hydrocarbons (PAHs) in mangrove sediments in Negeri Sembilan coastal areas. <i>Proceedings of Postgraduate colloquium semester 2 2008/2009</i>, 13-16 April 2009.</p> <p>4. Distribution and sources of poly aromatic hydrocarbons (PAHs) in fresh and processed meat (lamb, buffalo and chicken), fish and mussels in Malaysia. <i>Proceedings of postgraduate colloquium semester 2, 2008/2009</i>, 13-16 April 2009.</p> <p>Others:</p> <p>1. Zakaria, M.P. 2006. The Improvement of Mussel watch Effects of Species, and Seasonal and Spatial Variation on Contaminant Concentration in Mussels. <i>R&D Bulletin Institute of Bioscience</i> 4(2): 12-15.</p> <p>2. MahuaSaha, Ayako Togo, KaorukoMizukawa, Michio Murakami, Hideshige Takada, Mohamad P. Zakaria, Nguyen H. Chiem, Bui CachTuyen, Maricar Prudente, Ruchaya Boonyatumanond, Santosh Kumar Sarkar, Badal Bhattacharya, Pravakar Mishra, Touch SeangTana. 2009. Sources of sedimentary PAHs in tropical Asian Waters: Diffrentiation between pyrogenic and petrogenic sourcers by alkyl homolog abundance. <i>Marine Pollution Bulletin</i> 58(2):189-200.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Developing a Code Solving Directly Higher Order Ordinary Differential Equations (ODES) Using the Multistep Method in the Backward Difference Mulation
Project Number	04-01-04-SF0099
Project Leader and Team Members	Leader: Mohamed Suleiman Members: Zarina Bibi Ibrahim, Zanariah Abdul Majid and Khairil Iskandar Othman
Field of Research	Mathematical Sciences
Project Summary/ Objectives	The analysis on the convergence and stability of MSBD method was successfully investigated and analysed. The MSBD code solving stiff and nonstiff ODE was validated. The comparison of performance of MSBD code with other codes was also done.
Publications/Products/ Outcomes	Conference: Paper titled 'Partitioning Ordinary Differential Equations Using Block Multistep mulas' was presented in 'The International Conference on Applied Mathematics and Numerical Analysis AMNA 2008, Paris, France.
Awards/Certificates	1. International award
IP Status	Copyright
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Development of Airbone-based Ground Penetrating Radar System Soil Moisture Mapping of Agriculture Fields
Project Number	04-01-04-SF0118
Project Leader and Team Members	Leader: Jumiah Hassan Members: Kamel Ariffin Mohd, Zulkifly Abbas and Noor Akma Ibrahim
Field of Research	Engineering Sciences
Project Summary/ Objectives	The project objectives are to map soil moisture in an entire agricultural field, to develop clutter reduction algorithm, to reduce low probability of false alarm while maintaining a maximal probability of detection and to develop a helicopter hard-mounted ground penetrating radar system and finally to design, fabricate and test the performance of the antenna system.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Abas, Z., Vahdati, S., Kajani, M.T. and . Atan, K.A.M. 2009. New construction of wavelets base on floor function. Applied Mathematics and Computation 210:473-478. 2. Abbas, Z., Vahdati, S. Atan, K.A. and Nik Long, N.M.A. 2009.Legendre Multi-Wavelets direct method for linear integro-differential equations. Applied Mathematical Sciences 3: 693-700. 3. Abbas, Z., Vahdati, S.,Ismail, F. and Dizicheh, A.K. 2010. Application of homotopy analysis method for linear integrodifferential equation. International Mathematical Forum 5: 237-249. 4. Yeow, Y.K., Abbas, Y.K., Khalid, A.K. and Fah, K.N. 2009. Improved formulation for admittance of thin and short monopole driving from coaxial line into dissipative media. IEEE Antennas and Wireless Propagation Letters 8:1246-1249. 5. Jusoh, A., Abbas, Z., Azmi, B.Z., .Hassan, J. Meng, C.E. and Ahmad, A.F. 2011.A simple procedure to determine complex permittivity of moist materials using standard commercial coaxial sensor. Measurement Science Review 11(1):19-22.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Exposure Assessment of Mercury and Methyl Mercury in Fish
Project Number	04-01-04-SF0380
Project Leader and Team Members	Leader: Jinap Selamat Members: Fatimah Abu Bakar and Jamilah Bakar
Field of Research	Environmental Sciences
Project Summary/ Objectives	The correlation between mercury and methyl mercury in different fish species (marine and fresh water) commonly consumed in Malaysia and the effects of processing on mercury and methyl mercury content in fish products were successfully determined. A method in reducing mercury and methyl mercury from fish products was developed. Estimation was also made on the dietary exposure to mercury and methyl mercury in human.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Hajeb, P., Jinap, S., Ismail, A., Fatimah, A.B., Jamilah B.A and Abdul Rahim, M. 2009. Assessment of mercury level in commonly consumed marine fishes in Malaysia. <i>Journal of Food Control</i> 20(1): 79-84. 2. Parvaneh, H., Jinap, S., Ahmad, I., Fatimah, A.B. and Jamilah, B., Hanifah, N.I. 2008. Hair mercury level of coastal communities in Malaysia: A linkage with fish consumption. <i>European Food Research and Technology</i> 227(5): 1349-1355 3. P. Hajeb, S. Jinap. 2009. Effects of washing pretreatment on mercury concentration in fish tissue. <i>Journal of Food Additives and Contaminants</i> 26(10): 1354–1361. 4. P. Hajeb, S. Jinap, A. Ismail, A. B. Fatimah, B. Jamilah. 2009. Optimizing conditions for methylmercury extraction in fish samples using response surface methodology. <i>Journal of Food Additives and Contaminants</i> 26 (6): 829-838. 5. Parvaneh Hajeb, Jinap Selamat, Ahmad Ismail, Fatimah Abu Bakar, and Jamilah Bakar, Hanifah Nuryani Iloe. 2008. Hair Mercury Level of Coastal Communities in Malaysia: A Linkage with Fish Consumption. <i>European Food Research and Technology</i> 227:1349–1355.



	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Hajeb, P., Jinap, S., Ismail, A., Fatimah.A.B, and Jamilah, B. 2006. Mercury level in commonly consumed marine fishes in Malaysia. <i>Proceedings of Agriculture Congress</i> 12-15 Dec 2006., Putrajaya. 2. P. Hajeb, S. Jinap. Fatimah, A.B. Jamilah, B. 2008. Hair mercury levels in relation to fish consumption. <i>First European Food Congress</i> 4-9 Nov 2008, Slovenia.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Development of Biological Indicators Based on Tropical Marine Copepod Biodiversity in Coastal Waters of the Straits of Malacca
Project Number	04-01-04-SF0418
Project Leader and Team Members	Leader: Fatimah Md Yusoff Members: Hazel Monica Matias-Peralta, SafuraSaad, Heidi Jane de Guzman and ZulikhaZakariya
Field of Research	Biological Sciences
Project Summary/ Objectives	The changes of copepod species biodiversity in disturbed and polluted areas compared to the pristine ecosystems were evaluated. The temporal and spatial distribution of copepod species in relation to the ecosystem disturbance was determined. The specific copepod species as the biological indicators of the different environmental conditions of the coastal waters was identified.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Rezai, H., Yusoff, F.M. and Othman, B.H.R. 2009. Abundance and composition of zooplankton in the Straits of Malacca. <i>Aquatic Ecosystem Health and Management</i> 12 (3):264–270. <p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. Heidi, J.G., Fatimah, M.Y., Safura, S., H.M.P. and Mariana, N. S., Distribution of different developmental stages of the chaetognath <i>Sagittaregularis</i> and <i>Aidanosagittaneglecta</i> in the coastal waters off an industrial area in the Straits of Malacca. <i>The 4th VAST-JSPS Joint Seminar on Coastal Marine Science</i>, 26-28 Oct 2009, HaiPhong, Vietnam. 2. SafuraSaad, Fatimah Md Yusoff, Hazel Monica Peralta, Yap Chee Kong and Mohamed Shariff. Heavy Metal contents in Zooplankton, water and sediments in polluted and unpolluted coastal waters of the Straits of Malacca. <i>The 4th VAST-JSPS Joint Seminar on Coastal Marine Science</i>, 26-28 Oct 2009, HaiPhong, Vietnam. 3. Hazel Monica Peralta and Fatimah Md Yusoff, Temporal change in abundance and biomass of tropical marine copepod community in shallow coastal waters off mangrove ecosystems. <i>Fundamental Science congress 2009 "Accelerating Research Excellence"</i>, 17-18 Jun 2009, UPM, Selangor.



	<ol style="list-style-type: none"> 4. Hazel Matias-Peralta, Fatimah Md Yusoff and Eleena Daud. The Influence of Tropical Monsoon on the copepod Composition and Abundance on the Shallow Coastal Waters off a Mangrove Forest Reserve. <i>International Conference on Marine Ecosystem 2009</i>, 26-28 May 2009, Awana Porto Malai, PulauLangkawi. 5. Safura Saad, Fatimah Md Yusoff and Hazel Matias-Peralta. Temporal changes od Copepods Zooplankton in the Coastal Water off a Mangrove Area in Kuala Juru, Penang. <i>International Conference on Marine Ecosystem 2009</i>, 26-28 May 2009, Awana Porto Malai, PulauLangkawi. 6. Nur Zulikha Zakariya, Fatimah Md Yusoff and Hazel Matias-Peralta. Marine Copepod Labidocerajavaensis (Copepoda, Calanoida, Pontellidae) a New Record from the Coastal Waters of the Straits of Malacca. <i>International Conference on Marine Ecosystem 2009</i>, 26-28 May 2009, Awana Porto Malai, Pulau Langkawi. 7. Heidi Jane Guzman, Fatimah Md Yusoff and Safura Saad. Variability on the Distribution of Matured Stages of the Chaetognath Sagittaregularis in Two Different Mangrove Ecosystems along the Straits of Malacca <i>International Conference on Marine Ecosystem 2009</i>, 26-28 May 2009, Awana Porto Malai, PulauLangkawi.
Awards/Certificates	<ol style="list-style-type: none"> 1. 3rd Biology Colloquium, An update in Biological Sciences: 1 Silver Award. 2. 3rd Biology Colloquium, An update in Biological Sciences: 1 Bronze Award.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Multi-dimensional Evaluation of Coastal Areas Sustainable Development Using GIS
Project Number	04-01-04-SF0432
Project Leader and Team Members	Leader: Mohd Ibrahim Mohamed Member: Mohammad Firuz Ramli
Field of Research	Environmental Sciences
Project Summary/ Objectives	The most important criteria rapid assessment of the coastal areas were identified and the potential of coastal areas further development while maintaining the quality of the environment was evaluated. A new methodology rapid assessment of coastal zones based on multi-criteria techniques and GIS was developed. Finally, a preliminary software rapid evaluation of the coastal zone planning purposes was successfully developed.
Publications/Products/ Outcomes	Conference: 1. Mohamed, M. I. <i>6th International Symposium & Exhibition Geoinmation/GNSS 2007</i> , 5-7 Nov 2007, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Forward Scattering Radar Biodiversity Conservation Monitoring System
Project Number	04-01-04-SF0488
Project Leader and Team Members	Leader: Raja Syamsul Azmir Raja Abdullah Members: Mohd Fadlee A Rasid, Borhanuddin Mohd Ali and Nor Kamariah Noordin
Field of Research	Engineering Sciences
Project Summary/ Objectives	A laboratory prototype of FSR system that is capable of not only to detect target, but also can classify target category was successfully developed.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mohamed Khalaf Alla.H.M and RSA Raja Abdullah, Detection of Ground Target in Forward Scattering RADAR Using Hilbert transform and Wavelet technique. 2009. <i>International Review of Electrical Engineering</i> 4(2): 320-326. 2. N.K. Ibrahim, R.S.A Raja Abdullah and M.I. Saripan, “Artificial Neural Network Approach in Radar Target Classification”. 2009. <i>Journal of Computer Science</i> 5(1): 23-32. 3. Mutaz Salah, MFA Rasid, M cherniakov and RSA Raja Abdullah. Speed Estimation in Forward Scattering Radar using Standard Deviation method. 2008. <i>Canadian Center of Science and Education (CCSE)</i> 3(3): 16-26. 4. Mohamed Khalaf Alla Hassan, Raja Syamsul Azmir, MF A.Rasid and Mutaz salah Mohamed. Target Detection in Forward Scattering Radar. 2008. <i>Pertanika Journal of Science and Technology (JST)</i> 17 (2): 201-210. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Raja Abdullah R.S.A., Rasid M.F. A., Azis M.W. and Mohamed Khalafalla., 2007.Target prediction in ward scattering radar. <i>IEEE ASIA–PACIFIC Conference on Applied Electromagnetics</i>, 4-6 Dec 2007, Melaka. 2. Mohamed K.H, M Cherniakov, MF A Rasid, RSA Raja Abdullah. 2010. Automatic Target Detection using Wavelet Technique in Forward Scattering Radar European Microwave Week. <i>European Radar Conference Amsterdam</i>, 27-28 Sept 2010, Paris.

	<ol style="list-style-type: none"> 3. Mutaz Salah, RSA Raja Abdullah, MF A Rasid, Mohamed Khalafalla. 2008. Speed Estimation in Forward Scattering Radar. <i>IASTED International Conference Malaysia</i>, 2-4 April 2008, Langkawi. 4. RSA Raja Abdullah, MF A. Rasid, MW Azis and Mohamed Khalafalla. 2010. Target Prediction in Forward Scattering Radar IEEE. <i>ASIA-PACIFIC Conference on Applied Electromagnetics Malaysia</i>, 9-11 Nov 2010, Port Dickson. 5. RSA Raja Abdullah, MF A.Rasid, A Ismail, Mutaz Sadiq and Mohamed Khalafalla. 2009. Speed Estimation and Target Detection in Forward Scattering Radar. <i>Global Knowledge Forum Saudi Arabia</i>, 6-7 July 2009, Saudi Arabia. 6. RSA Raja Abdullah, M. I. Saripan and M. Cherniakov, . 2007. Neural Network Based for Automatic Vehicle Classification in Forward Scattering Radar International RADAR. <i>Conference United Kingdom</i>. 15-17 Oct 2007, Edinburgh.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Design and Development of Radio Frequency (RF) Front-end a Wireless Receiver or Transceiver
Project Number	04-01-04-SF0494
Project Leader and Team Members	Leader: Sudhanshu Shekhar Jamuar Members: Mohd Nizar Hamidonand Roslina Mohd Sidek
Field of Research	Engineering Sciences
Project Summary/ Objectives	This fully-integrated, single-chip solution can contribute to personal communications devices with low power consumption, low cost and small m factor. The expected output from this project is a single chip containing radio frequency (RF) front end wireless receiver or transceiver capable of operating at low power consumption. Depending upon the nature of the specifications of each building block, some of the circuits are composed from subcircuits, which are designed to operate at low voltages. If these subcircuits can be designed to operate at low voltages, then the circuits in which they are used can be expected to operate at low voltages, thus dissipating low power.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Rahimi, M. and Sudhanshu, S. K.. 2007. Design, simulation and modeling of RF MEMS inductor with high Q factor. <i>IEEE Regional Symposium on Microelectronics</i> , 3-6 Dec 2007, Penang. 2. Varahram, P., Jamuar, S.S., Mohammady, S., Hamidon, M.N. and Khatun, S. 2007. Power amplifiers linearization based on digital pre-distortion with memory effects used in CDMA applications. <i>European Conference on Circuit Theory and Design 2007, ECCTD 2007</i> , 27-30 Aug 2007, Seville.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Performance of a Stormwater Storage-infiltration System
Project Number	04-01-04-SF0602
Project Leader and Team Members	Leader: Abdul Halim Ghazali Members: Thamer Ahmed Mohammed and Ratnasamy Muniandy
Field of Research	Engineering Sciences
Project Summary/ Objectives	One of the adverse effects of development is the increase in stormwater surface run-off when the increased paved areas cannot allow the water to infiltrate and/or be naturally stored, resulting in the increased susceptibility to flooding in urban areas. It is widely accepted that storage and infiltration of stormwater run-off can help to reduce the negative impact. However, in highly developed areas it is extremely difficult to construct these facilities in conventional ways as they require large land tracts. This study has been carried out to evaluate a method to utilise a facility commonly found in urban areas, i.e. the parking lot for the purposes of stormwater storage and infiltration. This research makes use a stormwater storage-infiltration system which has been developed in UPM to construct a parking lot and evaluate its performance. The research findings indicate that the system performs its intended functions in terms of reducing the surface run-off and also sustaining load from vehicles.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Abdullah, A.N. Al-Hamati, Ghazali, A.H. and Mohammed, T. 2010. Adetermination of storage volume required in a subsurface stormwater detention/retention system. <i>Journal of Hydro-Environmental Research</i> 4(1):47-53. <p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. Ghazali, A.H. and Al-Hamati, A.A.N. 2007. Ponding and drainage time of stormwater runoff in a developed sub-surface detention system. <i>World Engineering Congress</i>, 5 -9 Aug 2007, Penang. <p>Product :</p> <p>Modular Stormwater Blocks</p>
IP Status	Malaysian Utility Innovation Application No.:UI2006 4728



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Wireless Geocoding Road Accidents Reporting System Using Location Based Services (LBS)
Project Number	04-01-04-SF0603
Project Leader and Team Members	Leader: Ahmad Rodzi Mahmud Members: Helmi Zulhaidi Mohd Shafri, Mohammed Mustafa and Ehsan Zarrin Bashar
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project was focused on investigating and designing a wireless geocoding approach using location based services using open source software alternative to be used as platm development the mobile and middleware. A middleware handling police data communication regarding accident management and after accident management by integrating web services, geospatial database management systems and GIS functionalities was developed. The current road accident database model according to the standards of geospatial database management systems and LBS dynamic content was constructed. Mobile-GIS software LBS and middleware model handling and process web services dynamic content transactions as well as digital police recording road accident with predetermined data regarding the location were developed.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mahmud, A.R. and Zarrinbashar, E. 2008. Intelligent GIS- Based Road Accident Analysis and Real-Time Monitoring Automated System using WiMAX / GPRS, <i>International Journal of Engineering</i>, 2(1): 1-7. 2. Mahmud, A.R., Mohd Shafri, H.Z., Al-Habshi, M.M., Elost, A.,K. 2006. Open source portable WEB-GIS based Server. <i>Journal of The Malaysian Surveyor</i> 40 (4): 37-42. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Irwan, R.R., Mahmud, A.R., Mohd Shafri, H.Z., Al-Habshi, M.M. 2008. Application of PDA and GIS technology in construction industry. <i>Proceedings of 7th International Symposium and Exhibition on Geoinformation</i>, 13-15 Oct 2008, Kuala Lumpur. 2. Zarrinbashar, E., Mahmud, A.R. 2008. GIS-Based accident analysis and real-time monitoring system using WiMAX, <i>ICEE 2008</i>, 27-31 July 2008, Hungary.



	<p>3. Zarrinbasha, E., Mahmud, A.R. 2007. GIS-Based decision making tool for road accident data of Kuala Lumpur by customizing ArcGIS using ArcObjectsTM. <i>Proceedings of Joint International Symposium and Exhibition on Geoinformation 2007 & International Symposium on GPS/GNSS</i>, 5-7 Nov 2007, Johor Bahru.</p> <p>4. Habshi, M.M., Mahmud, A.R., Shafri, M.Z. 2007. Database wireless synchronization in location based services for road accident data collection. <i>Location Asia 2007 Conference</i>, 13-14 Sept 2007, Hong Kong.</p> <p>5. Habshi, M., Mahmud, A.R., Helmi Z. M. S. 2006. The application of Personal Digital Assistant (PDA) in telegeoinformatics: Basic Concepts and Recommendations. <i>9th International Research/Expert Conference, Trends in the Development of machinery and Associated Technology</i>, 26-30 Sept 2006, Turkey.</p>
Awards/Certificates	Exhibition of Invention, Research and Innovation 2009: 1 Silver Medal, 1 Bronze Medal
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Design of a Multi-standard Base Band Digital Transceiver using Software Defined Radio (SDR)
Project Number	04-01-04-SF0604
Project Leader and Team Members	Leader: Alyani Ismail Members: Borhanuddin Mohd Ali, Sabira Khatun and Sudhanshu Shekhar Jamuar
Field of Research	Engineering Sciences
Project Summary/ Objectives	This project examined the design and development of a multi standard protocol SDR baseband digital transceiver. The result of a multi standard protocol achieved two development objectives: The reusability of software different protocols can be easily reached; The SDR software framework changes the configuration to provide different service within two different protocols (CDMA and TDMA). The project would achieve these objectives by: (i) Enable text-based files to create VHDL source codes CDMA and TDMA protocols; (ii) To design, develop, simulate and synthesize fully tested codes CDMA and TDMA protocols; (iii) To test and verify the designed prototype the SDR baseband digital transceiver.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Mohamed, K.A., Ali, B.M., Jamuar, S.S., Sabira, K., Alyani, I. Design of a multistandard multi-band protocol SDR base band transceiver. <i>8th IEEE Malaysia International Conference on Communications (MICC 2007)</i> , 14 - 17 May 2007, Penang, Malaysia. 2. Mohamed, K.A., Ali, B.M., Jamuar, S.S., Sabira, K., Alyani, I. 2007. A software defined radio approach digital CDMA transmitter. <i>Proceedings of the 4th International Conference on Cybernetics and Information Technologies, Systems and Applications (CITSA 2007)</i> , 12-15 July 2007, Orlando, Florida.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Developing Precision Environmental Management Utilising Green Plot Ratio, Human Activities Phenomena and Physical Development Aspect in Achieving Sustainable Living Environment
Project Number	04-01-04-SF0674
Project Leader and Team Members	Leader: Ahmad Makmom Abdullah Members: Marzuki Ismail and Azizi Muda
Field of Research	Environmental Sciences
Project Summary/ Objectives	In order to determine environmental factors affecting Urban Comt Zone, Green Plot Ratio, and Physical Developments predicting spatial and temporal effects of atmospheric composition, land uses and Leaf Area Index on urban thermal comt, a database which includes emission inventory land use and LAI on urban thermal comt was established. Leaf Area Index from Normalize Difference Vegetation Index used as a valuable tool in modeling the Green Plot Ratio in Kuala Lumpur urban area was determined and LAI-NDVI relationship Green Plot Ratio modeling was produced. An integrated model MM5-SMOKE-CMAQ system and Urban Comt Expert System was successfully established.
Publications/Products/ Outcomes	Journal: 1. Chng, L.K., Abdullah, A.M., Sulaiman, W.N.Z. and Ramli, M.F 2009. The effects of improved land use on meteorological modeling in Klang Valley Region Malaysia. <i>Environment Asia</i> 3(1):127-133.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Evaluation of slope stability in Pos Selim to Simpang Pulai Highway Using Remote Sensing Technique
Project Number	04-01-04-SF0676
Project Leader and Team Members	Leader: Mohammad Firuz Ramli Members: Helmi Zulhaidi Mohd Shafri and Norhakim Yusof
Field of Research	Environmental Sciences
Project Summary/ Objectives	The project was focussed on to demarcate the type, extent and nature of past and potential landslides using analyses of satellite imagery, aerial photographs, digital elevation model and field mapping. Factors of landslides initiation in Pos Selim-Simpang Pulai Highway were determined and the method of historical and current remote sensing data such as aerial photographs and satellite imagery landslide studies was developed
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Ramli, M.F., Tripathi, N.K., Shafri, H.M.Z., Ali Rahman, Z. and Yusof, N. 2009. Lineament mapping in a tropical environment using Landsat imagery. International Journal of Remote Sensing 30(23): 6277-6300. 2. Ramli, M.F., Yusof, N., Yusoff, M.K., Juahir, H., Misman, M.A. and Shafri, H.Z.M. 2010. Comparison between topographic expression of RADARSAT and DEM in Simpang Pulai to Pos Selim, Malaysia. Environment Asia 3: 93-97. 3. Ramli, M.F., Yusof, M.F., Yusoff, M.K., Juahir, H. and Shafri, H.Z.M. 2010. Lineament mapping and its application in landslide hazard assessment. A review. Bulletin of Environmental and Engineering Geology 69:215-233.
Awards/Certificates	Angkasa Publication Award 2009: 2nd Place
Additional Information	International Linkages: Asian Institute of Technology, Bangkok.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Ocean Transboundary Pollution as a Potential Threat to National Security: Determination and Characterisation of Fate and Transport
Project Number	04-01-04-SF0681
Project Leader and Team Members	Leader: Mohamad Pauzi Zakaria Member: Che Abd. Rahim Mohamed
Field of Research	Environmental Sciences
Project Summary/ Objectives	In the present project, transboundary pollutants were determined, qualified and quantified. The transboundary pollutants within Malaysian environments were characterised and the fate and transport pathways of transboundary pollutants were determined
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Bahry, P.S., Zakaria, M.P. Abdullah, A.M., Abdullah, D., Sakari, M., Chandru, K. and Shahbazi, A. 2009. Forensic characterization of polycyclic aromatic hydrocarbons and hopanes in aerosols from Peninsular Malaysia. <i>Environment Forensics</i>, 10(3):240-252. 2. Yuko, O., Hideshige, T., Kaoruko, M., Hisashi, H., Satoru, I., Satoshi, E., Yukie, M., Mahua, S., Keiji, O., Arisa, N., Michio, M., Nico, Z., Ruchaya, B., Mohamad, P.Z, Le Quang, D., Miriam, G., Carlos, M., Satoru, S., Charles, M., Hrisi, K. K. et al. 2009. International Pellet Watch: Global monitoring of persistent organic pollutants (POPs) in coastal waters. 1. Initial phase data on PCBs, DDTs, and HCHs 58 (10): 1437-1446. 3. Emma, L.T., Jovita, M.S., Detlef, R.U. K., Morton, A.B., Susanne, J., Annika, B., Steven, J.R., Richard, C.T., Tamara, S.G., Rei, Y., Daisuke, O., Yutaka, W., Charles, M., Pham, H.V., Touch, S.T., Maricar, P., Ruchaya, B., Mohamad, P.Z., Kongsap, A., Yuko, O., Hisashi, H., Satoru, I., Kaoruko, M., Yuki, H., Ayako, I., Mahua, S., Hideshige, T. 2009. Transport and release of chemicals from plastics to the environment and to wildlife. <i>Philosophical Transactions of the Royal Society B: Biological Sciences</i> 364: 2027-2045. <p>Others:</p> <ol style="list-style-type: none"> 1. Kuhan, C., Mohamad, P.Z., Sofia, A., Azadeh, S., Mahyar, S., Pourya, S.B., Che Abd Rahim, M. 2008. Characterization of alkenes, hopanes, and polycyclic

	<p>aromatic hydrocarbons (PAHs) in tar-balls collected from the East Coast of Peninsular Malaysia. <i>Marine Pollution Bulletin</i> 56(5):950-962.</p> <p>2. Mahua, S., Ayako, T., Kaoruko, M., Michio, M., Hideshige, T., Mohamad, P.Z., Nguyen H. Chiem, Bui CachTuyen, MaricarPrudente, RuchayaBoonyatumanond, Santosh Kumar Sarkar, Badal Bhattacharya, Pravakar Mishra and Touch SeangTana . 2009. Sources of sedimentary PAHs in tropical Asian waters: Differentiation between pyrogenic and petrogenic sources by alkyl homolog abundance, <i>Marine Pollution Bulletin</i> 58(2): 189-200.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Determination of Impact of Land Use - Land Cover Changes on Flood Hydrology of Pahang River Basin
Project Number	04-01-04-SF0686
Project Leader and Team Members	Leader: Wan Nor Azmin Sulaiman Members: Mohd Noor Bidin, Ali Heshmatpoor and Mohd hafiz Rosli
Field of Research	Environmental Sciences
Project Summary/ Objectives	Studies focusing on the impact of land use - land cover change on flood hydrology of the Pahang River Basin was able to delineate 16 sub-basins within GIS environment. The land use changes between 1984 to 2004 were also identified. The physical and hydrological databases of each sub-basin that are important current state condition of the sub-basin towards hydrologic analysis and a rainfall runoff model the whole catchment were established. The sub-basin sensitive to land use land cover change in terms of flooding was identified and a new flood lag time casting the basin was established. Cooperation with JPS on the possibility of transferring the method to other basins in Malaysia is planned.
Publications/Products/ Outcomes	Conferences: 1. Rosli, M. H., Sulaiman, W. N. A. and Samah, M. A. A. 2008. Selected Morphology Characteristic of Pahang Basin Based on GIS Analysis. <i>Int. Conference On Environmental Research and Technology 2008 (ICERT)</i> , 28-30 May 2008, Penang.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 6732 wannor@fsas.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Development of a Three Dimensional Numerical Model of the Strait of Malacca Simulating Pollutant Flushing Capacity
Project Number	04-01-04-SF0687
Project Leader and Team Members	Leader: Zelina Zaiton Ibrahim Member: Mohd Ibrahim Mohamad
Field of Research	Marine Sciences
Project Summary/ Objectives	<p>The general project objective was to develop a 3-dimensional numerical ocean model Malaysian coastal seas and to provide an alternative to expensive commercial models. However the Princeton Ocean Model (POM) application in the Straits of Malacca was not developed successfully. Prototype model was found to be unstable and the cause of instability in time was not identified. In the attempt to simulate circulation, material transport and travel paths to estimate pollutant flushing capacity, the circulation patterns as well as transport paths were identified and flushing capacity was estimated from secondary data analysis. However it was unable to compare the models. The knowledge obtained from this project can be used to provide training course to Coastal Engineering units of Drainage and Irrigation Department and National Hydraulic Research Institute of Malaysia on ocean data analysis and visualization.</p>
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Amiruddin, A. M., Ibrahim Z.Z. and Ismail, S. A., 2011. Water mass characteristics in the Strait of Malacca using Ocean Data View, <i>Research Journal of Environmental Sciences</i> 5: 49-58. <p>Conference:</p> <ol style="list-style-type: none"> 1. Ibrahim, Z. Z., 2009. Invited Country Representative Presentation: First Brainstorming Workshop of WESTPAC Drafting Group on Regional Science Plan, IOC/WESTPAC, 25-26 August 2009, Bangkok. <p>Other:</p> <ol style="list-style-type: none"> 1. Amiruddin, A. M. and Ibrahim, Z. Z. 2008. Water Mass in Malacca Strait Using Ocean Data View: Universiti Putra Malaysia. M. Sc. Thesis.



Additional Information	International Linkages: Collaboration with Prof Tetsuo Yanagi, Director Research Institute of Applied Mechanics, Kyushu University, Japan; Participation in JSPS Multilateral Core University Project on Oceanography in Asian Coastal Seas, coordinated by Ocean Research Institute, University of Tokyo; Contribution to International Oceanographic Commission (IOC) Western Pacific Regional Strategic Plan.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Forecasting Land-based Pollution Loads to Estimate Marine Pollution in the Malaysian Seas to the Year 2020
Project Number	04-01-04-SF0688
Project Leader and Team Members	Leader: Zelina Zaiton Ibrahim Member: Shattri Mansor
Field of Research	Environmental Sciences
Project Summary/ Objectives	The general objective of the project was to develop a methodology assessing pollutant loading into the coastal area via estuaries. A procedure assessment of sediment and organic pollutant loading suitable use in Malaysian conditions was developed. A calculation module the estimation of the pollutant loads was mulated. The finding of this project can be transfered to the relevant parties through workshop on the application of the method.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Al-Shuely, W., Z.Z. Ibrahim, A. Al-Kindi, S. Al-Saidi, T. Khan, F.A. Marikar and M. Al-Busaidi. 2009. Heavy metals contents on beach sediments North and South of sohar industrial area, Oman. J. <i>Environmental Science, Technology</i> 2: 73-79. <p>Conferences:</p> <ol style="list-style-type: none"> 1. Z. Z. Ibrahim. 2007. Rapid Estimation of Pollutant Load to Coastal Waters from Land-based Sources using a Simple Model. <i>NRCT-JSPS Marine Science Seminar. Material Transport in the Coastal Sea of Southeast Asia</i>, 8-9 Feb 2007, Sichang Island, Thailand. 2. Z. Z. Ibrahim. 2007. A Simple Catchment to Coastal Pollutant Load Model. <i>LIPI-JSPS Joint Seminar on Coastal Marine Science</i>, 3-5 Aug 2007, Yogyakarta, Indonesia.
Additional Information	<p>International Linkages: Collaboration with Prof Tetsuo Yanagi, Director Research Institute of Applied Mechanics, Kyushu University, Japan; Participation in JSPS Multilateral Core University Project on Oceanography in Asian Coastal Seas, coordinated by Ocean Research Institute, University of Tokyo. Collaboration with Sultan Qaboos University, Oman.</p> <p>Commercialisation: Consultancy services provided for Department of Irrigation and Drainage for catchment to coast pollutant load model application.</p>



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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Quantitative Determination of PCBs, Dioxins, and Furans in Marine Fish from Straits of Malacca
Project Number	04-01-04-SF0782
Project Leader and Team Members	Leader: Azrina Azlan Members: Amin Ismail, Nor Azam Ramli and Muhammad Rizal Razman
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The concentration of PCBs, PCDDs and PCDFs in marine fish samples was determined. The sufficiency of current legal requirement on the safety of marine fish was successfully identified.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Muhammad Rizal Razman and Azrina Azlan. 2009. Safety Issues related to PCDDs and PCDFs in fish & shellfish in relation with current Malaysia law. <i>Journal of Food, Agriculture and Environment</i> 7(3 & 4): 134-138. 2. Nadia, A.A, Azrina, A, Amin, I, 2011. Proximate Composition and Energetic Value of Selected Marine Fish and Shellfish from the West Coast of Peninsular Malaysia. <i>International Food Research Journal</i> 18(1): 137-148. <p>Conference:</p> <ol style="list-style-type: none"> 1. Azrina A, Nadiah N., Mohd Nasir, Muhammad R. R, Azam N. R, Aishah A. L, 2010. Investigation on the level of furans and dioxins in 5 commonly consumed fish species. <i>National Conference on Environment and Health</i>. 17-18 March 2010, Kota Bharu.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Effects of Non-uniform Temperature Gradients on the Onset of Marangoni Convection with a Prescribed Heat Flux
Project Number	04-01-04-SF0929
Project Leader and Team Members	Leader: Norihan Md. Arifin Members: Roslinda Mohd. Nazar, Norfifah Bachok and Fadzilah Md. Ali
Field of Research	Mathematical Science
Project Summary/ Objectives	The mathematical models for Marangoni and Bénard-Marangoni convection in a horizontal fluid layer under externally imposed uniform magnetic field including the effect of non-uniform temperature gradient with a constant heat flux at a lower boundary was constructed. The linear stability theory is applied and the resulting eigenvalue problem is solved using single-term Galerkin expansion procedure. The influence of various parameters on the onset of convection has been analyzed. Six non-uniform basic temperature profiles are considered and some general conclusions about their destabilising effects are presented.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Norfifah, B. and Norihan, M.A..2009. Marangoni Convection in a Fluid Layer with Internal Heat Generation. <i>Int. J. Applied Math. Comp. Sci.</i> 5(4):322-324. 2. Nor Fadzillah, M.M., Norihan, M.A., Roslinda, M.N., Fudziah, I. and Mohamed, S.2009.Marangoni Convection in a Liquid Saturated Porous Medium with Internal Heat Generation. <i>Far East J. App. Math.</i> 34(2):269-283. 3. Nor Fadzillah, M.M., Norihan, M.A., Roslinda, M.N., Fudziah, I. and Mohamed, S..2009. Marangoni Convection in a Fluid Saturated Porous Layer with a Deformable free Surface. <i>Int. J. Math and Stat. Sci.</i>, 1(1):57–62. 4. Melviana, J.F., Norihan, M.A., Roslinda, N. and Mohd, N.S.2009. Effect of non-uniform basic temperature gradient and magnetic field on marangoni convection in a micropolar fluid.<i>Int. Review Chem. Eng.</i>, 1(4):369–374. 5. Isa, S.P.M., Arifin, N.M., Nazar, R. and Saad, N.M. 2010.Effect of non-uniform basic temperature gradient and magnetic field on onset of Marangoni Convection heated from below by a constant heat flux. <i>Appl. Math. Mech.</i> –Engl. Ed., 31(4):1-8.

Proceedings/Conferences/Seminars:

1. Norfifah, B. and Norihan, M.A.. Marangoni convection in a fluid layer with internal heat generation. 2008. *Proceedings of World Academy of Science, Engineering and Technology*, Vol. 36, December 17-19 2008, Bangkok, Thailand.
2. Siti Suzilliana Putri Mohamed Isa, Norihan Md Arifin, Roslinda Nazar and Mohd Noor Saad. 2008. Marangoni Convection in a Fluid layer with non-uniform temperature gradient. *Proceeding of the 3rd International Conference on Mathematical Sciences (ICoMS 2008)*, 5-6 Aug 2008, Bogor, Indonesia.
3. Siti Suzilliana Putri Mohamed Isa, Norihan Md Arifin, Roslinda Nazar and Mohd Noor Saad. 2008. Effect of Magnetic Field on the onset of Marangoni Convection in a Fluid Layer with non-uniform basic temperature. *Prosiding Simposium Kebangsaan Sains Matematik* ke-16, June 3-5 2008, Kota Bharu.
4. Nor Fadzillah Mohd Mokhtar, Norihan Md Arifin, Roslinda Nazar, Fudziah Ismail and Mohamed Suleiman. 2009. Marangoni Convection in a Fluid Saturated Porous Layer with a Deformable Free Surface. *Proceedings of World Academy of Science, Engineering and Technology*, Vol. 28, 25-27 Feb 2009, Penang.
5. Nor Fadzillah Mohd Mokhtar, Norihan Md. Arifin, Roslinda Mohd Nazar, Fudziah Ismail and Ioan Pop. 2009. Effect of Heat Generation on Marangoni Convection in a Horizontal Porous Layer Superposed by a Fluid Layer . *Proceeding of the 4th International Conference on Applications of Porous Media*, 10-12 Aug 2009, Istanbul.

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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Investigation of Past Climate, Hydrological Regime and Changing Water Pollution History Using the Deposited Sediment Record in Reservoir: A Case of Tasik Merah and Its Catchment area, Perak
Project Number	04-01-05-SF0007
Project Leader and Team Members	Leader: Wan Ruslan Ismail Members: Zubir Din, Zullyadini A. Rahaman, Ahmad Sofiman Othman, Zainudin Othman and Nor Azam Ramli
Field of Research	Earth Sciences
Project Summary/ Objectives	Methods of differentiating sediment sources and processes governing suspended sediment transport were investigated. Attempts were made to reconstruct past climate history of climate change based on preserved records in lake sediment. Studies on the history of riverine pollution in river input and Tasik Merah were made. However the aim to model the transport of pollutant based on past sedimentary record was not achieved.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Wan Ruslan Ismail, Sumayyah Aimi Mohd Najib. 2009. Sediment and Nutrients Balance of Bukit Merah Reservoir, Perak, Malaysia. <i>13th Lake Conference 200</i>, 1-5 Nov 2009, China. 2. Wan Ruslan Ismail, Mohamad Adam Omar, Sumayyah Aimi Mohd Najib, Aznan Ismail and Zakaria Abdullah. 2009. Perubahan kualiti air dan aktiviti pembuangan gambut di Kolam Utara Tasik Bukit Merah, Perak. <i>Second Seminar Society Space and Environment</i>, 2-3 June 2009, Pulau Pinang. 3. Wan Ruslan Ismail, Mohamad Adam Omar, Sumayyah Aimi Mohd.Najib, Aznan Ismail and Zakaria Abdullah.2009.Changing water quality and dredging activity in the north lake, Bukit Merah Reservoir, Perak. <i>2nd National Conference Society, Space and Environment 2009</i>, 2-3 June 2009, Penang 4. Sumayyah Aimi Mohd Najib, Wan Ruslan Ismail, Zullyadini A. Rahaman and Mohamad Adam Omar. 2009. Trophic Status of the South Lake, Bukit Merah Reservoir (BMR), Perak. <i>2nd National Conference Society, Space and Environment 2009</i>, 2-3 June 2009, Penang.

	<p>5. Wan Ruslan Ismail, Sumayyah Aimi Mohd Najib and Zuliyadini A. Rahaman. 2008. River Inputs and Sedimentation of Bukit Merah reservoir, Perak, Malaysia. <i>International Conference on Social Development and Environmental Studies</i>, 18-20 Nov 2008, Bangi.</p> <p>Others:</p> <ol style="list-style-type: none"> 1. Mohd. Zakaria, A.W..2009. Klorofil, fosus dan sedimen di Tasik Bukit Merah: Satu kajian perbandingan mengikut kedalaman. Tesis Tahun Akhir Pusat Pengajian Ilmu Kemanusiaan, Universiti Sains Malaysia. 2. Muhammad Nasir Abdul Razak. 2009. Imbangan Nitrogen di dalam Sistem Takungan Bukit Merah, Perak. Tesis tahun akhir, Pusat Pengajian Ilmu Kemanusiaan, Universiti Sains Malaysia. 3. Sumayyah Aimi Mohd Najib. 2008. Pertalian antara kemasukan air sungai dan kadar pemendapan di Tasik Bukit Merah, Perak. Tesis tahun akhir, Pusat Pengajian Ilmu Kemanusiaan, Universiti Sains Malaysia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Atmospheric optical properties using MODTRAN and Multispectral Lidar System
Project Number	04-01-05-SF0035
Project Leader and Team Members	Leader: Nasirun Mohd Saleh Members: Khiruddin Abdullah, Mohd Zubir Mat Jafri, Lim Hwee San and Azrul Alias Nizam
Field of Research	Environmental Sciences
Project Summary/ Objectives	An atmospheric modelling programme and computer code capable of predicting atmospheric transmittance and radiance from the atmospheric optical properties was developed. An accurate, convenient and versatile atmospheric modelling tool was established and validated. Measurements were made on the optical properties of the atmosphere such as the backscattering coefficient. The capability of obtaining radiance and transmittance from the modelling programme was studied. A technique removal of atmospheric effects from satellite images was successfully developed.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Alias, A.N., MatJafri, M.Z., Saleh, N.M. and Lim, H.S. 2009. Aerosol modeling: aerosol types and humidity effect factors. <i>Global Journal of Environmental Research</i>3(1):36-41. 2. Alias, A.N., MatJafri, M.Z., Lim, H.S. and Mohd. Saleh, N. 2009. Two-dimensional simulation of aerosol–Cloud profile. <i>Modern Applied Science</i> 3(10):17-26. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Lim, H.S., MatJafri, M.Z., Abdullah, K., Mohd. Saleh, N. and Ng, H.G. 2008. Air quality mapping using remote sensing technique over Penang, Malaysia. <i>Proceeding of the International Conference on Environmental Research and Technology 08 (ICERT 08)</i>, 28-30 May 2008, Penang. 2. Wong, C.J., MatJafri, M.Z., Abdullah, K., Lim, H.S. and Low, K.L. 2007. Temporal air quality monitoring using surveillance camera. <i>Proceeding of the IEEE International Geoscience and Remote Sensing Symposium</i>, 23-28 July 2007, Barcelona.

	<ol style="list-style-type: none"> 3. Lim, H.S. MatJafri, M.Z., Abdullah, K. and Mohd. Saleh, N. 2007. Air quality observation and mapping over Penang by remote sensing technique. <i>Proceeding of the International Symposium on Atmospheric Observations And Advanced Measuring Techniques in the Remote Areas</i>, 28 Aug 2007, Kaohsiung, Taiwan. 4. Lim, H.S., MatJafri, M.Z., Abdullah, K., Mohd. Saleh, N. and Alias, A.N. 2007. Air quality mapping using based on landsat TM band ratio technique. <i>Proceeding of The 28th Asian Conference on Remote Sensing (ACRS)</i>, 12-16 Nov 2007, Kuala Lumpur. 5. Ng, H.G., MatJafri, M.Z., Abdullah, K., Alias, A.N. and Lim, H.S. 2008. Aerosol retrieval at South China Sea by AVHRR image. <i>Proceeding of the 2008 IEEE Aerospace Conference</i>. 1-8 Mac 2008, Big Sky, Montana. 6. N. Mohd. Saleh, H. S. Lim, M. Z. MatJafri and K. Abdullah, 2007, Air Quality Derivationutilizing Landsat TM image over Penang, Malaysia, <i>Proceeding of the 3rd International Conference on Recent Advances in Space technologies (RAST 2007)</i>, 14-16 June 2007, Istanbul, Turkey.
Awards/Certificates	<ol style="list-style-type: none"> 1. International Exposition of Research and Inventions of Institutions of Higher Learning 2007 (PECIPTA 07: 1 Silver Medal. 2. Pameran Eureka 2007, 56th World Exhibition Of Innovation, Research & New Technologies Brussels 2007 : 1 Silver Medal.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Modelling and Predictions of Air Pollutant Concentrations in Selected Cities of Malaysia
Project Number	04-01-05-SF0115
Project Leader and Team Members	Leader: Ahmad Shukri Yahaya Members: Norazam Ramli and Fauziah Ahmad
Field of Research	Environmental Sciences
Project Summary/ Objectives	Fitted distributions which have been developed by previous researches to fit new distributions such as the Pareto distribution, Beta distribution, generalised lambda distribution and mixture of distribution estimating air pollutants concentration were successfully compared. From the study, the best graphical distribution was found and methods and goodness-of-fit criteria were identified. Besides, the criteria were able to fit extreme value distributions such as Gumbel, Frechet modified Gumbel and other distributions. The best distribution by graphical methods and goodness-of-fit criteria as well as the time series model were found. All equations raised in the original objectives were verified using new data sets and the best distribution was suggested.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Mohamed Noor, N., Yahaya, A.S., Ramli, N.A., Abdullah, Mohd Mustafa, A.B. 2008. Estimation of missing values in air pollution data using single imputation techniques. <i>Science Asia Journal</i> 34(4):341-345. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Nurulilyana, S., Nor Azam, R., Ahmad, S.Y. 2007. The Incidence of Exceedences Of PM10 Concentration In Kuala Lumpur, <i>Prosiding Kebangsaan Keempat Kejuruteraan Awam</i> 2007, 29-31 Mei 2007, Langkawi. 2. Hazrul Abdul Hamid, Ahmad Shukri Yahaya, Nor Azam Ramli. 2008. Perbandingan penganggar parameter bagi taburan lognormal dengan tiga parameter: Kajian kes bagi data PM10. <i>Prosiding Simposium Kebangsaan Sains Matematik Ke-16</i>, 2-5 Jun 2008, Kota Bharu. 3. Nurul Adyani Ghazali, Nor Azam Ramli, Ahmad Shukri Yahaya. 2007. Prediction Of Particulate Matter (PM10) Concentration In Penang Using Linear Regression Technique. <i>Prosiding Kebangsaan Keempat Kejuruteraan Awam</i> 2007, 29-31 Mei 2007, Langkawi.

	4. Nor Azam Ramli, Noor Faizah Fitri Md Yusof, Ahmad Shukri Yahaya, Nurul Adyani Ghazali, Nurulilyana Sansudin. 2008. Analysis Of High Particulate Matter (PM10) Event In Kuantan From 1997 To 2005, <i>Proceedings of the International Conference on Civil Engineering 2008 (ICCE'08)</i> , 12- 14 May 2008, Kuantan.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Control and Management of Commensal Norway Rat (<i>Rattus norvegicus</i>) (Mammalia:Rodentia:Muridae) Population in an Urban Habitat: Integrated Approach by GIS-modelling
Project Number	04-01-05-SF0265
Project Leader and Team Members	Leader: Shahrul Anuar Mohd Sah Member: Shukor Md Nor
Field of Research	Biological Sciences
Project Summary/ Objectives	In the study, the distribution and abundance, potential suitable habitats and the movement, and home range size of <i>Rattus norvegicus</i> throughout the selected sitewere determined. A Geopgraphical Inmation System (GIS) map of the distribution and abundance of <i>Rattus norvegicus</i> was established. An integrated habitat suitability model using GIS the control and management of <i>Rattus norvegicus</i> was also developed.
Publications/Products/ Outcomes	Conferences: 1. Nurul Liyana, K. Shahrul Anuar, M. S. , MohdFadzly, A.S2010. Study of <i>Rattusnorvegicus</i> (Norway rat) in the three major settlements area around Georgetown, Pulau Pinang, Malaysia. <i>2nd National Conference on Environmental and Health</i> , 17-18 Mar 2010, Kelantan. 2. Nurul Liyana, K. Shahrul Anuar, M. S. , MohdFadzly, A.S2010. Control and management of commensal Norway rat (<i>Rattusnorvegicus</i>) population in an urban habitat. <i>The 7th IMT-GT UNINET and The 3rd Joint International PSU-UNS Conferences</i> 7-8 Oct 2010, Songkhla, Thailand.
Additional Information	International Linkages: Mississippi State University, USA; La Sierra University, USA – linkages in the form of student training in the population biology and ecology by both institutions Industrial Linkages: With Penang Health Department in terms of collaborative works with regard to the control and management of commensal rat in Penang
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TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	The Molecular Phylogeny of Malaysia's Sea Cucumber (Echinodermata: Holothuroidea) based on Mitochondrial DNA Sequence
Project Number	04-01-05-SF0321
Project Leader and Team Members	Leader: Zulfigar Yasin Member: Aileen Tan Shau Hwai
Field of Research	Biotechnology
Project Summary/ Objectives	The project foccuses on the production of complete phylogeny tree of Malaysia's sea cucumbers and to review the problem of the overlapping, confusion and suspicions taxonomy status of sea cucumbers in Malaysia. The taxonomy keys of sea cucumbers in Malaysia are based on the classical morphology and spicules analysis support with the mitochondrial DNA sequences data which will provide the inmation of sea cucumber species evolution which is an undiscovered research area in Malaysia have been completed. The new sea cucumber species based on the mitochondrial DNA sequences were identified and the gene library of marine invertebrates in Malaysia future references was developed.
Publications/Products/ Outcomes	Books: 1. Zulfigar, Y., Sim Yee, K., Aileen T.S.H. and Yoshihisa, S. 2008. Field guide to the echinoderms (Sea cucumber and Sea Stars) of Malaysia. <i>The Nippon Foundation</i> . Japan. (pp.103). Kyoto University Press.
Additional Information	International Linkages: Japanese Society for the Promotion of Science/ NaGissa/ Census of Marine Life.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Predicting the Habitat Selection and Abundance of Raptors Using Remote Sensing Techniques and Geographic Information Systems: A Case Study with the White-Bellied Sea-eagle (<i>Haliaeetus leucogaster</i>)
Project Number	04-01-05-SF0362
Project Leader and Team Members	Leader: Shahrul Anuar Mohd Sah Member: Shukor Md Nor
Field of Research	Biological Sciences
Project Summary/ Objectives	The objectives of the project were to study the abundance of White-bellied Sea-Eagle in the coastal dipterocarp forest of Penang and to measure habitat structure and forest structure in studied forest areas that were regularly visited or nested by the eagle species. The habitat selection and macrohabitat preferences of the eagle species by calculating habitat preferences were analysed. Besides, the distribution of suitable nesting habitat of White-bellied Sea-Eagle through the use of remotely sensed habitat and topographical data was predicted. A rigorous model assessment of species conservation and threat according to national criteria was developed.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Nest Characteristics of White-bellied Sea Eagle in Penang, Malaysia. 2008. <i>The 6th Regional IMT-GT UNINET Conference</i>. 28-30 August 2008, Penang. 2. Topographical Factors on Nest Site Selection of the White-bellied Sea-Eagle in Penang National Park. <i>2nd Natural Conference Society, Space & Environment 2009; Towards Sustainable Heritage and Future</i>. 2-3 June 2009. 3. Prediction of Habitat Selection and Abundance of Raptors Using GIS; A Case Study with the White-bellied Sea-Eagle. 2009. <i>1st Bio Colloquium</i>. 4. Observations on the Nesting Behaviour of the Brahminy Kite <i>Haliasturindus</i> on Penang Island, Malaysia. <i>AUSTRALIAN Field Ornithology</i> 2011, 28, 38–46.
Additional Information	International Linkages: Mississippi State University, USA; Kyoto University, Japan – training of research staff and students in the technology of GIS and remote sensing; also staff exchanges between institutions.

	<p>Industrial Linkages: Dept. of Wildlife and National Parks, Malaysia, Malaysian Nature Society – formal linkages in term of joint effort to study the distribution of white-bellied sea eagles as continuous project.</p> <p>Spin-off: Nature education trails in Penang National Park – works are underway to help the Penang National Park establish the nature informative trail regarding the habitat and distribution of the raptor in the forest of Penang National Park.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Earthquake Induced Deformation of National Geodetic Vertical Datum (NGVD) and Its Implication on Surveying and Mapping
Project Number	04-01-06-SF0092
Project Leader and Team Members	Leader: Kamaludin Mohd. Omar Members: Sahrums Ses and Abd Majid Abd Kadir
Field of Research	Engineering Sciences
Project Summary/ Objectives	Crustal deformation of National Geodetic Vertical Datum (NGVD) infrastructures over the area of Peninsular Malaysia due to the recent earthquakes, Dec 2004 and March 2005 was identified. The impacts and implications of the above demation on GPS-based positioning services surveying and mapping in Peninsular Malaysia were determined, namely MyRTK and MyGeolD and a revised solution of NGVD was sucessfully developed. The GNSS technique can be used to monitor the movement of tectonic plate in Malaysia.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) UniversitiTknologi Malaysia (UTM) 81310Skudai, Johor.
Phone Number	Office: 07-553 0869/ 0370 H/p: 019-770 2760
e-Mail	kamaludin@fksg.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	The Development of Physical Oceanography Database Malaysian Seas Using Satellite Altimetry missions
Project Number	04-01-06-SF0093
Project Leader and Team Members	Leader: Kamaludin Mohd. Omar Members: Sahrum Ses and Ibrahim Busu
Field of Research	Engineering Sciences
Project Summary/ Objectives	The best ocean tide model Malaysian seas was investigated. The database wave variations, wind speed and sea level variations Malaysian seas was developed. This database can be used to monitor sea level in Malaysian seas.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Omar, K., Mustafar, M.A. and Din, A.H.M. 2008. Review of Sea Level Rise over Malaysian Seas. <i>7th ISG Conference, 13-15 October 2008</i>, PWTC Kuala Lumpur. 2. Din A. H. M., and Omar K. 2009. Derivation of Sea Level Anomaly using Satellite Altimeter. <i>Proceeding of 2009 East Asia Hydrographic Symposium & Exhibition (EAHSE)</i>. 20-22 October, Kuala Lumpur. 3. Din A. H. M., and Omar K. 2009. Sea Level Change in the Malaysian Seas from Multi-Satellite Altimeter Data. <i>Postgraduate Seminar Faculty of Geoinformation Science & Engineering</i>. 14-15 July 2009, Skudai.
Additional Information	Linkages: Delft University of Technology, Institut Teknologi Bandung, UiTM Arau dan JUPEM (all as collaborators)
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) 81310 Skudai, Johor.
Phone Number	Office: 07-553 0869 H/p: 019-770 2760
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Development of Doppler Shift Algorithm Modelling Sea Surface Current Movements from Radar Remote Sensing Data
Project Number	04-01-06-SF0111
Project Leader and Team Members	Leader: Maged Marghany Members: Samsudin Ahmad, Shaparas Daliman, Norsheila Faisal and Mazlan Hashim
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	<p>A new Doppler centroid model to extract surface current from Advanced Synthetic Aperture Radar (ASAR) instrument onboard ENVISAT was developed and used to model the monsoon wind effects on the behaviour of ENVISAT Doppler variations. It should be noted that ENVISAT data were replaced by RADARSAT-1 data due to difficulties to acquire ENVISAT data. Further, altimeter satellite data was used to model the monsoon wind effects on surface current movements. In fact one SAR image acquired in a few second per day was not enough to represent monsoon the season. Technology Transfer can be performed through designing special software modeling sea surface current from SAR satellite data. Further, designing a network providing quick access inmation national organization in Malaysia such as MACRES, NAHRIM and environmental department is suggested.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Maged, M. and Mazlan, H. 2008. Doppler Algorithm for Modelling Sea Surface Current from RADARSAT-1 SAR images. <i>IJCSNS International Journal of Computer Science and Network Security</i>, 17-22. 2. Maged, M. and Mazlan, H. 2008. Robust Model for sea Surface Current Simulation from RADARSAT-1 SAR data. <i>Journal of Convergence Information Technology</i>, 3 (2): 45-49. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Maged, M. 2008. Finite Difference ModelFor Modeling Sea Surface Current from RADARSAT-1 SAR Data. <i>International Geoscience and Remote Sensing Symposium (IGARSS)</i> 2, 6-11 July 2008, Boston.

	<ol style="list-style-type: none"> 2. Maged. M. 2009. Robust model for retrieval sea surface current from different RADARSAT-1 SAR mode data. <i>ICSIPA09 - 2009 IEEE International Conference on Signal and Image Processing Applications, Conference Proceedings</i>, 18-19 Nov 2009, Kuala Lumpur 3. Maged. M and Mazlan. H. 2008. Finite Element Model for Current Velocity Modeling from Advection Processes Using MODIS Data. <i>CD- Proceedings of the 29th Asian Conference on Remote Sensing (ACRS)</i>, 10-14 Nov 2008, Sri Lanka.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) UniversitiTeknologi Malaysia (UTM) 81310 Skudai, Johor. Office: 07-553 0802 maged@utm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Development of Estuarine Nutrient Response Model Circulation and Water Quality
Project Number	04-01-06-SF0112
Project Leader and Team Members	Leader: Noor Baharim Hashim Members: Suriyani Awang @ Abdul, Supiah Shamsudin and Razali Ismail
Field of Research	Environmental Sciences
Project Summary/ Objectives	A hydrodynamic and water quality model was successfully developed and the hydrodynamic and water quality model using intensive field survey was verified. The linkages between physical transport, nutrient input and dissolved oxygen dynamics were determined.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Baharim. N. R. 2009. Hydrodynamic and Salinity Transport Model in an Estuarine System. 2009. <i>International Conference on Water Resources (ICWR 2009)</i>, 26-27 May 2009, Langkawi. 2. Baharim. N. R. 2009. Numerical Simulation of Coastal Pollution in Sungai Johor Estuarine System. <i>International Conference on Water Resources (ICWR 2009)</i>, 26-27 May 2009, Langkawi. 3. Baharim. N. R. 2007. Sediment Transport Modeling of Sungai Pulai Estuary. 2007. <i>2nd International Conference on Managing Rivers in the 21st Century: Solutions towards Sustainable River Basins</i>, 6-8 June 2007, Sarawak. 4. Baharim. N. R. 2007. Hydrodynamic Modeling of Sungai Johor Estuary Using EFDC Model. <i>Persidangan Kebangsaan AWAM' 07</i>. 29-31 May 2007, Kedah.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) 81310 Skudai, Johor.
Phone Number e-Mail	Office: 07-553 1511 nbaharim@time.net.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Enhancing Coral Growth through Photoecology by Using Fibre Optics to Enhance Underwater Sunlight Penetration
Project Number	04-01-06-SF0223
Project Leader and Team Members	Leader: Ahmad Khairi Abd. Wahab Members: Noraieni Mokhtar and Adil Mohd
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	Four versions of the prototype instrumentation were developed and installed. The project was successful in attracting a lot of different fish species though the coral growth enhancement using this technique which was observed to be insignificant.
Additional Information	Commercialisation: Royalty, Direct Selling and Licensing
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) UniversitiTeknologi Malaysia (UTM) 81310 Skudai, Johor. Office: 07-553 0869/ 0370 akhairi@ic.utm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Enhancing Coral Growth on Artificial Reef by Direct Current
Project Number	04-01-06-SF0256
Project Leader and Team Members	Leader: Ahmad Khairi Abd. Wahab Members: Mohamed Amin Alias, Adil Mohd, Jafri Din, Yussof Ariffin, Hishamudin Md. Dea and Azmee Shariff
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	Added value to artificial reef by using direct current technique was successfully developed and installed at Jabatan Taman Laut Jetty, Pulau Perhentian, Terengganu. Periodical observations and analyses were performed. By applying the direct current cage reef setup, coral growth rate was enhanced up to 80% compared to natural reef especially the acropora family.
Additional Information	Industrial Linkages: Dorken Reef Sdn. Bhd. – Fabrication and Monitoring of the Artificial Reef
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) 81310 Skudai, Johor.
Phone Number e-Mail	Office: 07-553 0869/ 0370 khairi@fka.utm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Online Dynamic Cadastral Block Segmentation and Dynamic Network Adjustment of Land Record Modern Cadastre In Malaysia
Project Number	04-01-06-SF0296
Project Leader and Team Members	Leader: Abdullah Hisam Omar Members: Mohd Azwan Abbas, Halim Setan and Mustaffa Anjang Ahmad
Field of Research	Engineering Sciences
Project Summary/ Objectives	An online Based Land Record Segmentation Module and a dynamic Network Adjustment Technique Module was successfully developed.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) UniversitiTeknologi Malaysia (UTM) 81310 Skudai, Johor.
Phone Number e-Mail	Office: 07-5530946 abd_hisham@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Real Time Data Acquisition and Processing Geodetic Industrial Demation Analysis
Project Number	04-01-06-SF0301
Project Leader and Team Members	Leader: Halim Setan Members: Khairulnizam M. Idris and Mohd Azwan Abbas
Field of Research	Engineering Sciences
Project Summary/ Objectives	The project was focussed on the development of a practical observation procedure industrial demation analysis through the implementation of high precision robotic total station (RTS). The software of real time data gathering was developed and it has the capability to analyze and process the data in near real time mode.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Khairulnizam. M. Idris, and Halim. S. 2009. Communication and Database Modules for Precise Measurement Data Acquisition. <i>Geoinformation Science Journal</i> 9 (1): 1-10. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Khairulnizam, M. Idris, and Halim, S. 2009. Implementing of Industrial Deformation Analysis Software (InDA) for Precise Surveying Applications. <i>Proceedings of ISG 2009</i>, 10-11 August 2009, Kuala Lumpur. 2. Halim, S., Khairulazhar Z., and Zulkepli M. 2009. 3D Scanning and 3D Measurement for Precise Non-topographic Applications. <i>Proceedings of SEASC 2009</i>, 4-7 August 2009. Bali, Indonesia, 3. Khairulnizam, M. Idris, and Halim, S. 2008. Precise Dimensional Measurement of a Helicopter Model Using Geodetic and Non-Contact Measurement Techniques. <i>Proceedings of ISG 2008</i>, 13-15 October 2008, Kuala Lumpur. 4. Khairulnizam M. Idris and Halim S. 2008. Industrial Deformation Analysis (InDA) Software System. <i>Proceedings of MAP ASIA 2008</i>, 18-20 August 2008, Kuala Lumpur. 5. Halim Setan & Khairulnizam M. Idris 2008. Automation in Data Capture and Analysis for Industrial/Deformation Surveying Using Robotic Total Station. <i>Proceedings of FIG Working Week 2008, Stockholm</i>, 14-19 June 2008, Sweden.

	6. Khairulnizam, M. Idris & Halim, S. 2008. Semi-automated Geodetic Monitoring System for Structural Deformation Analysis. <i>Proceedings of International Conference on Civil Engineering 2008 (ICCE'08)</i> , 12-14 May 2008, Kuantan.
Contact	Universiti Teknologi Malaysia (UTM)
Institution/Entity	Universiti Teknologi Malaysia (UTM)
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e-Mail	halim@utm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Eco-hydrological Dynamics Indices of Johor River Corridors
Project Number	04-01-06-SF0339
Project Leader and Team Members	Leader: Ayob Katimon Members: Mahmad Nor Jaafar, Mushairry Mustaffar, Hasmida Hamza and Ali Ahmed Suliman
Field of Research	Environmental sciences
Project Summary/ Objectives	The original project objectives were to establish the hydraulic-hydrologic interaction mechanism of riparian zone (river corridors) of Johor River Basin; to determine eco-hydrological indices of the dynamicity of riparian zones of the selected Malaysian river basin; and to develop criteria towards the conservation, preservation and remediation of the riparian zone of the study river basin.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. AyobKatimon. 2006. Productive Land and Water Resource Utilisation. Editorial Column. <i>Bulletin Jurutera (IEM)</i> 1: 5. 2. Charles Bong HinJoo, AyobKatimon. 2010. Non-darcian Transmission of Water Properties in Malaysian Peat Soil. <i>The IUP Journal of Soil and Water Science</i> (India) III(2): 40-54. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. AyobKatimon and HasmizaHamza. 2009. Water Quality Variation of the Upper Part of Johor River in Relation to Rainfall and Runoff pattern. <i>Int. Conf. on Water Resources (ICWR 2009)</i>, 26-27 May 2009, Langkawi. 2. Said Hassan Matan, AyobKatimon and SupiahShamsudin. 2009. Modelling Riparian Buffer Zone for Improving Water Quality and Quantity. <i>International Conference on Water Resources (ICWR) 2009</i>, 26-27 May 2009, Langkawi.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) UniversitiTknologi Malaysia (UTM) 81310 Skudai, Johor.
Phone Number	Office: 07-553 1680 H/p: 017-728 6742
e-Mail	ayob57@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Development of Mapping Procedures Using Digital Imagery and Unmanned Aerial Vehicle System
Project Number	04-01-06-SF0362
Project Leader and Team Members	Leader: Anuar Ahmad Members: Abas Ab Wahab, Mushairry Mustaffar and Zulkepli Majid
Field of Research	Engineering Sciences
Project Summary/ Objectives	This project successfully used unmanned aerial vehicle (UAV) system in acquiring digital aerial imagery and process it to produce a map or orthophoto using digital photogrammetry workstation. A procedure accurate mapping using digital imagery that can be used with various applications was developed and the accuracy of mapping or measurement using UAV system was verified. The cost effective mapping using UAV the purpose of commercialisation was evaluated. The research method used in this project was successfully adopted in producing the project output such as the orthophoto or map (vector). This indicates that the research method can be used by any user that require the same product (i.e. orthophoto/map), high resolution digital images at lower cost compared to data acquisition using normal large mat aerial camera. The method adopted in this project could be used by many applications and fields if the particular research budget is limited and not very accurate results are required.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	An Investigation of Unsteady Aerodynamics on Helicopter Tail Shake Phenomenon
Project Number	04-01-06-SF0364
Project Leader and Team Members	Leader: Shuhaimi Mansor Members: Iskandar Shah Ishak, Tholudin Mat Lazim, Muhammad Riza Abd Rahman, Airi Ali and Azlan Ithnin
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	An experimental and simulation technique to study the characteristics of transient unsteady aerodynamic of a helicopter was developed. The effect of the unsteady flow contributed by the main rotor assembly towards tail shake phenomenon was investigated. The component of the main rotor assembly that has the most significant contributions towards turbulence level/unsteady flow was identified. This finding can be used in the development of techniques in wind tunnel tests and numerical simulation in quantifying helicopter turbulence wake estimation.
Publications/Products/ Outcomes	<p>Book:</p> <ol style="list-style-type: none"> 1. Mansor, S., Shah, I.S. and Lazim, T. M. 2008. Helicopter Tail Shake Phenomenon: Experimental Research. In <i>Aeronautical Engineering Research, Book Chapters 2008</i>, (pp. 96-111), Universiti Teknologi Malaysia. <p>Journal:</p> <ol style="list-style-type: none"> 1. Ishak, I. S., Mansor, S. and Lazim, T. M. 2008. Experimental Research on Helicopter Tail Shake Phenomenon. <i>Jurnal Mekanikal</i>, Universiti Teknologi Malaysia 26:23-27. <p>Proceedings/Conferences/Seminars: 9</p> <ol style="list-style-type: none"> 1. Ishak, I. S. and Mansor, S. 2008. Preliminary Experimental Research on Helicopter Tail Shake Phenomenon. <i>Subsonic Aerodynamic Testing Association Conference – SATA'08</i>, 8-12 June 2008, South Africa. 2. Ishak, I. S., Mansor, S. and Lazim, T. M. 2008. Experimental Research on Helicopter Tail Shake Phenomenon. <i>2nd Regional Conference on Vehicle Engineering & Technology – RiVET'08</i>, 15-17 July 2008, Kuala Lumpur.

	<ol style="list-style-type: none"> Ishak, I. S., Lazim, T. M. and Mansor, S. 2008. Wind Tunnel Tests on a Generic Eurocopter 350Z Helicopter. <i>2nd Regional Conference on Vehicle Engineering & Technology – RiVET'08</i>, 15-17 July 2008, Kuala Lumpur. Ishak, I. S., Mansor, S. and Lazim, T. M. 2008. Mapping of Turbulence Intensity on Helicopter Model by Wind Tunnel Test. <i>The 1st International Meeting on Advances in Thermo-Fluids - IMAT'08</i>, 26 Aug 2008, Johor. Ishak, I. S., Mansor, S. and Lazim, T. M. 2009. Helicopter Tail Shake Phenomenon; A Preliminary Experimental Investigation. <i>2009 IEEE Toronto International Conference – TIC-STH 2009</i>, 26-27 Sept 2009, Canada. <p>Others:</p> <ol style="list-style-type: none"> Mansor, S., Shah, I.S. and Lazim, T. M. 2009. Wind Tunnel Measurement of Aerodynamic Characteristics of a Generic Eurocopter Helicopter. <i>Bulletin of the Institution of Engineers Malaysia</i>, (4-7), May 2009.
Additional Information	<p>Linkages: Loughborough University, University of Glasgow (Visiting professors, advisors and evaluators for post graduate students and expert advices for unsteady aerodynamic testing facility); Eurocopter France (technical assistant for the helicopter model testing and training provider).</p> <p>Spin-off: Automotive drag reduction and wind tunnel testing techniques – 10% reduction of drag coefficient by varying rear slant angle of a fastback car by wind tunnel testing.</p>
Contact Institution/Entity Address Phone Number e-Mail	Universiti Teknologi Malaysia (UTM) UniversitiTknologi Malaysia (UTM) 81310 Skudai, Johor. Office: 07-553 5845 H/p: 019-779 9778 shuhaimi@fkm.utm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Development of Ship Manoeuvring Simulator Research, Training and Safety Assessment
Project Number	04-01-06-SF0369
Project Leader and Team Members	Leader: Adi Maimun Abdul Malik Members: Agoes Priyanto and Mohamad Pauzi Abdul Ghani
Field of Research	Engineering Sciences
Project Summary/ Objectives	The mathematical models describing manoeuvring of vessels and a ship simulator suitable for research, training and safety assessment were developed. The simulator can be used in training of pilots and captains, also in terms of designing of channel and harbours or ports. The relevant authority such as Marine Department, ship owners, ports and harbours authorities and ship designers may use the simulator.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Muhammad, A.H., Maimun, A., Yaakob, O. and Priyanto, A. 2008. Effect of Spray Strake on Patrol Vessel Manoeuvrability. <i>27th International Conference on Offshore Mechanics and Arctic Engineering OMAE 2008</i>, 15-20 June 2008, Portugal. 2. Maimun, A., Priyanto, A., Rahimuddin, Baidowi A. and Nurcholis. 2009. Ship manoeuvring in Shallow Water with Ship-bank Interaction Effects. <i>The Royal Institution of Naval Architects</i>, Antwerp, 13-15 May 2009, Belgium. 3. Maimun, A., Priyanto, A., Rahimuddin, Baidowi, A. and Nurcholis. 2009. Manoeuvring of a Vessel in Shallow Water with Ship- bank Interaction Effect. <i>International Conference in Ocean Engineering, ICOE 2009 IIT India</i>, 1-5 Feb 2009, India. 4. Maimun, A., KairulAnuar, Priyanto, A. and Baidowi, A. 2008. Manoeuvring Control of Pusher Barge in Restricted Water. <i>2nd Regional Conference on Vehicle Engineering and Technology</i>, 15-17 July 2008, Kuala Lumpur.
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) 81310 Skudai, Johor.
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TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	The Development of WPI-net GPS Services Precise Real-time Positioning, Mapping and Navigation
Project Number	04-01-06-SF0459
Project Leader and Team Members	Leader: Tajul Ariffin Musa Members: Shahrum Ses, Khairul Anuar Abdullah and Halim Setan
Field of Research	Engineering Sciences
Project Summary/ Objectives	A network-RTK (Real-Time Kinematic) system research (and commercial) activities, maintained by Universiti Teknologi Malaysia, is locally developed using state of the art processing technique. The network-RTK consists of three Global Positioning System (GPS) Continuous Operating Reference Station (CORS). The coverage of the network includes the WPI (Wilayah Pembangunan Iskandar) metro-area and part of Selat Tebrau which is a critical area near Singapore border line. The finding can be used to provide positioning and precise navigation services in ISKANDAR Malaysia and to train the potential user in ISKANDAR Malaysia.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars: 16</p> <ol style="list-style-type: none"> 1. Abdullah, K.A, Leong, S.K. and Musa, T.A. 2009. GPS-Derived Local TEC Mapping over Malaysia during Solar Minimum of Sunspot Cycle 24. <i>Proceeding of the 2009 International Symposium on GPS/GNSS</i>. 4-6 Nov 2009, Korea. 2. Shariff, N. S. M, Musa, T.A. and Ses, S. 2008. Impact of 'Poor' Data Correction to Network-RTK Users. <i>International Seminar on Geoinformation (ISG) 08</i>, 13-15 Oct 2008, Kuala Lumpur. 3. Wan Anom, W. A., Musa, T. A., Setan, H. and Ses, S. (2008). UTMnav: An Approach of DGPS Technique for Precise Navigation System. <i>International Seminar on Geoinformation (ISG) 08</i>, 13-15 Oct 2008, Kuala Lumpur. 4. Siti Nuruljannah, A. M., Musa, T. A., Setan, H. and Ivin, A. M. (2008). Network Analysis for GPS UTMnav System: Preliminary Stage. <i>International Seminar on Geoinformation (ISG) 08</i>, 13-15 Oct 2008, Kuala Lumpur.



	5. Amir S. and Musa, T. A. 2009. GPS ZPD Estimation for Meteorological Applications: From Low Latitude to the Mid Latitude Regions. <i>Postgraduate Seminar Faculty of Geoinformation Science & Engineering</i> , 14-15 July 2009. Johor.
Additional Information	Linkages: University of New South Wales (UNSW), Australia; Port of Tanjung Pelepas (PTP); Kolej Komuniti Pasir Gudang (both are the place where the GPS CORS are located).
Contact Institution/Entity Address	Universiti Teknologi Malaysia (UTM) Universiti Teknologi Malaysia (UTM) 81310 Skudai, Johor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS –SCIENCEFUND (S2S)

Project Title	Effects of Used Engine Oil on Properties of Concrete and on Structural Behaviour of Reinforced Concrete Members
Project Number	04-02-02-SF0006
Project Leader and Team Members	Leader: Nasir Shafiq Members: Muhd Fadhil Nuruddin
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	The effects of used engine oil on engineering properties and durability characteristics of fresh and hardened concrete were investigated. The hypothesis of adding used engine oil to the fresh concrete mix was seen to be similar to adding an air-entraining chemical admixture, which can work as air-entraining agent and/or superplasticiser was confirmed. Further research to investigate the effect of adding used engine oil to concrete in the form of t structural behaviour (bending and bond) of reinforced concrete members is proposed.
Awards/Certificates	1. Eureka-Innova 2008: Gold Medal
Contact Institution/Entity Address	Universiti Teknologi Petronas (UTP) Director Research Enterprise Office, Universiti Teknologi PETRONAS (UTP), Bandar Seri Iskandar, 31750 Tronoh, Perak.
Phone Number	Office: 05-368 7289 H/p: 016-544 5930
e-Mail	nasirshafiq@petronas.com.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – CIF (S&T Core)

Project Title	myHearing Exchange an Online Knowledge and eLearning Centre for the Community Associated with Hearing Loss and Impairments in Malaysia
Project Number	C0001
Project Leader and Team Members	Leader: Ernest Liew Chau Ming
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Project objective was to develop a portal to provide a web-based resources for the deaf community in Malaysia. The portal can be used as user friendly tool for the development of deaf individu and the deaf community in general.
Publications/Products/ Outcomes	The portal is now up and running and can be accessed online. This portal acts as resource/ knowledge centre providing basic and advanced information related to deafness. It also provides support for community interaction and knowledge sharing in addition to e-Learning that provides interactive learning aids as well as rich, interactive media content supporting self, group and facilitator-assisted learning.
Contact Institution/Entity Address Phone Number e-Mail	Majudiri 'Y' Foundation for the Deaf 101-4-3, Taman Teratai Mewah, Jalan Langkawi, 53000 Kuala Lumpur. Office: 03-4024 0180 H/p: 012-658 8287 ashleykwho@yahoo.com lucy@mydeafoundation.org.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – CIF (S&T Core)

Project Title	Processing of High Quality Agricultural Produce by Using Electricity from Pico Hydro for Orang Asli Community
Project Number	C0003
Project Leader and Team Members	Leader: Abdul Razak Kecik Members: Azlan Muhammad Shariff, Pandak Alang, Hood Mohd Salleh and Mohd Nizam Abdul Rahman
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	Project objective was to develop hydro power system for the processing of high quality agricultural produce. Pico-hydro is the smallest scale hydro power system. Its electrical output is sufficient to power light bulbs, radios, televisions, refrigerator and other electrical appliances. Using pico-hydro as the source of electricity, Global Peace Mission (GPM) with the help of other donors and villagers, constructed the general processing centre for agricultural produce in the community.
Publications/Products/ Outcomes	The central processing centre for the agricultural produce is now powered with electricity and can be utilised by the indigenous people in the area.
Contact Institution/Entity Address Phone Number e-Mail	Global Peace Mission (GPM) Malaysia Anjung Rahmat, Batu 6, Jalan Gombak, 53100 Kuala Lumpur. Office: 03-6188 8409 gpmhq@yahoo.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – CIF (S&T Core)

Project Title	Solar Drying System for High Quality Dried Fish to Increase the Standard of Living of Fishing Communities
Project Number	C0005
Project Leader and Team Members	Leader: Abdul Latif Ibrahim Members: Norzahani Hassan, Mohd. Saiful Bakhtiar Laui, Ruhana Salleh, Nor sa'adah Hashim, Abedilah Abd. Ghani, Noor Ainiza Abdullah, Noraida Hitam, Rasidah Kasim and Rozita Haslina Endut
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	Project objective was to develop a simple and inexpensive drying process to prevent large quantities of fish from spoilage due to inadequate preservation and storage facilities. This developed solar dryer has great potential to be adopted and applied in the tropics and sub-tropics countries. The construction cost of the solar dryer is low and can be locally constructed, whereby it does not require any power and energy from electrical grids or fossil fuels.
Publications/Products/ Outcomes	Low cost solar dryer for the preservation of fish in the tropics and sub-tropics countries
Additional Information	Spin-off: The establishment of SolarTIF Sdn. Bhd.
Contact Institution/Entity Address Phone Number e-Mail	Kelab Remaja Islam Malaysia (KRIM) 589-A, Jalan Nesan Empat, 20000 Kuala Terengganu, Terengganu. Office: 09-627 0320 H/p: 019-956 0741 krim_trg@yahoo.com latifibrahim@yahoo.com.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – CIF (S&T Core)

Project Title	Bioponic-simple Biotechnology Method for Food Production
Project Number	C0010
Project Leader and Team Members	Leader: Habib Marikan Bawasah Members: Zarina Mat Zain and Mohd. Idris Tan
Field of Research	Agricultural Sciences
Project Summary/ Objectives	Project objective was to develop a simple biotechnology method to produce food by integrating aquaculture technique with hydroponics. Fish kept in the tanks were fed with high protein foods. The fish faeces were then transferred to the gravel based plantation site, where it was transformed into fertiliser for the crops with the help of effective microorganisms. At the same time, the plantation site and the crops became clean, filtered and enriched the water with oxygen before being re-circulated to the fish tanks.
Publications/Products/ Outcomes	The developed bioponic system is able to support the growth of chillies and wild betels.
Contact Institution/Entity Address	Unit Peladang Bukit Tok Kandang d/a 475, Tasek Junjung, 14120 Simpang Empat, Seberang Prai Selatan, Pulau Pinang.
Phone Number	Office: 04-508 7621 H/p: 019-413 5615
e-Mail	Ketuaunitpeladang@yahoo.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – CIF (S&T Core)

Project Title	Inno-Youth: Empowering Kajang Prison Inmates (Youths) in Digital Micro-enterprises
Project Number	C0019
Project Leader and Team Members	Leader: Ramanitharan Rajaram Members: Vivegananthan Rajangam, Mohd. Ridzuan Yusof, Saiful Azman Bidin, Balraj Rajagopal and Norazlina Ali
Field of Research	Social Sciences
Project Summary/ Objectives	Project objective was to empower selected 250 inmates with hands-on, value added ICT skills in multimedia and desktop publishing. The project also includes capacity and confidence building for the inmates via seminars, workshops and motivation talks. This would enable the inmates to enter the labour market with self confidence and thus reduce cases of reoffending.
Publications/Products/ Outcomes	The Inno-Youth Center in Kajang Prison was equipped with personal computers, printers, name card printers, multimedia projector and other peripherals. Inno-Youth Centre will be an in-situ training venue for selected participants.
Contact Institution/Entity Address	Pertubuhan Prihatin Sosial Malaysia No. 83A, Laluan Klebang Restu 3, Medan Klebang Restu, 31200 Ipoh, Perak.
Phone Number	Office: 05-291 6535 H/p: 019-558 2007
e-Mail	ramanitharan_rajaram@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – CIF (S&T Core)

Project Title	Youth Motivation and Career Guidance Camp
Project Number	C0022
Project Leader and Team Members	Leader: Yee Kai Yon Members: Khoo Kok Seng, Wee Hui Bieh, Sha Thiam Hai, Gan Lee Yong, Ng Fook Kow@ Ng Fook How and Tan Soon Huat
Field of Research	Social Sciences
Project Summary/ Objectives	Project objective was to organise a camp to motivate and provide career guidance to youths who are not academically inclined. This project was jointly organised by a community education-based association and a career consultancy to create awareness on the danger of drugs, instilling the spirit of self reliance and entrepreneurship, provide exposure to various skills, craft training and trades, as well as creating an interest in creativity, science and technology activities amongst the youths.
Publications/Products/ Outcomes	The survey results showed that an average of 52% of the participants found the project was good, 28% of the participants found it to be average and only 10% found it to be unsatisfactory, suggesting that 90% of the participants have gained benefit from the project. Approximately 26% of the participants were very keen to further their study, 56% would consider taking up a course and only 18% showed no interest to further their studies, indicating 84% of participants were motivated to further their studies.
Contact Institution/Entity Address	Gabungan Persatuan-Persatuan Bekas Penuntut Sekolah Cina Pahang Darul Makmur 50, Tingkat 2, Jalan Besar, 28300 Triang, Pahang.
Phone Number	Office: 03-4294 1822 H/p: 012-275 7420 wencom@po.jaring.my yeeky@tm.net.my
e-Mail	



COMPENDIUM OF MOSTI FUNDED PROJECTS – CIF (S&T Core)

Project Title	Rehabilitation of Kelana Jaya Lakes Through Community Participation
Project Number	C0023
Project Leader and Team Members	Leader: K. Kalithasan Member: Faizal Parish
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	Project objective was to improve the water quality of Kelana Jaya lakes and its biodiversity through active participation of local communities using innovative technologies. This project involved designing and developing of an eco-fan to treat the polluted lakes according to specifications.
Publications/Products/ Outcomes	“Kelana Jaya Park Ranger” was established by the Friends of Kelana Jaya Park (FoKJP) to monitor the Kelana Jaya lake water quality. To sustain the initiative of FoKJP, the EcoFans that developed in this project is now under the purview of Majlis Bandaraya Petaling Jaya (MBPJ).
Contact Institution/Entity Address	Global Environment Centre (GEC) 2nd Floor, Wisma Hing No. 78, Jalan SS2/72 47300 Petaling Jaya Selangor
Phone Number	Office: 03-7957 2007 H/p: 012-305 0164
e-Mail	fparish@gec.org.my kalithasan@gec.org.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – CIF (S&T Core)

Project Title	Volunteers Management System
Project Number	C0025
Project Leader and Team Members	Leader: Chew Mei Fun Members: Daphne Loke Wai Yue, Tan Chik Heok, Sun Teik Heng, Tan Teik Boon, Lim Tong Ming, Law Chee Horng, Michelle Shia Kwan Wei and Ooi Shiau Fei
Field of Research	Economics, Business and Management
Project Summary/ Objectives	Project objective was to develop a system to manage resources comprising of manpower, skills, equipment and materials to assist in conducting relief work. The developed system would enable physical communication between headquarter and the state as well as their members. Additionally, it will also link the material suppliers and logistic management system to manage the stock of food and daily supplies, utensils and equipment for relief work.
Publications/Products/ Outcomes	The developed management system is able to conduct precise, efficient, effective and quick identification of resources to meet the requirement of a particular crisis. In addition, a numbers of trainings were conducted in four states to introduce the Volunteer Management System.
Contact Institution/Entity Address Phone Number e-Mail	Yayasan CRSM 10th Floor, Wisma MCA, 163 Jalan Ampang, 50450 Kuala Lumpur. Office: 03-2161 8044 H/p: 012-297 9803 daphneloke@hotmail.com chewmf@tmnet.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – CIF (S&T Core)

Project Title	Research of New Natural Resources for Local Commercial Application as Dye and Fiber
Project Number	C0029
Project Leader and Team Members	Advisor: Leela Mohd Ali Head Of Research: Stephen Doss Members: Edric Ong, K. Sivakesava Rao, Achmad Sopandi, Ezaruddin Abd Rahman and Lilywati Zakaria
Field of Research	Material Sciences
Project Summary/ Objectives	Project objective was to develop the latest technique and utilisation in batik fabrication. The scope of the project included the latest techniques in natural colour selection such as flowers, fruits, mangrove roots and engkernai.
Publications/Products/ Outcomes	The product was firstly exhibited at the Kuala Lumpur International Batik Convention while its second exhibition was held at the UNESCO Natural Dyes Symposium 2008 in Daegu, South Korea.
Contact Institution/Entity Address	Yayasan Budi Penyayang Malaysia 3rd Floor, Wisma Penyayang, No.6, Jalan Equine, Bandar Putra Permai, 43300 Seri Kembangan, Selangor.
Phone Number e-Mail	H/p: 03-8946 0222 yabpm@tm.net.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – CIF (S&T Core)

Project Title	Development Project Proposal for Disable Children Rehabilitation by Community Participation Through <i>Seramik</i> Activity
Project Number	C0032
Project Leader and Team Members	Leader: Abd. Razak Mohd Ali Member: Hasnida Ahmed Hassanein Bay
Field of Research	Social Sciences
Project Summary/ Objectives	Project objective was to introduce an innovative teaching technique involving the use of ceramics in the rehabilitation of the disable children. In addition, this project was also aimed to bridge the gap between the community and the disable children.
Publications/Products/ Outcomes	The “rehadatherapy” has helped the development of small muscles and social skills of the participants. BAIDURI on the other hand has requested for the therapy to be incorporated at 9 centres of the Intercommunity Rehabilitation Centre (PDK) of Semai Bakti BAIDURI. A guidelines for the rehada programme was published to assist the instructors of the rehabilitation centre. An 80% increase in focus and learning skills were reported for the participants with Down’s Syndrome and those who are slow learners, mentally retarded as well as physically retarded.
Contact Institution/Entity Address	Dewan Perniagaan Melayu Malaysia Negeri Perak No. 11, Lot PT. 138197, Jalan Panglima Bukit Gantang Wahab, 30000 Ipoh, Perak.
Phone Number	Office: 05-255 5201 H/p: 019-511 6481
e-Mail	arma63mlk@yahoo.com junita_ms71@yahoo.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – CIF (S&T Core)

Project Title	Development of a Fertigation System for Agriculture to Optimise Crop Production Cost of Farmers under the Malay Growers' Association of Cameron Highlands
Project Number	C0038
Project Leader and Team Members	Leader: Syed Abu Rahman Syed Abd Rashid
Field of Research	Agricultural Sciences
Project Summary/ Objectives	Project objective was to develop a crop production fertigation control and monitoring system to optimise nutrient usage of tomato plant. The established 'model farm' was to encourage adoption of the technology among farmers in the target community specifically and the farming community generally.
Publications/Products/ Outcomes	Based on the feedback by MARDI, the software-controlled fertigation system contributed 20% saving to the farmers due to the reduction in fertiliser consumption and thus substantial disposal and seepage of fertiliser into rivers could be reduced subsequently.
Contact Institution/Entity Address	Persatuan Pekebun-Pekebun Melayu Cameron Highlands Pejabat PPK, 39100 Brinchang, Cameron Highlands, Pahang.
Phone Number	Office: 05-491 4204 H/p: 019-576 0669
e-Mail	saras49@tm.net.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – CIF (S&T Core)

Project Title	Expansion of Inno-Youth: Empowering Kajang Prison I Inmates (Youths) in Digital Micro-enterprises
Project Number	C0019
Project Leader and Team Members	Leader: Ramanitharan Rajaram Members: Vivegananthan Rajangam, Mohd. Ridzuan Yusof, Balraj Rajagopal and Norazlina Ali
Field of Research	Social Sciences
Project Summary/ Objectives	Project objective was to expand the Inno-Youth project that encompassed building and exposing the target group to potential business opportunities via ICT skills in multimedia and desktop publishing. The project has organised a few meetings to introduce all inmates to local business mentors and to share their experiences. Available business opportunities for inmates were explored during the meetings.
Publications/Products/ Outcomes	This project has become part of the Prison Department Life Long Learning Programme, launched by the Minister of Home Affairs.
Contact Institution/Entity Address	Pertubuhan Prihatin Sosial Malaysia No.83A, Lalan Klebang Restu 3, Medan Klebang Restu, 31200 Ipoh, Perak.
Phone Number	Office: 05-291 6535 H/p: 019-558 2007
e-Mail	ramanitharan_rajaram@yahoo.com





COMPENDIUM OF MOSTI FUNDED PROJECTS – CIF (S&T Core)

Project Title	E-Semai: ICT as an Enabler for Promotion of Eco-tourism amongst Semai Community
Project Number	C0053
Project Leader and Team Members	Leader: Sehar Samiappan Members: Gunalan Muniandy, Mohd. Ridzuan Yusof, Saiful Azman Bidin and Kavitha Sellapan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Project objective was to install and develop an management system of ICT infrastructure for Semai people in order to facilitate communication and interaction with the world in relation to the promotion of eco-tourism resources. The project also provides capacity building via various ICT based training courses for the Semai community.
Publications/Products/ Outcomes	The portal www.esemai.org was successfully developed as a platform for the community to reach the world to promote the eco-tourism. In addition, Semai Community Technology Centre (SCTC) was successfully developed as a centre for the community to promote their eco-tourism resources as well as to increase their competency in ICT
Contact Institution/Entity Address	Rangkaian Alam Malaysia 83A , Lalan Klebang Restu 3, Medan Klebang Restu, 31200 Ipoh, Perak.
Phone Number	Office: 05 - 291 6535 H/p: 012-483 9314
e-Mail	sehar1414@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – CIF (S&T Core)

Project Title	Peningkatan Keupayaan Industri Pembuatan Parang Negeri Sabah, Kota Belud, Sabah
Project Number	C0058
Project Leader and Team Members	Leader: Ramlan Salon Members: Noorbin Minjin, Jamlan Salon, Jamlin Ramlin, Rosdi Jaffar, Pawel Mallo, Jaffar Rambab, Tamdrah Enjun, Liddi Jaffar, Nasip Banut, Saed Pawel, Mohd. Aswadie Ramlan and Ramlin Jelon
Field of Research	Material Sciences
Project Summary/ Objectives	Project objective was to improve the ability of parang making in Kota Belud, Sabah through the development of a local centre to boost the fabrication and manufacturing of the parangs for daily use or as handicraft.
Publications/Products/ Outcomes	The local centre is now able to produce parangs with a consistent size, dimensions and quality.
Contact Institution/Entity Address	Komuniti Pembuat Parang Kumpulan Siasai Jaya, Kota Belud, Sabah Kg. Siasai Jaya, Jalan Kem Paradise, P/S 65, 89150 Kota Belud, Sabah.
Phone Number e-Mail	H/p: 014-374 9952 -





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Thermoluminescence Dosimeter (TLD) Using Nano-sized Dopant Material
Project Number	06-03-01-SF0013
Project Leader and Team Members	Leader: Wan Saffiey Wan Abdullah Members: Ishak Mansor, Mohd Taufik Dolah, Megat Harun Al Rashid and Nadira Kamarudin
Field of Research	Physical Sciences
Project Summary/ Objectives	The project comprises the development of TLD material using Mg ion as dopant material. The matrix base TL materials were from commercial LiOH and HF, whilst the dopant materials were extracted from a compound of Mg (MgCl ₂). The project involved material processing (synthesis), doping techniques, material fabrication and characterisation.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Wan Saffiey Wan Abdullah, Hafzaliza Erny Zainal Abidin, Megat Harun Al Rashid Megat Ahmad, Nadira Kamaruddin, Mohd Taufik Dollah, Ishak Mansor, Norlina Ab Aziz and Nurhaslinda Ee Abdullah. 2009. Physical and radiation characterisations on new thermoluminescence dosimeter(TLD) material. <i>International Conference on Neutron and X-Ray Scattering 2009 (ICNX 2009)</i>, 29 June – 1 July, Kuala Lumpur. 2. Wan Saffiey Wan Abdullah, Megat Harun Al Rashid Megat Ahmad, Nurazila Mat Jali, Nadira Kamaruddin, Mohd Taufik Dollah, Ishak Mansor. 2008. Effect of base solution concentration on the precipitation of thermoluminescence (TL) material. <i>Sem. Sensor Int. Group</i>, 31 March, Selangor. 3. Wan Saffiey Wan Abdullah, Nurazila Mat Zali, Megat Harun Al Rashid Megat Ahmad, Nadira Kamaruddin, Mohd Taufik Dolah, Ishak Mansor, Norlina Ab Aziz and Nurhaslinda Ee Abdullah. 2008. Effect of dopant material concentration on the sensitivity of thermoluminescence (TL) material. <i>NSET 2008</i>, 23-24 Oct, Kuala Lumpur. 4. Megat Harun Al Rashid Megat Ahmad, Wan Saffiey Wan Abdullah, Nadira Kamaruddin, Mohd. Taufik Dollah, Ishak Mansor, Norlina Abd. Aziz dan Nurhaslinda Ee Abdullah. 2007. Density functional theory of F-centre in lithium fluoride, <i>MTeC Colloquium 2007</i>, Selangor.

	<p>5. Nurazila Mat Jali, Wan Saffiey Wan Abdullah, Megat Harun Al Rashid Megat Ahmad, Nadira Kamaruddin, Mohd Taufik Dollah, Ishak Mansor, Norlina Abd. Aziz dan Nurhaslinda Ee Abdullah. 2008. Effect of base solution concentration on the precipitation of thermoluminescence (TL) material, <i>Seminar R& D 2008</i>, 26-29 Aug, Selangor.</p> <p>Products: A new TLD material for ionising radiation dose measurement (for X-ray, gamma-ray and beta-ray).</p>
Awards/Certificates	<ol style="list-style-type: none"> 1. Silver medal for innovation competition Nuclear Malaysia, 16-18 July, 2008. 2. Gold Medal – Malaysian Technology Expo 2009 (MTE2009), 3. 19-21 February 2009, PWTC, Kuala Lumpur. Nominated for Anugerah Inovasi Perkhidmatan Awam 2009 (AIPA 2009).
Additional Information	<p>Linkages: One SMI is showing interest to manufacture the TL material but has no manpower and expertise to support the project at their site.</p> <p>Spin-off: Further research topics that can be extended as spin-off from the initial project:</p> <ul style="list-style-type: none"> • Development of TL-material for high dose dosimetry for radiation processing using CaSO₄ base material. The proposed project is requested under Science Fund and still under review by MOSTI. • Development of thin layer TL-material for beta, low energy X- and gamma radiation. • Development of TL-material for neutron dosimetry
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Nuclear Malaysia Malaysian Nuclear Agency, 43000 Kajang, Kajang. Office: 03-8925 0510 H/p: 019-600 2189 wansaffiey@nuclearmalaysia.gov.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Establish Radiation Safety Protocol/Procedure on Using the Diathermy Machines
Project Number	06-03-01-SF0015
Project Leader and Team Members	Leader: Rozaimah Abdul Rahim Member: Roha Tukimin
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The project has two components, which are assessment of Radiofrequency(RF) and Microwave(MW) emitted by the diathermy machines, and the development of safety protocol for diathermy usage in hospital.
Publications/Products/ Outcomes	Product: 1. Safety Protocol of Diathermy usage in Hospital 2. Baseline data of the Radiofrequency(RF) and Microwave (MW) radiation levels from diathermy machines
Additional Information	Linkages: This project will contribute for safety precaution in handling diathermy machines in hospital in Malaysia.
Contact Institution/Entity Address	NUCLEAR Non-Ionising Radiation (NIR) Group, Radiation Health & Safety Division, Malaysian Nuclear Agency, 43000 Kajang, Selangor.
Phone Number	Office: 03-8925 0510 H/p: 012-714 5291
e-Mail	rozaimah@mint.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	To Invent a State of Art Technology on Web-based Hanyu Pinyin Instruction to Facilitate Self-learning Mandarin for Non- native Mandarin Learners
Project Number	06-01-01-SF0099
Project Leader and Team Members	Leader: Lim Soo Giap
Field of Research	Social Sciences
Project Summary/ Objectives	The WBI (guruhanyupinyin.com) is the instructional material that is used in the learning system, involving the network operation centre (NOC), the WWW resources, the learners, instructors and the regularly conducted lectures of fulltime teaching staff. Learners can access it through any computer. This instruction is designed on the basis of ISD (Instructional system design) methodology. This approach involves four phases; analysis and design, development, implementation and, evaluation of the instruction. This project was tailored to the specific needs of Malay learners , web-based training can be updated very rapidly. This study had generated new teaching and learning methodology in facilitating learning of Mandarin. We had break through the bottleneck of Bumiputera learners in speaking perfect Mandarin and assist UiTM to become authority and excellent centre.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Lim Soo Giap., Ong Sheau Fen. and Mah Boon Yih. 2010. The Process of Designing and Developing a Romanised Mandarin Web-based Instruction on ISD Methodology for Non-native Learners in Malaysia . <i>Educational and Network Technology (ICENT)</i>, 2010 International Conference. 25-27 June. Qinhuangdao. <p>Others :</p> <ol style="list-style-type: none"> 1. Lim Soo Giap. Hanyu Pinyin WBI - An Online Mandarin Learning Instruction for Non-native Mandarin Learner. <i>IID Invention, Innovation and Design, Cultivating Innovative Minds for the World of Tomorrow</i>. 27-28 July, Malaysia.
Awards/Certificates	Invention Gold Award : Invention, Innovation and Design IID 2010SE UiTM



Contact Institution/Entity Address	Universiti Teknologi Mara (UiTM) UiTM Pulau Pinang, 13500 Permatang Pauh, Pulau Pinang.
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e-Mail	lsgmy@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	A Non-thermal Plasma Source: Design, Characterisation and Bio-application
Project Number	06-01-03-SF0186
Project Leader and Team Members	Leader: Chin Oi Hoong Members: Wong Chiow San and Thong Kwai Lin
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	A non-thermal Dielectric Barrier Discharge Device was successfully designed and characterised. It was then used for the inactivation of a few types of bacteria namely <i>Eschericia coli</i> , <i>Salmonella enteritidis</i> and <i>Bacillus cereus</i> .
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. C.K. Lai,. O.H. Chin,. and K.L. Thong,. 2009. Characteristics of a dielectric barrier discharge in atmospheric air, <i>AIP Conf. Proc.</i>, Vol.1150, July 10, p.460-463. 2. C.K. Lai,. O.H. Chin,. and K.L. Thong,. 2009. Dielectric Barrier Discharge for Bacteria Sterilization. <i>5th Mathematical and Physical Sciences Graduate Congress 2009</i>, 7-9 Dec, Faculty of Science, Chulalongkorn University, Bangkok, Thailand. 3. C.K. Lai,. & O.H. Chin,. 2008. Electrical Characteristics and Physical Appearance of a Dielectric Barrier Discharge powered by Unipolar and Sinusoidal Voltages. <i>4th Mathematics and Physical Sciences Graduate Congress 2008</i>, 17-19 Dec, Faculty of Science, National University of Singapore, Singapore. 4. C.K. Lai,. O.H. Chin,. J. Singh,. & C. S. Wong,. 2007. Electrical Characteristics of a Parallel Plate Dielectric Barrier Discharge, <i>National Physics Conference (PERFIK 2007)</i>, 26-28 Dec, Heritage Bay Club, Pulau Duyung, Kuala Terengganu. pp.98. <p>Others:</p> <ol style="list-style-type: none"> 1. C.K. Lai,. 2011. Operating characteristics and bio application of an atmospheric dielectric barrier discharge, MSc dissertation, submitted for examination, Jan, University of Malaya.





Contact Institution/Entity Address	Universiti Malaya (UM) Physics Department, University of Malaya, 50603 Kuala Lumpur.
Phone Number	Office: 03-7967 4091 H/p: 013-339 0141
e-Mail	ohchin@um.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Biogenic Volatile Organic Compounds Emission in Malaysian Landscapes and Its Implication to the Global Carbon Cycle
Project Number	06-01-10-SF0020
Project Leader and Team Members	Leader: Maryati Mohamed Member: Charles S. Vairappan
Field of Research	Environmental Sciences
Project Summary/ Objectives	Photosynthesis rates of plants from different vegetation landscapes were measured in the primary forest, secondary forest and oil palm. Volatile organic compounds emission of plants from different vegetation landscape were analysed in the primary forest, secondary forest and oil palm. The factors influencing volatile organic compounds emission were established.
Additional Information	Linkages: 1. Centre for Ecology and Hydrology, Edinburgh, UK Industrial 2. Sabahmas Plantation, Lahad Datu, Sabah
Contact Institution/Entity Address	Universiti Malaysia Sabah (UMS) Pusat Penyelidikan dan Inovasi, Universiti Malaysia Sabah (UMS), Beg Berkunci 2073, 88999 Kota Kinabalu, Sabah.
Phone Number e-Mail	Office: 08-832 0000 dmaryati@ums.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Operating Small and Medium-sized Accommodation Enterprises in Sabah
Project Number	06-01-10-SF0031
Project Leader and Team Members	Leader: Jennifer Chan Kim Lian Members: Tini Maizura Mohtar, Awangku Hassanah Bahar, Kamarul Mizal Marzuki, Kalsom Abd. Wahab and Yuzain Janin
Field of Research	Economics, Business and Management
Project Summary/ Objectives	<p>The research project is a pioneering investigation into small and medium-sized accommodation enterprises in Sabah. Qualitative and quantitative research approaches were used to gather primary data via multi research methods - personal in-depth interviewing, questionnaire survey techniques and participation observation techniques. Findings revealed that SM accommodation are often located in cities, towns or major tourist sites; they are mostly family-owned and operated, and are operating within niche markets. A significant number of operators/owners have limited knowledge and skills in hospitality and business operations and have limited access to financial capital, the international markets and information. Hence, they face difficulties in increasing their market share due to keen competition and an oversupply of accommodation properties, as well as their lack of business management knowledge and skills. The research suggests that major management and operational aspects contribute towards value-added products and services via training and the giving of incentives and assistance to accommodation management. The use of branding to create awareness and to add value to the accommodation property, and subsequently to create a differentiated identity, provides a range of benefits and enhances profitability, as well as forms an alternative marketing strategy and a means of communication.</p>
Publications/Products/ Outcomes	Journals : <ol style="list-style-type: none"> 1. Chan, J.K.L. (in press). The branding of SMEs in accommodation sector: brand name development and brand equity <i>Journal of Vocational Marketing</i>. 2. Chan, J.K.L. and Quah W.B. (in press). Start-up Factors for Small and Medium-sized Accommodation Businesses in Sabah, Malaysia: Push and Pull factors , <i>Asia Pacific Tourism Journal</i>.

3. Chan, J.K.L. 2009. The empirical evidence of human resource practices by SMEs in accommodation: issues of training and benefits and staff retention, *TEAM Journal of Hospitality and Tourism*, volume 6(1), pg 23-36.
4. Sharija Che Shaari. 2008. Kefahaman Undang-undang Hospitaliti di kalangan Pengusaha Rumah Penginapan Kecil dan Sederhana di Sabah: Tinjauan Awal. *Borneo Research Council in -9th Biennial International Conference: Borneo on the Move –Continuity and Change*, 29-31 July. Universiti Malaysia Sabah.
5. Chan, J.K.L. and Quah, W.B. 2008. Key issues on managing small and medium-sized accommodation businesses: an exploratory study, *TEAM Journal of Hospitality and Tourism*, volume 5 (1), pg.13- 26.

Proceedings/Conferences/Seminars

1. Chan, J.K.L. and Kamarul, M. 2009. Key functional human resource issues and practices among small and medium sized accommodation operators. Full refereed paper submission for *7th Asia-Pacific CHRIE (APacCHRIE) Conference 2009 - Creative Hospitality Research and Innovative Education Singapore*, 28-31 May, Singapore.
2. Chan, J.K.L., Quah, W. B. and Izyanti, A.R. 2008. Motivational factors of small and medium-sized accommodation operators in Sabah in *6th Asia-Pacific CHRIE (APacCHRIE) Conference and THE – ICE International Panel of Experts Forum 2008 and Developing & Delivering Industry*.
3. Janie, L. and Chan, J.K.L. 2008. Codes of conduct for hospitality: A preliminary finding of its perception and practice by small and medium-sized accommodation operators in Sabah in *9th Borneo Research Council 2008 International Conference: Borneo on the move – continuity and Change*, July 29-31, Sabah.
4. Chan, J. K. L. 2008. Factors affecting the adoption of Internet by small and medium-sized accommodation in Sabah: An exploratory study in *6th Asia-Pacific CHRIE (APacCHRIE) Conference and THE –ICE International Panel of Experts Forum 2008 and Developing & Delivering Industry*, Sabah.



	5. Chan, J.K.L. 2008. Internet adoption framework for small and mediums-sized accommodation business : A Case in Sabah, Malaysia in 2nd Asia Euro Tourism, Hospitality and Gastronomy Conference- Asia Euro Transfer of Technology and Knowledge in Tourism, Hospitality & Gastronomy, 20-22 Nov, Sabah.
Awards/Certificates	1. (Best Paper Award – Hospitality Category). International conference proceeding
Additional Information	Linkages: Malaysia Hotel Association (Sabah and Labuan)
Contact Institution/Entity Address	Universiti Malaysia Sabah (UMS) Pusat Penyelidikan dan Inovasi, Universiti Malaysia Sabah (UMS), Beg Berkunci 2073, 88999 Kota Kinabalu. Sabah.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	The Promotion of Transportation in Tourism Development
Project Number	06-01-10-SF0057
Project Leader and Team Members	Leader: Liew Heng Mei @ Janie Liew Members: Sharon Cheuk, Phang Ing, Kamarul Mizal Marzuki, Tini Maizura Mohtar, Azaze @ Azizi Abdul Adis, Izyanti Awang Razli and Awangku Hassanah Bahar Pengiran Bagul
Field of Research	Economics, Business and Management
Project Summary/ Objectives	Transport provides the essential link between tourism origin and destination areas, and facilitates the movement of holiday makers, business travellers, people visiting friends and relatives and those undertaking educational and health tourism. A clear relationship exists between transport development and tourism growth. Due to the choice of transport available and the competitive environment for tourist travel, transportation planners may not recognise the important role that transportation plays within the travel experience. Accurate information on the use of tourist transport infrastructure is critical when formulating transport policies. This does not necessarily include potential or projected tourist arrivals. As forecasting is a process associated with the assessment of future changes, the demand for tourist transportation, it must be stressed that forecasting is not an exact science. Forecasting can only attempt to make estimations of future traffic potential and a range of possible scenarios, based on the Government's policy on attracting tourist arrivals, which provides an indication of the likely scale of change in demand. In the promotion of transportation, this research focuses on the impacts, either positive or negative, it can bring to the development of tourism in Malaysia.
Publications/Products/ Outcomes	Books : <ol style="list-style-type: none"> 1. The Promotion of Transportation Towards Sustainable Tourism Development. UMS Publications in 2010 – 2011. (in press). Journals : <ol style="list-style-type: none"> 1. Phang Ing @ Grace., Janie Liew Tsonis., Sharon Cheuk and Izyanti Awang Razli. 2009. An examination of the challenges involved in distributing a strong and consistent destination image in the marketing of tourism in Malaysia. <i>International Business and Economics Research Journal</i> Vol 9(1), 31-39.



	<ol style="list-style-type: none"> 2. Janie Liew Tsonis., Sharon Cheuk., Phang Ing @ Grace and Izyanti Awang Razli. 2009. An examination of the challenges faced in economic, socio-cultural and environmental aspects of transport development and tourism in Malaysia. <i>European Journal of Social Sciences</i>, Vol 11(4), 522-534. 3. Sharon Cheuk., Janie Liew Tsonis., Phang Ing @ Grace and Izyanti Awang Razli. 2009. An establishment of the role of private and public sector interests in the context of tourism transport planning and development: The case of Malaysia. <i>International Business and Economics Research Journal</i>, Vol 12(4), 115-140. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Sharon Cheuk., Janie Liew Tsonis., Phang Ing @ Grace and Izyanti Awang Razli. 2009. An establishment of the role of private and public sector interests in the context of tourism transport planning and development: The case of Malaysia. <i>European Applied Business Conference Proceeding</i>, Prague.
<p>Awards/Certificates</p>	<ol style="list-style-type: none"> 1. <i>Gold Award</i> - Sustainable Tourism Development: A framework for analysing tourism transport needs in order to expand tourism activities in PEREKA. 2. <i>Silver Award</i> - "An establishment of the role of public and private sector interests in the context of tourism transport planning and development : The case of Malaysia" in PEREKA. 3. <i>Silver Award</i> - "The Promotion of Transportation in Tourism Development: A recommendation of a new methodology" in PEREKA. 4. <i>Bronze Award</i> - "An examination of the challenges involved in distributing a strong and consistent destination image in the marketing of tourism in malaysia" in PEREKA. 5. <i>Best Paper Award</i> at EABR International Conference in Prague, June 2009 for "An examination of the challenges involved in distributing a strong and consistent destination image in the marketing of tourism in Malaysia" 6. <i>Gold Award</i> and <i>Best Paper Award</i> went on to PECIPTA Exhibition in 2009.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Effects of Total Dose Irradiation on Semiconductor Devices
Project Number	06-01-10-SF0087
Project Leader and Team Members	Leader: Haider F. Abdul Amir Member: Abdullah Chik
Field of Research	Physical Sciences
Project Summary/ Objectives	<p>The hardness (radiation resistance) of the semiconductor devices under test to be used within a range of ionising radiation environment was identified. This was to ensure proper functionality of the components after the semiconductor devices are fabricated. The mechanisms involved in the creation of radiation induced charge carriers and bonding defects, and the permanent or impermanent damaging effects on the devices were studied. This research had established an autonomous data acquisition system comprised of hardware and software which is of low cost, yet, with appropriate method and concept. This system allows in line metrology in measuring the changes of characteristics in the electronic devices which is induced by the ionising radiation, thus, improving the process monitoring; reducing product variance and enabling higher throughput.</p>
Publications/Products/ Outcomes	<p>Journals</p> <ol style="list-style-type: none"> 1. Chee, F. P., Haider F. A. A., Saffie, S. and Azali, M. 2010. Effects of total ionizing dose on bipolar junction transistor. <i>American Journal of Applied Science</i> 7: 807-810. 2. Haider, F. A. A., and Chee, F. P., 2010. Evaluation of Static Performance of Optoelectronic Semiconductor Devices under X-rays Irradiation. <i>Advanced Materials Research</i> 173: 1-6. 3. Chee, F. P., Haider F. A. A. and Saffie, S. 2009. System Design for Enhanced In Situ Monitoring of Ionizing Radiation Effects in Semiconductor Device. <i>A Journal of Science and Technology</i> 2: 59- 69. <p>Proceedings/Conferences/Seminars: 10</p> <ol style="list-style-type: none"> 1. Chee, F. P., Haider, F. A. A. and Saafie, S. 2010. Range distribution and electronic stopping power for cobalt (Co) ions in gallium arsenide (GaAs) optoelectronic devices. <i>International Conference on Modeling, Simulation and Applied Optimization (ICMSAO-2011)</i>

	<ol style="list-style-type: none"> 2. Haider, F. A. A. and Chee, F. P., 2010. Environmental Conditions Simulation for penetration of ion helium into silicon materials. <i>Seminar Kebangsaan Aplikasi Sains dan Matematik 2010 (SKASM2010)</i>, <i>Simposium Kebangsaan Sains Matematik 2010 (SKSM2010)</i>, Johor Bahru. 3. Haider, F. A. A., Chee, F. P, Saafie, S. and Azali, M. 2009. The Effects of Ionizing Radiation on the Functional and Parametric Performance of Bipolar Junction Transistors (BJTs). <i>8th Annual Seminar on Science and Technology</i>, University Malaysia Sabah, Kota Kinabalu, Sabah. 4. Haider, F. A. A. and Chee, F. P. 2010. Evaluation of Static Performance of Optoelectronic Semiconductor Devices under X-rays Irradiation. <i>International Conference on X-Rays & Related Techniques in Research & Industry (ICXRI 2010)</i>, Unimap and Xapp Mns. 5. Chee, F. P., Haider, F. A. A. and Saafie, S. 2010. Environmental Conditions Effect on bipolar junction. <i>3rd International Conference on Southeast Asian Natural Resources and Environmental Management (SANREM 2010)</i>, University Malaysia Sabah and Science and Technology Unit of Sabah State Government, Kota Kinabalu.
Awards/Certificates	Sijil Pereka UMS, 2009.
Additional Information	Linkages: Malaysia Nuclear Agency and Lott Inspection Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Modelling Service Quality, Customer Satisfaction and Customer Loyalty of Island Hotels in Malaysia
Project Number	06-01-12-SF0015
Project Leader and Team Members	Leader: Mahadzirah Mohamad
Field of Research	Economics, Business and Management
Project Summary/ Objectives	<p>The hotel industry, like any other service industries, service quality is one of the most critical components for the success of the business. The survey among customers can help management to determine which service areas are most in need for improvement. Understanding customer satisfaction is an advantage for the manager to distinguish their hotel from competitors and increase customer loyalty, which is described as the intention to come back and provide positive word-of-mouth. The cost of attracting a new customer is seven times more than retaining the old ones. Higher customer loyalty will lead to higher profitability and more stable customer basis. Hence, customer satisfaction and loyalty is an asset to the hotel. Tangibility and responsiveness, the two underlying components of service quality, were observed to be the most significant to customer's intention to revisit or recommend the hotel to friends and relatives. The study proved that customer satisfaction had a strong and consistent causal relationship with repurchase intention. The study also showed that high score of service quality results in high customer loyalty.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mahadzirah Mohamad and Pham Thi Ho Ly. 2007. Guests satisfaction and loyalty of Perhentian Island hotels in Malaysia, <i>Journal of Global Business Management</i>, Volume 3, Number 1, pp. 143 - 151. 2. Mahadzirah Mohamad and Pham Thi Ho Ly (2007), Modelling the inter-relationship between guest satisfaction and loyalty of international tourist visiting the Malaysian Islands, <i>Journal of Global Business Management</i>, Volume 3, Number 2, pp. 183-192.

	2. Mahadzirah Mohamad and Pham Thi Ho Ly. 2007. Hotel Guest satisfaction and loyalty: A study of international tourists visiting Malaysian Islands, 2007 European Marketing Academy Conference (EMAC), <i>Proceeding of the 36th EMAC Conference</i> , 22-25 May.
Contact Institution/Entity Address	Universiti Malaysia Terengganu (UMT) Pusat Pengurusan Penyelidikan, Universiti Malaysia Terengganu (UMT), Mengabang Telipot, 21030 Kuala Terengganu, Terengganu.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Controlling and Managing of Cryptosporidium & Giardia Potential Risk in Water Environment via Nano Technology and Novel Eco-efficient Micro-organism Separation System (MICROSYS)
Project Number	06-01-12-SF0025
Project Leader and Team Members	Leader: Nora'aini Ali Members: Ahmad Jusoh, Shahrul Ismail and Abdul Latif Ahmad
Field of Research	Environmental Sciences
Project Summary/ Objectives	This research project studied the Cryptosporidium and Giardia potential risk in water environment. We developed a novel NANO membranes technology for controlling and managing the microorganism risk. We had evaluate the performance and properties of the novel NANO membranes for microorganism disinfections.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Nora'aini Ali., L.Y. Wong., A. Asmadi. and M. Taib, A.R. Hassan. 2008. Locally developed low pressure asymmetric UF membranes (LPAUM) for bacteria removal application. <i>Proceeding of the Seminar on Science and Technology 2008, 29-30 Oct, School of Science and Technology, UMS, Labuan, Sabah.</i>
Contact Institution/Entity Address	Pusat Pengurusan Penyelidikan Universiti Malaysia Terengganu (UMT), Mengabang Telipot, 21030 Kuala Terengganu, Terengganu Darul Iman.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Environmental-safe Bio-based Hydraulic Fluid by Chemical Modification Techniques
Project Number	06-01-12-SF0029
Project Leader and Team Members	Leader: Wan Mohd Norsani Wan Nik Members: Ahmad Jusoh, Robiah Yunus, Masjuki Hassan, Farid Nasir Ani, Nora'aini Ali and Ku Halim Ku Bulat
Field of Research	Engineering Sciences
Project Summary/ Objectives	We have identified the appropriate modification method and process that could be used to improve both thermal and oxidative stability of bio-based oil. We have examined the reductive ozonolysis technique to improve thermal stability of plant oil. We have improved and modified previous ozonolysis synthesising technique to ensure a better quality of hydraulic fluid that could be produced at the end of the project. We have produced bio-based hydraulic fluid using transesterification reaction and tested the performance of the modified oil in hydraulic system.
Publications/Products/ Outcomes	<p>Books :</p> <ol style="list-style-type: none"> 1. Wan Nik, W.B., Eng Giap, S.G., Masjuki, H.H. and Senin, H. 2005. Application of Modified Power Law and Arrhenius Relationship in Studying Rheological Behavior of Bio-Oils. (p147-152). Trans Tech Publications <p>Journals:</p> <ol style="list-style-type: none"> 1. S.G.E. Giap., W.B. Wan Nik., M.F. Ahmad. and A. Amran. 2009. The Assessment of Rheological Model Reliability of Lubricating Behaviour of Vegetable Oils. <i>Engineering e-Transaction</i>. V4, N2, pp81-89. 2. Wan Sani Wan Nik., Sunny Goh Eng Giap. and Senin Hasan, Rheology and Oxidation of Hydraulic Fluid Derived from Bio-Based Material. <i>Journal Fizik Malaysia</i>. 3. Rosliza Ramli., S.Y. Seoh , W.B. Wan Nik. and H.B. Senin. 2006. Corrosion Behavior of Aluminum Alloys in Acidic Media. <i>Journal of Solid State Science and Technology</i>. Letters 13 (2):285-287 4. Wan Nik, W.B., Ani, F.N., Masjuki, H.H. 2005. Thermal Stability Evaluation of Palm Oil as Energy Transport Media. <i>Energy Conversion and Management</i>. Vol. 46, Issues 13-14 : 2198-2215.





	<p>5. Wan Nik, W.B., Ani, F.N., Masjuki, H.H. 2005. Rheology of Bio-edible Oils According to Several Rheological Models. <i>Industrial Crops and Products</i>. Vol. 22, Issue 3 : 249-255.</p> <p>Proceedings/Conferences/Seminars: 13</p> <ol style="list-style-type: none"> 1. Nor Halaliza Alias., Robiah Yunus., Azni Idris and W.B. Wan Nik. 2005. Preliminary Investigation on Formulation of Natural Synthetic Lubricant for Hydraulic Fluid Application. <i>International Conference on Chemical and Bioprocess Engineering</i>, 8-10 Dec, Sabah. 2. Wan Sani Wan Nik., Nora'Aini Ali., Ku Halim Ku Bulat, and Farid Nasir Ani. Study of Plant Oil and Its Ageing Effect on Hydraulic System Efficiency and Rheological Performance, <i>International Conference on Chemical and Bioprocess Engineering</i>, 8-10 Dec, Sabah. 3. Wan Nik, W.B., Eng Giap, S.G., Surjosatyo, A Ibrahim, and M.Z., Ani, F. 2005. Thermal and Rheological Studies of Plant Oil to Aid in Evaluating Its Suitability as Bio Hydraulic Fluid. In CD-Production of Biofuel section. <i>World Renewable Energy Regional Congress and Exhibition 2005</i>, 17-21 Apr, Jakarta, Indonesia 4. Wan Sani Wan Nik., Sunny Goh Eng Giap., Masjuki Haji Hassan., Senin Hassan and Md. Makhlesur Rahman. 2005. The Effect of Temperature, Shear and Ageing on Plant Oil Rheological Behavior. <i>International Meeting on Frontiers of Physics 2005</i>. 25-29 July, The Mines, Kuala Lumpur 5. Wan Sani Wan Nik., Masjuki Haji Hassan., Farid Nasir Ani, and Md. Makhlesur Rahman. 2005. Performance Investigation of Plant Oil as Energy Transport Media. <i>National Conference on Advances in Mechanical Engineering 2005 (Name'05)</i>, 18-20 Mei, Kuala Lumpur.
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Malaysia Sabah (UMS) Pusat Pengurusan Penyelidikan, Universiti Malaysia Terengganu (UMT), Mengabang Telipot, 21030 Kuala Terengganu, Terengganu. Office: 09-668 3342 niksani@umt.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Performance of a Dielectric Barrier Discharge Plasma Actuator and Flow Simulations
Project Number	06-01-09-SF0023
Project Leader and Team Members	Leader: Andrew R.H. Rigit Members: Almon Chai, Anatoli Vakhguelt, Marini Sawawi, Ervina Junaidi, David Bong Boon Liang, Jane Labadin, Mohammad Shahril Osman, Mahbub Hasan and A. Rahim Md. Amin
Field of Research	Physical Sciences
Project Summary/ Objectives	Electrohydrodynamic (EHD) actuators can be classified into three large groups based on the different electrical characteristics of the discharge namely AC dielectric barrier discharge devices (DBD), DC unipolar coronas discharge based devices (UCD) and plasma sheet discharge devices (PSD). This study had looked into the first group, DBD. Usual configurations of a DBD consist of planar parallel electrodes separated by a thin dielectric film, disposed in general in arrangements in the streamwise direction of an aerodynamic surface. The physical mechanisms responsible for the EHD effect in a surface DBD are not completely clear. Many parameters (dielectric thickness and permittivity, voltage waveform, amplitude, frequency) are known to affect the velocity of the generated flow but the scaling laws are not known and work is still necessary to quantify the EHD force and understand the parameters optimising this force. Therefore this study had illustrated how 2D fluid models of the discharge can help in the understanding and quantification of the EHD force generated by surface DBDs and provide scaling laws.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Rigit, A.R.H., Lai, K.C., & Bong, D.B.L. (2009). Electrical Performance Evaluations for a Dielectric Barrier Discharge Plasma Actuator. <i>IEEE/DEIS Annual Report - Conference on Electrical Insulation and Dielectric Phenomena, CEIDP</i>, art. no. 5377784, pp. 67-71. 2. Lai, K.C., Rigit, A.R.H., Bong, D.B.L., Hasan, M., Sawawi, M., & Osman, M.S. (2009). Thermal Imaging of Dielectric Barrier Discharge Plasma Actuator Panels. <i>IEEE/DEIS Int. Symp. Electrohydrodynamics, UNIMAS, Kota Samarahan, Sarawak, Malaysia, Paper A5</i>. ISBN 978-983-9257-95-3.





	3. Rigit, A.R.H., Lai, K.C., & Bong, D.B.L. (2009). Degradation of a Dielectric Barrier Discharge Plasma Actuator. <i>IEEE/DEIS 9th Int. Conf. Properties and Application of Dielectric Materials</i> , Harbin, China, Vol.2, pp. 569-572. ISBN978-1-4244-4366-
Additional Information	Linkages: Sanmina SCI (Sarawak) Sdn Bhd.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaysia Sarawak (UNIMAS) Timbalan Naib Canselor (Penyelidikan dan Inovasi), Universiti Malaysia Sarawak (UNIMAS), 94300, Kota Samarahan, Sarawak. H/p: 012-888 6965 arigit@feng.unimas.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Structural Life Assessment Software
Project Number	06-02-03-SF0003
Project Leader and Team Members	Leader: Judha Purbolaksono Members: Faris Tarlochan, Zainudin Yahya, Fazril Ideris and Md Mujibur Rahman Minsur
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>The project developed the software that enabled to analyse fatigue problems of structural components without or with presence of a crack. This software can be used to analyse the crack growth with linear model for constant-amplitude loading as well as variable-amplitude loading. Some of fatigue crack growth retardation models are incorporated. Various configurations of through and part-through cracks including multiple cracks problems was developed. This project also developed a new procedure on how to estimate oxide scale growth and heat flux in water-tube boiler by utilising the empirical formula correlating scale thickness with Larsen-Miller parameter and the finite element modelling. The technique takes into account the geometry of the tube and heat transfer parameters that may govern the problem such as mass flow rate, viscosity, thermal conductivity, flue gas temperature and convection coefficient. The technique is able to show the quantitative description of how the oxide growth rate can be accelerated by the conditions of operation. Well informed data for heat transfer parameters according to variations in the operating conditions from the monitoring system will improve estimations obtained from the iteration procedure. Better estimations allow appropriate actions to be taken to avoid further failures of the tubes.</p>
Publications/Products/ Outcomes	<p>Journals :</p> <ol style="list-style-type: none"> 1. Purbolaksono, J., Khinani, A., Ali, A.A., Rashid, A.Z., Ahmad, J. and Nordin, N.F., 2009. A new method for estimating heat flux in superheater and reheater tubes, Nuclear Engineering and Design, ELSEVIER, Article in Press, DOI: 10.1016/j.nucengdes.2009.05.018; ISSN:0029-5493, The Netherlands



	<p>2. Purbolaksono, J., Ahmad, J, Khinani, A., Ali, A.A. and Rashid, A.Z., 2010. Failure case studies of SA213- T22 steel tubes of boiler through computer simulations, Journal of Loss Prevention in the Process Industries, ELSEVIER , Article in Press, DOI: 10.16/j.jlp.2009.06.005, ISSN: 0950- 4230, The Netherlands</p> <p>Others :</p> <p>1. Evaluation on Stress Intensity Factors of Multiple Surface Cracks on the Outer Surface of Boiler Tubes by Boundary Element Method, Malaysian Science and Technology Congress 2008, 16-17 Dec, Kuala Lumpur, Malaysia.</p>
Additional Information	Linkages: Power Plants and Aerostructure Related
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Tenaga Nasional (UNITEN) Pengarah Pusat Pengajian Siswazah dan Penyelidikan, Universiti Tenaga Nasional (UNITEN), KM7, Jalan Kajang-Puchong, 43000 Kajang, Selangor. Office: 03-8921 2213 H/p: 012-913 4760 judha@uniten.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of a Three-dimensional (3D) Boundary Element Method (BEM) Solver for Thin Liquid Film Flow Applications
Project Number	06-02-03-SF0010
Project Leader and Team Members	Leader: Norshah Hafeez Shuaib Members: Ungku Anisa Ungku A, Kannan M. Munisamy, Mohd Zamri Yusoff and Hasril Hasini
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	The developed algorithm was based on isothermal assumption, in which the heat transfer was not modelled. The aim was to accurately model the thin liquid film shape. Having achieved the objective, the same algorithm has been extended and is now being used to simulate various heat transfer enhancement in different microchannels flow, which are useful for example in the computer chip cooling applications, among Others .
Publications/Products/ Outcomes	Product: Algorithm/Solver for the simulation of thin liquid films in various applications
Additional Information	Linkages: Collaboration work with University of Nottingham, United Kingdom
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) Universiti Tenaga Nasional (UNITEN), College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	The Development of Online Recruitment Systems in Malaysia: Best Fit Approach
Project Number	06-02-03-SF0056
Project Leader and Team Members	Leader: Noor Awanis Muslim Members: Harihodin Selamat, Nurazariah Abidin and Othman Ibrahim
Field of Research	Economics, Business and Management
Project Summary/ Objectives	This project had identified the best fit technique in online recruitment system. Had successfully measured the relationship between best fit technique and satisfy the desire of employment and candidates (employees to be) in online recruitment system. Finally had evaluated the importance of best fit technique in online recruitment system in Malaysia.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Applicant Perception towards the importance of information quality in online recruitment. 2008. <i>Regional Conference on Human Resource Development 2008</i> . New York.
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) Pengarah Pusat Pengajian Siswazah dan Penyelidikan, Universiti Tenaga Nasional (UNITEN), KM7, Jalan Kajang-Puchong, 43000 Kajang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Multilevel-inverter for Direct Torque-control of Induction Motor for Optimum Drive Performance and Energy Efficiency
Project Number	06-02-03-SF0065
Project Leader and Team Members	Leader: Zahrul Faizi Hussien Members: Yap Keem Siah, Ungku Anisa Ungku Amiruldin, Miszaina Osman and Izham Zainal Abidin
Field of Research	Engineering Sciences
Project Summary/ Objectives	The proposed project aims to contribute significant improvements to the current state of induction motor drives technology by developing an asymmetrical multilevel inverter DTC drive. Multilevel inverter has been shown to have the main advantages of higher input and output qualities at lower switching losses (high efficiency), the suitability for higher power drives, and lower dv/dt stress which is important for motor drive application [10], and these advantages enhances as the number of levels increases. By employing asymmetrical multilevel inverter, vast increase in the number of levels can be achieved, hence providing higher resolution control at lower switching losses. The project also set out to innovate novel control strategy in DTC for the asymmetrical multilevel inverter-induction drive with improved performance and reduced controller implementation complexity.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	An Adaptive Strategy for the Prevention of Power System Wide Collapse
Project Number	06-02-03-SF0068
Project Leader and Team Members	Leader: Izham Zainal Abidin Members: Zahrul Faizi Hussien, Miszaina Osman, Sharifah Azma Syed, Razali Jidin, Ya'akob Raja Omar and Halimatusun
Field of Research	Engineering Sciences
Project Summary/ Objectives	Frequency changes are closely related to real power changes in the system. Voltage related faults however are more related to Reactive Power changes. In practice, faults may be a combination of both frequency and voltage related. Based upon initial research, literature review and discussion, the developed strategy is based upon the concept of Wide Area Protection (WAP). The algorithm developed used concentrates on using Fast Voltage Stability Indices (FVSI and LQP) as an indicator to observable points during the mitigating action conducted at various locations in the system (based upon WAP). The concept is tested and is shown that the FVSI and LQP indices will improve when 'forced outages' are made in other parts of the system which shows that Wide Area Protection Concept works). Relays are modelled in MATLAB and are currently being developed in detail to demonstrate the feasibility of using Wide Area Protection using FVSI as an indicator in a working power system network.
Additional Information	Linkages: Tenaga Nasional Berhad, Tenaga Research Sdn. Bhd., Advanced Power Solution Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Mental Health Diagnostic Expert System: A Hybrid Implementation of Rule-based Reasoning and Fuzzy Logic
Project Number	06-02-03-SF0072
Project Leader and Team Members	Leader: Hajar Mat Jani Member: Alicia Tang Yee Chong
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	Mental and neurological disorders are highly prevalent worldwide. Based on the results, a Mental Health Diagnostic Expert System was developed. This research resulted in the understanding of the situations of patients/individuals with mental health problems. Transformed human experts' knowledge in the area of mental health into a knowledge base that grows over time based on newly acquired knowledge. We have developed a Mental Health Diagnostic Expert System that can assist and train new psychiatrists or even any psychiatrists/psychotherapists in making a more accurate diagnosis, efficiently. This will speed-up decision-making (diagnosis) process. The above expert system using two Artificial Intelligence reasoning techniques, which are Rule-Based and Fuzzy Logic was implemented.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mat Jani, H., and Lee, S.P. 2009. Using GA and KMP Algorithm to Implement an Approach to Learning through Intelligent Framework Documentation. In <i>Proc. 8th International Conference on Information Systems Technology and its Applications (ISTA 2009), and Lecture Notes in Business Information Processing (Journal, LNBIP) by Springer</i>, Campbelltown, Australia, pp. 202-213. 2. Masri, R.Y., Mat Jani, H., and Tang, Y.C. 2009. Implementing Fuzzy-Genetic Algorithm in Mental Health Diagnostic Expert System. <i>International Journal of Computer and (ICTS 2009)</i>, Vienna, Austria, Vol. 1, No. 1, pp. 375-382. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mat Jani, H. 2010. Benefiting from Online Mental Status Examination System and Mental Health Diagnostic System. In <i>Proc. The 3rd International Conference on Information Sciences and Interaction Sciences (ICIS 2010)</i>, IEEE/AICIT, Chengdu, China, pp. 66-70.





	<ol style="list-style-type: none"> 2. Mat Jani, H., and Lee, S.P. 2009. Using Case-based Reasoning and Genetic Algorithm in Framework Documentation Approach. In <i>Proc. 6th International Conference on Information Technology in Asia 2009 (CITA 2009)</i>, IEEE/UNIMAS, Kuching, Malaysia, pp. 147-154. 3. Masri, R.Y., Mat Jani, H., and Tang, Y.C. 2008. Applying Artificial Intelligence Techniques to Mental Health Diagnostic Expert System. In <i>Proc. 4th International Conference on Information & Communication Technology and Systems (ICTS 2008)</i>, IEEE/ITS, Surabaya, Indonesia, pp. 375-382. 4. Masri, R.Y., Mat Jani, H., and Tang, Y.C. 2008. Expert System Approach in Diagnosing Mental Health: A Proposal. In <i>Proc. International Symposium on Information Technology 2008 (ITSIM 2008)</i>, IEEE/UKM, Malaysia, pp. 261-266. 5. Masri, R.Y., Mat Jani, H., and Tang, Y.C. 2008. Using Rule-Based Reasoning and Fuzzy Logic in Mental Health Diagnostic Expert System. In <i>Proc. 4th Conference on Information Technology and Multimedia (ICIMu 2008)</i>, Malaysia, pp. 29-34. 6. Ab. Rahim, N.H., Mat Jani, H., and Tang, Y.C. 2008. Artificial Intelligence Techniques for Mental Health: A Comparative Study. In <i>Proc. 4th Conference on Information Technology and Multimedia (ICIMu 2008)</i>, Malaysia, pp. 35-40. <p>Others:</p> <ol style="list-style-type: none"> 1. A prototype was developed to implement the proposed Mental Health Diagnostic Expert System (<i>MeHDES</i>) 2. A masters student (final stage – finalising/writing the thesis)
Awards/Certificates	<ol style="list-style-type: none"> 1. Gold Medal in ICT Research Competition at UNITEN (2010) 2. Silver Medal in ICT Research Competition at UNITEN (2010)
Additional Information	Linkages: Hospital Ipoh, Perak

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Integrated Probabilistic Approach in the Design of Modern Power Distribution Network
Project Number	06-02-03-SF0089
Project Leader and Team Members	Leader: Au Mau Teng Members: Amir Hisham Hashim, John Steven Navamany and Thahirah Syed Jalal
Field of Research	Engineering Sciences
Project Summary/ Objectives	<p>The general objectives was to improved methodology in the design of modern power distribution network based on probabilistic concepts. This allows for elements of uncertainty/risk to be assessed against design criteria. We found that the approach implemented with a spread sheet format is suitable for a quick energy auditing of existing distribution network technical losses as well as assessing sensitivity of distribution network efficiency to change in different network and load parameters. It was shown that reliability curves of transformers and underground cables based on exponential and Weibull distributions derived using modified failure rate gives more realistic results. The gamma distribution was found to be the best fit among all probability distributions for kilo-voltampere (KVA) recorded at peak periods. It is shown that distribution transformers capacity could be more optimally sized by considering a risk factor and thus results in cost savings.</p>
Publications/Products/ Outcomes	<p>Publications and Papers:</p> <ol style="list-style-type: none">1. Mau Teng Au., Anthony, T.M., Kamaruddin, N., Verayiah, R., Syed Mustafa, S.A. and Yusoff, M. 2008. A simplified Approach in estimating Technical Losses in distribution Network Based on Load Profile and Feeder Characteristic, <i>2nd IEEE International Conference on Power and Energy (PECon 08)</i>, 1-3 Dec, Johor Baharu, Malaysia.2. Kannan, S., Mau Teng Au. and Hashim, A.H. 2009. A Comparative study on difference Models to evaluate Reliability of Power Distribution Network Component. <i>International Conference on Energy and Environment</i>, 7-8 Dec, Melaka, Malaysia.

	3. Kannan, S. and Mau Teng Au. 2010. Probabilistic Approach in Sizing Distribution Transformers. <i>International Conference on Probabilistic Methods Applied to Power Systems (PMAPS 2010)</i> 14-17 June, Singapore.
Additional Information	Linkages : Tenaga Nasional Bhd Spin-off : Consultancy Projects from TNB
Contact Institution/Entity Address	Universiti Tenaga Nasional (UNITEN) Pengarah Pusat Pengajian Siswazah dan Penyelidikan, Universiti Tenaga Nasional (UNITEN), KM7, Jalan Kajang-Puchong, 43000 Kajang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Numerical and Experimental Investigation of Lattice Boltzmann Method (LBM) for Turbomachinery Flow Applications
Project Number	06-02-03-SF0093
Project Leader and Team Members	Leader: Mohd Zamri Yusoff Members: Lim Chin Wai, Ir Dr Norshah Hafeez Shuaib, Kumaran Palanisamy, Goh Su Mei, Ban Kean Nam and Hussein Muhammed
Field of Research	Mathematical Sciences
Project Summary/ Objectives	<p>Turbomachinery flows are among the most complex flows encountered in fluid dynamic simulations. The traditional CFD method, via 3D Navier Stokes solvers have been useful in simulating turbomachinery flows. But it requires complicated turbulent modeling and significantly large amount of computing resources. The Lattice Boltzmann Method (LBM) has been introduced and proven as a new parallel and efficient alternative. LBM is based statistical mechanics. Unlike the continuum assumption used in traditional CFD, statistical mechanics concerns the collecting of particles and averaging the macroscopic properties of the particles within a fluid system. The LBM solves the Boltzmann equation by discretising the Boltzmann distribution function into discrete velocity space and time. In this project an LBM solver suitable for simulation on of compressible flow in turbomachinery is developed. The LBM solver has been applied to various cases of compressible flows in turbomachinery and of that it shock tunnels. Experimental measurements were also made in UNITEN shock tunnels to obtain data for solver validation.</p>
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Hussein Mohammed, Hanim Salleh and Mohd Zamri Yusoff. 2008. Design and Fabrication of Coaxial Surface Junction Thermocouples for Transient Heat Transfer Measurements. <i>International Communications in Heat and Mass Transfer</i>, Vol.35 : 853-859. 2. Hussein Mohammed, Hanim Salleh and Mohd Zamri Yusoff. 2009. A Detailed Construction and Evaluation of Type-E Low Cost Fast Response Surface Temperature Sensor. <i>International Journal of Sensors and Actuators A Physical</i> Vol.53 : 153-159.

	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Y.L. Ng., M.Z. Yusoff. and N.H. Shuaib. 2009. Development of Improved Three Dimensional Unstructured Tetrahedral Mesh Generator. <i>Proceedings of The International Conference on Computational Fluid Dynamics 2009 (ICCFD2009)</i>, 28 – 30 Oct, Venice, Italy. 2. Al-Falahi Amir, Yusoff M. Z, and Yusaf T. 2008. Numerical Simulation of Inviscid Transient Flows in Shock Tube and its Validations. <i>Proceedings of World Academy of Science, Engineering and Technology</i>, 24-26 Sept, Heidelberg, Germany. 3. Al-Falahi Amir, Yusoff M. Z. and N. H. Shuaib. 2009. Experimental and Numerical Simulation to Study the Two-Dimensional Effects Due to Area Contraction near the Diaphragm of a Shock Tube. <i>Proceedings of World Academy of Science, Engineering and Technology</i>, Vol 38.
Awards/Certificates	<ol style="list-style-type: none"> 1. ITEX2008, Silver Medal for product Development of Coaxial Surface Junction Thermocouple 2. ITEX2009, Gold Medal for product A Novel Type E Temperature Sensor for Transient Heat Transfer Measurements
Additional Information	<ol style="list-style-type: none"> 1. Malaysia Patent filed (PI 20090534); Measuring Device (Low Cost Type E and Type K Fast Response Thermocouple)
Contact Institution/Entity Address Phone Number e-Mail	Universiti Tenaga Nasional (UNITEN) Department of Mechanical Engineering, College of Engineering, Universiti Tenaga Nasional, Jalan IKRAM-UNITEN, 43000 Kajang, Selangor. Tel : 03 8928 7255 zamri@uniten.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Ground Failure Induced by Earthquakes
Project Number	06-02-03-SF0107
Project Leader and Team Members	Leader: Lee Choon Yong Members: Monashuhaila Mohamad, Lariyah Mohd. Sidek and Sivadass Thiruchelvam
Field of Research	Environmental Sciences
Project Summary/ Objectives	<p>The conventional simple shear apparatus has been used to study the practical geotechnical engineering problems involving soils under or adjacent to embankments, retaining walls, excavations, piles, offshore foundations and earthquakes. The conventional manually operated static loading simple shear equipment has been modified to be a computer-controlled cyclic loading testing system. This modified simple shear equipment has three major components, namely soil sample assembly, vertical loading system and horizontal loading system. The vertical and horizontal displacements of the soil specimen are measured using transducers. The soil specimen can be tested under static and cyclic loading conditions. The testing procedures and data recording are performed by using a computer software and data acquisition system.</p>
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Lee, C. Y. 2008. Earthquake-Induced Settlements In Saturated Sandy Soils. <i>Journal of Engineering and Applied Sciences</i>. Volume 2, No. 4, page 6-13. 2. Thian, S.Y. and C.Y. Lee. 2010. Behaviour of Mining Sand with Different Clay Contents. <i>International Journal of Applied Engineering Research</i>, Volume 5, Number 21-22, page 3515-3520. 3. Thian, S.Y. and C.Y. Lee. 2010. Effect of Plastic Fines on Overconsolidated Mining Sand. <i>Journal of Engineering and Applied Sciences</i>. Volume 5, No. 11, page 6-14. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Sivadass, T. and C.Y. Lee. 2008. Simple Shear Testing of Residual Soils with High Silt Content. Advanced Research in Transportation and Geotechnical Engineering. <i>International Conference on Construction and Building Technology</i>, page 469-484. 16-20 June. Selangor, Malaysia.

	<ol style="list-style-type: none"> 2. Yong, P.M. and C.Y. Lee. 2009. Seismic Response Analysis of Soil Deposits in East Malaysia. <i>SCORed Conference</i>, 4-5 Aug. Selangor, Malaysia. 3. Yong, P.M. and C. Y. Lee. 2009. Stress-Strain Behaviour of Sandy Soil. <i>SCORed Conference</i>, 4-5 Aug. Selangor, Malaysia. 4. Yong, P.M. and C.Y. Lee. 2009. Comparison between Shear Strength of Mining and Beach Sands. <i>SCORed Conference</i>, 4-5 Aug. Selangor, Malaysia.
Additional Information	Linkages: GDS Instruments Sdn Bhd (Malaysia)
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Tenaga Nasional (UNITEN) College of Engineering, Jalan IKRAM-UNITEN, 43009 Kajang, Selangor. Office: 03 - 8928 7288 cylee@uniten.edu.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Evaluation of Tourism Potential in Sabah Forest Reserves using GIS (Geographic Information System)
Project Number	06-05-09-SF0001
Project Leader and Team Members	Leader: Anuar Mohammad
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This study focused on the evaluation of tourism potential in Sabah Forest Reserves using GIS (Geographic Information System). A new model was established with attributes for zoning and structuring tourism development and assessment of tourism potential site for tourism facilities and services using GIS. This study also had produced map products for existing and potential tourism sites in forest reserves in the northeast of Sabah.
Contact Institution/Entity Address	Jabatan Perhutanan Sabah (JPSB) Pengarah, Jabatan Perhutanan Sabah (JPSB), KM 10, Jalan Labuk, 90000 Sandakan, Sabah.
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e-Mail	anuar.mohd@sabah.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Determination of Environment Quality Indicators of Intensively Cultivated Rice Areas
Project Number	06-03-08-SF0059
Project Leader and Team Members	Leader: Suhaimi Othman Members: Ong Hwee Keng, Ma Choon Kwong, Suhaimi Masduki, Lim Ah Hong
Field of Research	Environmental Sciences
Project Summary/ Objectives	<p>This project had successfully determined the reliable indicators which include weeds spectrum shift, cyclic returns of major pests, disappearance of common rice field fishes, changes in microbial diversity, water quality status and the sustainability of yield performance. The relationship between indicators had also been identified for reliable quality assessment of the environment. However, the indicator relationship for quality assessment was non-conclusive and requires further details and extensive field studies for standards development. The adopted technology transfer approach involves participation in environmental awareness program. Through this program, project based knowledge was transferred through paper presentations at Soils/ Physiology/ Agro-environment /Rice conferences. Furthermore, judicious use of agrochemical inputs among farmers in adopting good agricultural practices (GAP) concurrent with existing large scale rice estate projects had also been activated.</p>
Contact Institution/Entity Address	MARDI Ketua Pengarah, Institut Penyelidikan & Kemajuan Pertanian Malaysia (MARDI), Peti Surat 12301, Pejabat Besar Pos, 50774 Kuala Lumpur.
Phone Number	Office: 03-8943 7130 H/p: 019-474 0808
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Use of Dynamic Olfactometry for Odour Measurement and Buffer Zone Establishment in Agriculture Development in Malaysia
Project Number	06-03-08-SF0069
Project Leader and Team Members	Leader: Ong Hwee Keng Members: Sashikala Maruthai Pil, Lim Yoke Sin, Jeffrey Lim Seng Heng and Shanmugavelu Sithambaram
Field of Research	Environmental Sciences
Project Summary/ Objectives	This study has established a Dynamic Olfactometry Laboratory in MARDI Headquarters in Serdang, capable of measuring odorous air samples. In addition, this study has also established buffer zone requirements in the development of agricultural projects that potentially emit odour into the atmosphere.
Publications/Products/ Outcomes	<p>Proceedings:</p> <ol style="list-style-type: none"> 1. Ong, H.K., Y.S.Lim and S.Shanmugavelu. 2009. Minimum separation distance by odour concentration: Towards land security for pig farms. Proc of 2ndIntconf on Sustainable Animal Agriculture for Developing Countries, Institute of Bioscience, UPM, Serdang. 2. Ong, H. K., Y.S.Lim and S.Shanmugavelu. 2010. The use of dynamic olfactometry for the determination of odour concentration in air. Proc of World Engineering Congress, 2-5 Aug. 2010, Kuching. <p>Journals:</p> <ol style="list-style-type: none"> 1. Ong, H.K., Y.S.Lim, S.Shanmugavelu and L.S.H. Jeffery. 2011. An assessment of odour concentration in and around some livestock farms in Malaysia. J. Trop. Agric. and Food Sci. In press.
Contact Institution/Entity Address	Ketua Pengarah MARDI, Institut Penyelidikan & Kemajuan Pertanian Malaysia, Peti Surat 12301, Pejabat Besar Pos, 50774 Kuala Lumpur.
Phone Number e-Mail	Office: 03-8943 3350 keng@mardi.gov.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	The Fate of Molinate and Carbofuran in Muda Rice Areas
Project Number	06-03-08-SF0094
Project Leader and Team Members	Leader: Khairatul Azmah Mohamed Members: Ma Choon Kwong, Ngan Chai Keong and Suhaimi Othman
Field of Research	Environmental Sciences
Project Summary/ Objectives	This project has achieved all its objectives in determining the fate of Molinate and Carbofuran in Muda rice areas which subsist in water bodies of recycled and non-recycled area, and in soils collected from the recycled and non-recycled area. In addition, the loss in pattern of Molinate and Carbofuran had also been determined.
Publications/Products/ Outcomes	<p>Proceedings :</p> <ol style="list-style-type: none"> 1. Khairatul, A.M., Ngan, C.K., Noor Effarizan, I. and Ismail, B.S. 2009. The fate of molinate and carbofuran in Muda rice areas. <i>The 2nd National Conference on Agroenvironment Proceeding</i>. 24-26 March 2009. The Puteri Pacific, Johore Bahru, Johore. 2. Khairatul, A.M., Ngan, C.K., Nor Ashikin, B., Noor Effariza, I., Ayob, A.H., Zulkefli, M. and Ismail, B.S. 2010. Assessment of selected organochlorine, organophosphorus and synthetic pyrethroid residue in paddy soils of non-recycled and recycled irrigation areas in the Muda Irrigation Scheme, Kedah, Malaysia. <i>The National Rice Conference Proceeding</i>, 28-30 June 2010, Lumut, Perak. <p>Journals:</p> <ol style="list-style-type: none"> 1. Khairatul, A.M., Ngan, C.K., Ismail, B.S. and NorAshikin, B. 2011. The adsorption and leaching studies of molinate, carbofuran and propiconazole in Muda agricultural soil. <i>Journal of Tropical, Agricultural and Food Science (JTAFS)</i>. Under review. <p>Others:</p> <ol style="list-style-type: none"> 1. Khairatul Azmah binti Mohamed, 2011. <i>Kajian Pencemaran Residu Pestisid Terpilih di Kawasan Pengairan Tidak Dikitar Semula Dalam Skim Pengairan Muda</i>. M.Sc. Thesis. National University of Malaysia.



<p>Additional Information</p>	<p>Linkages: This project is linked with Consultative Group of Agricultural Research (CGIAR) funded project entitled: The establishment of indicators for sustainable rice production (NARS 300410). One of the objectives of the project is to establish pesticide residues as water pollution indicator in Muda rice agroecosystems. This project was started in 2006 and was completed in 2010.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Ketua Pengarah MARDI, Institut Penyelidikan & Kemajuan Pertanian Malaysia, Peti Surat 12301, Pejabat Besar Pos, 50774 Kuala Lumpur. Office: 03-8943 7914 H/p: 012-6683897 atul@mardi.gov.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Linear and Non-linear Preserver Problems on Spaces of Matrices or Operators and Their Applications
Project Number	06-02-01-SF0021
Project Leader and Team Members	Leader: Chooi Wai Leong Member: Lim Ming Huat
Field of Research	Mathematical Sciences
Project Summary/ Objectives	The linear and non-linear preserver problems on spaces of matrices or operators have been completely identified and characterised. New techniques for the classification of preserver have been developed to establish and develop new mathematical techniques in linear and multilinear algebra, matrix and operator theory. The results are then applied to linear model system and quantum modeling, related to preserver's problem.
Contact Institution/Entity Address Phone Number e-Mail	Multimedia University (MMU) Cyberjaya Campus: Jalan Multimedia, 63100 Cyberjaya, Selangor. Office: 03-8312 5433/5000/5018 wlchooi@mmu.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Basic Characteristics of Multi-server Queue and Their Applications in Cellular Traffic Engineering
Project Number	06-02-01-SF0022
Project Leader and Team Members	Leader: Tan Yi Fei Member: Pooi Ah Hin
Field of Research	Mathematical Sciences
Project Summary/ Objectives	This project has produced numerical results for basic characteristics of stationary queue length and actual waiting time distributions in a multi-server queue. The numerical results for the basic characteristics are found for the cases of hypo(2)/hypo(2)/n queue where $n=2,3$. For the larger values of n , the results can also be obtained by extending the ideas used in the cases where $n=2, 3$. The results for actual waiting time distribution are then obtained based on the stationary queue length distribution. The blocking probability in the case of one call was calculated based on the stationary queue length distribution. However, the investigation on the performance measure of new call and handoff probability for 2 base stations, each with two or more channels are still in progress.
Publications/Products/ Outcomes	Proceedings: 1. Tan Y.F. and Pooi A.H. 2008. An Alternative Method for finding Stationary Queue Size Distribution for the M/M/c Queue. <i>Symposium Kebangsaan Sains Matematik Ke-16. (The 16th National Mathematical Science Symposium)</i> 3 – 5 Jun 2008. Kota Bahru, Kelantan.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Pedagogic-driven Learning Resources Aggregator
Project Number	06-02-01-SF0039
Project Leader and Team Members	Leader: Tengku Putri Norishah Tengku Shariman
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This study focused on identifying the instructional requirements of science and mapping the instructional requirements for teaching and learning science at MMU and OUM . Through this study, a new prototype was designed for developing a learning resources aggregator based on the instructional requirements of science education. The development of the prototype was based on the identification of relevant learning objects from repositories. This enables an authoring interface for instructors to access and design sequences of teaching and learning activities and retrieves relevant learning objects as resources.
Publications/Products/ Outcomes	<p>Proceeding:</p> <ol style="list-style-type: none"> 1. Othman T., Tenku Putri Norishah T.S. and Sarah, I. 2010. The Learning Resources Aggregator as a Self Management Tool for Understanding Chemistry Concepts. <i>Proceedings of the International Conference on Education and Management Technology</i>, 2-4 November, 2010, Cairo, Egypt. <p>Journal:</p> <ol style="list-style-type: none"> 1. TenkuPutriNorishah T.S. and Muharniza Musa. 2009. The Design of a Computer Supported Learning Environment for Collaborative Engagement: Understanding Science Concepts through The Learning Objects Aggregator Platform. <i>International Journal of Learning</i>, 14 (3): 315-323. <p>Book:</p> <ol style="list-style-type: none"> 1. TenkuPutriNorishah T.S. and Habibah A.J. 2007. The Learning Objects Aggregator: Performance Assistance for Effective CSCL Activities. <i>Computers in Education</i>, (pp. 611-618). ISSN: 0922-6389 (IOS Press).





	Product: A prototype of the Learning Resources Aggregator has been created but the prototype needs further refinement and development in order to be commercialised.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Competitive Factors for Regional Container Hub Port: A Case Study in East Asia (Southeast and Northeast Asia)
Project Number	06-02-05-SF0010
Project Leader and Team Members	Leader: Leong Choon Heng
Field of Research	Economics, Business and Management
Project Summary/ Objectives	This project has identified and tested the criteria for port choice with a measurement framework developed using the AHPA and DEA methods. The strengths and weaknesses of Port Klang and PTP were gauged in comparison with other ports, especially the Singapore port. The study has identified the importance of marketing and third-party relations to improve the position of Port Klang. The study has led to the development of an index to estimate the distribution of cargo flow between ports and this will be extended to other ports in Malaysia.
Publications/Products/ Outcomes	Publications: <ol style="list-style-type: none"> 1. Ng A, Lim A.L., Leong C.H., and Cheng C.H. 2010. A competitive measurement framework for regional container hub ports: A case study in East Asia. <i>International Journal of Logistics Systems and Management</i>,6:6. 2. Leong, C.H. and Khairuddin M. 2008. Port Selection beyond the Endowed Factors. <i>International Association of Maritime Economists (IAME) 2008 Annual Conference</i>, April 2-4 2008, Dalian, China.
Contact Institution/Entity Address	Malaysia University of Science and Technology (MUST) Presiden / Ketua Eksekutif, Malaysia University of Science and Technology (MUST), GL 33, Ground Floor, Blok C, Dataran Usahawan Kelana, 17, Jalan SS 7/26 Kelana Jaya 47301 Petaling Jaya, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Multimedia Fate Model for the Malaysian Environment
Project Number	06-03-02-SF0019
Project Leader and Team Members	Leader: Norshidah Baharuddin Members: Chen Sau Soon, Letchumi Thannimala and Izham Bakar
Field of Research	Environmental Sciences
Project Summary/ Objectives	The new model called Malaysia Fate was established by using local environmental and geographical parameter values and verified by using pesticides at palm oil plantations in Peninsular Malaysia.
Contact Institution/Entity Address	SIRIM SIRIM Berhad, No. 1, Persiaran Dato' Menteri, Seksyen 2, Peti Surat 7035, Shah Alam, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Natural Rubber Nanocomposites via Sol-gel Technique
Project Number	06-01-02-SF0077
Project Leader and Team Members	Leader: Ishak Ahmad Members: Ibrahim Abdullah, Rusli Daik and Khairiah Badri
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	This project was carried out to prepare the natural rubber-clay nanocomposites by emulsion dispersion. It includes the study of the mechanical and dynamic mechanical properties of TPNR-clay nanocomposites together with the thermal properties by using DSC and TGA.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Chemical Science and Food Technology, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Daya Saing Pekerja dalam Sektor Perkhidmatan di Malaysia
Project Number	06-01-02-SF0099
Project Leader and Team Members	Leader: Rahmah Ismail Members: Liew Chei Siang, Zulkifly Osman, Ishak Yussof and Abd. Hair Awang
Field of Research	Economics, Business and Management
Project Summary/ Objectives	This study was conducted to assess the competency of workers in the service sector in Malaysia. First, the workers' competency and performance status were evaluated. Subsequently, factors affecting the workers' competency and performance were identified before finally comparing workers' competency and performance based on the studied service subsector. Through extensive studies, workers' current competency and performance indicators have been evaluated and indexed. Workers' competency and performance based on the studied subsector have also been compared. Factors that determine workers' competency and performance of the selected service sector were identified.
Publications/Products/ Outcomes	Proceedings: <ol style="list-style-type: none"> 1. Determinant of Workers Competitiveness in Malaysian Information and Communication Technology Sector. <i>Annual London Conference on 'Money, Economy and Managment'</i>; 3-4 July 2008. Imperial College, London. 2. Perbandingan Daya Saing Pekerja dalam Sub Sektor Perkhidmatan di Malaysia. Seminar Kebangsaan Ekonomi Malaysia. 2008. <i>Daya Tahan Ekonomi Negara :Dasar dan Strategi Pengukuhan</i>. 20-22 Ogos 2008. Corus Paradise Resort, Port Dickson, Negeri Sembilan. Others: <ol style="list-style-type: none"> 1. Bab dalam Buku: Daya Saing Pekerja Sektor Perkhidmatan di Malaysia 2. Pertandingan Poster Penyelidikan FEP, UKM
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Economics, Faculty of Economics & Business Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Pengalaman Awal dan Kesihatan Mental Pelacur di Malaysia
Project Number	06-01-02-SF0100
Project Leader and Team Members	Leader: Rohany Nasir Members: Lukman@Zawawi Mohamad, Fatimah Yusoooff, Halijah Hussain, Rozainee Khairudin and Rokiah Ismail
Field of Research	Social Sciences
Project Summary/ Objectives	This study was carried out to investigate the early experiences and mental health of sex workers in Malaysia. Subjects of the study comprised of 401 women involved in prostitution in Malaysia. The study focused on the background, (ethnicity, religion, socio-economic status, history of violence) and their mental health (self-esteem, self-concept, depression, cognitive distortion). The study also looked at the implications for counseling and psychotherapy. A module on parenting style was also developed to be used by counselors for adolescents.
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Nasir, R., Ahmad Zamani, Z., Khairuddin, R., and Ismail, R. 2010. History of violence among women involved in prostitution in Malaysia. <i>The Niew Journal-The Voice of the Nam Woman</i>, 2, 45-57. 2. Nasir, R., Ahmad Zamani, Z., Khairudin, R., Ismail, R., Yusoooff, F., and Lukman, Z. M. (2011). Female adolescent prostitutes' cognitive distortion, self-esteem and depression. <i>PERTANIKA Journal of Social Sciences & Humanities</i>, Vol. 19, 2. (In press) 3. Nasir, R., Ahmad Zamani, Z., Khairudin, R., Ismail, R., Yusoooff, F., and Lukman, Z. M. (2011). Psychological factors of self-esteem and cognitive distortion in prostitution. <i>World Applied Sciences Journal</i>, 12, 35-39 4. Lukman Z.M, Nasir, R., Ibrahim, R., Sarmon, N., Chong, S.T., Mostafa Kamal, M., Mohd Suhaimi, M., Zainah A.Z, Subhi N, Fatimah O, Salina N, Suzana M Hoesni, Rozanee K, Rusyda, MH. (2011) The relationship between dysfunctional family and the involvement of children in prostitution. <i>World Applied Sciences Journal</i>, 12, 07-12.





	5. Nasir, R., Ahmad Zamani, Z., Ismail, R., Yusoooff, F., Khairuddin, R., & Lukman, Z.M. 2010. Self esteem and cognitive distortion among women involved in prostitution in Malaysia. <i>Procedia Social and Behavioral Sciences</i> . 5, 1939-1944.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) School of Psychology and Human Development, Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor. Office: 03-8921 5202 rohany@pkrisc.cc.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Coating Composite for Microwave Absorption
Project Number	06-01-02-SF0113
Project Leader and Team Members	Leader: Rusli Daik Members: Khairiah Badri, Ibrahim Abdullah and Ishak Ahmad
Field of Research	Chemical Sciences
Project Summary/ Objectives	The study had accomplished all the set objectives. It has successfully synthesised a series of six polypyrrole derivatives and carried out a study on microwave absorption. The composites based on all the obtained polypyrrole derivatives have been developed and the microwave absorption of the composites was evaluated.
Publications/Products/ Outcomes	<p>Proceedings:</p> <ol style="list-style-type: none"> 1. Shamsuddin, M. A., and Daik, R. 2009. Morphology and Microwave Absorbing Properties of Polypyrrole Nanoparticles. <i>Malaysia Polymer International Conference</i>. Putrajaya. 2. Shamsuddin, M.A., and Daik, R. 2009. Kekonduksian Polipirola Berdop Surfaktan Amfoterik. <i>Kolokium Siswazah FST Ke 9 (The 9th FST Graduates Colloquim)</i>. 24-29 Jun 2009. Universiti Kebangsaan Malaysia, Bangi, Selangor. 3. Shamsuddin, M.A., and Daik, R. 2008. Synthesis and Characterization of Polypyrrole Doped with Amphoteric Surfactants. <i>VIIIth National Symposium on Polymeric Materials (NSPM 2008)</i>. 26-27 November 2008, Pulau Pinang. <p>Product:</p> <ol style="list-style-type: none"> 1. Microwave (radar) absorbing polymer nanocomposites
Additional Information	Linkages: STRIDE
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Chemical Sciences and Technology, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number	Office: 03-8921 5412 Fax: 03-8921 5410
e-Mail	rusli@ukm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Effects of Temperature-dependent Viscosity on Stability of Fluid Layers in Microgravity Environment
Project Number	06-01-02-SF0115
Project Leader and Team Members	Leader: Ishak Hashim Members: Mohd Salmi Md Noorani and Ahmad Kamal Zulkifle
Field of Research	Mathematical Sciences
Project Summary/ Objectives	This study has successfully developed a mathematical model that describes the stability of a horizontal layer of fluid with variable viscosity and algorithms for solving the steady and oscillatory convection problems. In addition, it also determined the effects of temperature-dependent viscosity on the stability of a horizontal layer of a Newtonian fluid in microgravity environment.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Hashim, I., Awang Kechil, S. 2009. Active control of Marangoni instability in a fluid layer with temperature-dependent viscosity in microgravity environment. <i>Fluid Dyn. Res.</i> 41(4): 15. 2. AwangKechil, S., Hashim, I. 2009. Oscillatory Marangoni convection in variable-viscosity fluid layer: The effect of thermal feedback control. <i>Int. J. Thermal Sci.</i> 48: 1102–1107. 3. Muhaimin, I., Kandasamy, R., Hashim, I. 2009. Thermophoresis and chemical reaction effects on MHD mixed convective heat and mass transfer past a porous wedge with variable viscosity in the presence of viscous dissipation. <i>Int. J. Comput. Meth. Engi. Sci. Mech.</i> 10: 231–240. 4. AwangKechil, S., Hashim, I. 2008. Control of Marangoni instability in a layer of variableviscosity fluid. <i>Int. Commun. Heat Mass Transfer</i> 35: 1368–1374. 5. Kandasamy, R., Muhaimin, I., Hashim, R. 2008. Thermophoresis and chemical reaction effects on non-Darcy mixed convective heat and mass transfer past a porous wedge with variable viscosity in the presence of suction or injection. <i>Nucl. Eng. Des.</i> 238: 2699–2705. 6. AwangKechil, S., Hashim, I. 2008. Onset of Marangoni convection in variable-viscosity fluid layer subject to uniform heat flux from below. <i>Int. Commun. Heat Mass Transfer</i> 35(8): 948–956.

	<p>7. Kandasamy, R., Hashim, I., Muhaimin, I. 2008. Chemical reaction and variable viscosity effects on MHD mixed convection heat and mass transfer for Hiemenz flow over a porous wedge in the presence of suction or injection. <i>Int. J. Fluid Mech. Res.</i> 35(1): 1–18.</p> <p>Proceeding:</p> <p>1. Awang Kechil, S. & Hashim, I. 2008. Control of Marangoni convection in a variable-viscosity fluid layer with deformable surface. <i>Proc. World Congress on Engineering 2008(ICAEM'08)</i>, 2–4 July 2008, London.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM) School of Mathematical Sciences, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 Bangi UKM, Selangor. Office: 03-8921 5758 H/p: 019-275 4515 ishak_h@ukm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Analysis of Volatile Fruit Scent Constituents of Bat-dispersed Figs (<i>Ficus Spp.</i>)
Project Number	06-01-02-SF0126
Project Leader and Team Members	Leader: Zubaid Akbar Mukhtar Ahmad Members: Jalifah Latip and Wan Aida Wan Mustap
Field of Research	Chemical Sciences
Project Summary/ Objectives	This project has identified the distinctive odor-producing chemical compounds produced by figs that attract fruit bats. GC and GC-MS analysis revealed the presence of 20 compounds.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Enviromental and Natural Resources Sciences, Faculty of Science and Technology Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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e-Mail	zubaid@ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Radiological Risk Assessment of Naturally Occurring Radioactive Materials (NORM) in Malaysia's Building Materials
Project Number	06-01-02-SF0129
Project Leader and Team Members	Leader: Amran Ab.Majid Members: Ismail Bahari, Redzuwan Yahaya and Muhamad Samudi Yasir
Field of Research	Environmental Sciences
Project Summary/ Objectives	In this project the specific activities of U-238, Th-232, Ra-226, Radon, and K-40 in several types of building materials and its raw materials from all areas in Peninsular Malaysia such as portland cement, granite stone, sand, clay brick, cement brick, ceramic tiles, marble and roof tile were determined. Additionally, the radiation hazard indices of NORM in sand and soil based building materials including radium equivalent activity (Raeq), gamma level index (Igr), external hazard index (Hex), internal hazard index (Hin) and annual effective dose were also determined. The potential radiological risk incurred by dwellers in Malaysia from the use of building materials containing natural radioactive material (NORM) were determined using RESRAD and RESBUILD computer codes.
Publications/Products/ Outcome	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ismail, A.F., Ab. Majid, A., Yasir, M.S., Yahaya, R., and Bahari, I. 2010. Radiological Risk Assessment On Concrete Building Materials in Peninsular Malaysia. <i>Sains Malaysiana</i>39(4), 607-613. 2. Ismail, A.F., Ab. Majid, A., Yasir, M.S., Yahaya, R., and Bahari, I. 2009. Radiological Hazard of Natural Radionuclide in Portland Cement of Peninsular Malaysia. <i>Sains Malaysiana</i> 38, 129-133. 3. Ismail, A.F., Ab. Majid, A., Yasir, M.S., Yahaya, R., Bahari, I. And Abd. Rahman, I. 2009. Radiological Studies of Naturally Occurring Radioactive Materials in Some Malaysia's Sand Used in Building Construction. <i>Malaysian Journal of Analytical Science</i>13 (1): 29 - 35. <p>Proceedings:</p> <ol style="list-style-type: none"> 1. Ab. Majid, A. and Ismail, A.F.2010.Environmental Radioactivity: Trends and Issues in Malaysia. <i>Symposium Kimia Analisis Malaysia (SKAM-22)(Chemical Analysis Symposium of Malaysia)</i>, 4 – 6 October 2010.



	<ol style="list-style-type: none"> 2. Ismail, A.F., Ab. Majid, A., Yasir, M.S., Yahaya, R. and Bahari, I. 2010. Assessment of Radon Emanation in Some Building Materials. <i>Symposium Kimia Analisis Malaysia, (SKAM-22)</i>, 4 – 6 October 2010. 3. Ismail, A.F., Ab. Majid, A., Yasir, M.S., Yahaya, R., and Bahari, I. 2010. Radiological Dose Assessment of Radon In Different Types of Houses. <i>Symposium Kimia Analisis Malaysia (SKAM-22)</i>, 4 – 6 October 2010. 4. Ismail, A.F., Ab. Majid, A., Yasir, M.S., Yahaya, R., and Bahari, I. Penilaian Risiko Radiologi Bahan Binaan (Konkrit) Di Semenanjung Malaysia. <i>Seminar Kimia Bersama UKM-ITB</i>, 9-11 June 2009. 5. Ismail, A.F., Ab. Majid, A., Yasir, M.S., Yahaya, R., Bahari, I. and Abd. Rahman, I. 2009. Radiological assessment of NORM in Malaysia's Portland Cement Using Resrad-Build Computer Code. <i>International Nuclear Conference (INC 2009)</i>, 29 June – 1 July 2009.
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM) Prof. Dr. Amran Ab.Majid Nuclear Science Programme, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor.</p> <p>Office: +603-8921 5472/ 3909 H/p: +6013-208 7935 amran@ukm.my; amranabmajid@gmail.com</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Terrestrial Radiation Isodose Map of the States of Perak, Kedah and Perlis, Malaysia
Project Number	06-01-02-SF0142
Project Leader and Team Members	Leader: Ismail Bahari Members: Amran Ab.Majid, Muhamad Samudi Yasir and Redzuwan Yahaya
Field of Research	Environmental Sciences
Project Summary/ Objectives	This project determined the relationship between terrestrial radiation dose rates and geo-soil structures in the states of Perak, Kedah and Perlis. The relationship between the actual dose rates and predicted dose rates in different geo-soil structures was identified. A GIS was integrated with terrestrial dose rates information in developing terrestrial radiation isodose map. Thus, the current terrestrial dose rates data base for future radiological risk assessment and land use development can be enriched. A new method of isodose mapping was developed, however requires further testing in terms of reliability, reproducibility and accuracy for all other geo-soil types for technology transfer.
Publications/Products/ Outcomes	<p>Proceedings:</p> <ol style="list-style-type: none"> 1. Ab.Majid, A., Yasir, M.S., and Yahaya, R. 2009. Mapping of radiological risk in Langkawi Island, Kedah using geographical information system. <i>The 9th Graduate Colloquium</i>, National University of Malaysia, Bangi. 2. Ab.Majid, A., Yasir, M.S., and Yahaya, R. 2009. Development and Validation of Statistically Predicted Terrestrial Gamma Radiation Dose Rates and Population Vulnerability Maps of Perak, Malaysia. <i>4th Annual International Symposium on Environment</i>, Athens, 2009. 3. Ab.Majid, A., Yasir, M.S., and Yahaya, R. 2008. Statistical Prediction of Environmental External Gamma Radiation Doses of Perak, Malaysia. <i>Nuclear Science Research Seminar: Radon & Other Natural Radionuclides</i>, Universiti Sains Islam Malaysia, 2008. 4. Ab.Majid, A., Yasir, M.S., and Yahaya, R. 2008. Validation of Statistically Predicted Terrestrial Gamma Radiation Dose Rates of Perak, Malaysia. <i>Symposium Kimia Analisis Ke-21 (Chemical Analysis Symposium)</i>, Universiti Malaysia Sabah, 2008.





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e-Mail	ismailb@pkisc.cc.ukm.my/ismailb@ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Habitat Classification and Mapping towards Sustainable Development of Ecotourism at Tasik Chini Watershed, Pahang
Project Number	06-01-02-SF0151
Project Leader and Team Members	Leader: Wan Juliana Wan Ahmad Members: Mohd Nizam Mohd Said, Khatijah Hussin and Khairul Nizam Abdul Maulud
Field of Research	Biological Sciences
Project Summary/ Objectives	This project identified three types of forest at Tasik Chini watershed, namely the lowland, seasonal flood and riverine forests. A total of 3974 trees with diameter at breast height (DBH) of 5.0 cm and above were recorded. The lowland forest recorded 2061 individuals representing 393 species from 164 genera and 57 families; the seasonal flood forest, 1019 individuals representing 268 species from 137 genera and 57 families; and the riverine forest, 894 individuals representing 260 species from 133 genera and 53 families. Apart from the species composition for each of the 30 sampled habitats in all three forest types, species abundance, diversity, above ground biomass and community similarity were also determined. Furthermore, the relationship between species abundance and edaphic factors were also identified.
Publications/Products/ Outcomes	<p>Books :</p> <ol style="list-style-type: none"> 1. Wan Juliana, W. A., Nik Norafida, N. A., Nurun Nadhirah, M. I. & Nizam, M. S. 2007. A Guide to the Nature Trail of TasikChini Research Centre. Faculty of Science and Technology, Universiti Kebangsaan Malaysia, Bangi, Selangor. 106 pp. 2. An Interpretive Trail of PPTC. FST, UKM Bangi. <p>Chapter in Book : :</p> <ol style="list-style-type: none"> 1. Norwahidah, Z. A. & Wan Juliana, W.A. 2009. Comparative study of tree species composition, diversity and biomass at riparian and adjacent inland forests at Chini Forest Reserve, Pahang. In: Mushrifah Idris, Mohamad Shuhaimi, O., Sahibin Abdul Rahim, Khatijah, H. H. & Nur Amelia, A. Sumber Asli Tasik Chini: Ekspedisi Saintifik. (pp. 157-176). Fakulti Sains & Teknologi, Universiti Kebangsaan Malaysia, Bangi, Selangor.





	<p>Journals:</p> <ol style="list-style-type: none"> 1. Wan Juliana, W.A., Nizam, M.S., Khatijah, H.H., MohdEkhwanToriman, MushrifahIdris, Nik Norafida, N.A., Cham, Y.H. & Nurhanim, M.N. 2011. The Biodiversity and Ecology of Aquatic Plants at TasikChini, Pahang, Malaysia. <i>Research Journal of Biological Sciences (Article accepted for publication)</i>. 2. Khairil M., Wan Juliana W.A., Nizam M.S. & Faszly R. 2011. Community structure and biomass of tree species at Chini watershed forest, Pekan, Pahang. <i>Sains Malaysiana (in press)</i>. <p>Proceedings:</p> <ol style="list-style-type: none"> 1. Khairil, M., Wan Juliana, W. A. & Mohd Nizam, M. S. 2009. The Soil Status of Chini Watershed, Pekan, Pahang. <i>Proceedings of The Second UKM-UI Joint Seminar 2009, 22-23 June 2009, UKM Bangi, Selangor</i>. 2. Khairil, M., Wan Juliana, W. A., MohdNizam, M. S. & Abdul Maulud, K. N. 2009. Pengelasan dan Pemetaan Habitat di Lembangan Chini, Pekan, Pahang. <i>Kolokium Siswazah ke-9 Fakulti Sains dan Teknologi (The 9th Graduate Symposium for Faculty of Science and Technology)</i>, 24-25 June 2009, UKM Bangi, Selangor. 3. Khairil, M., Wan Juliana W.A, Mohd Nizam M.S. 2011. Floristic composition and soil status at Chini Watershed Pekan, Pahang. <i>Taxonomist and Ecologist Conference 2011, 19-20 April 2011, Kuching, Sarawak</i>. 4. Khairil, M., Wan Juliana, W.A, MohdNizam, M.S., Faszly, R., Nik Norafida, N.A. & Syahril Amin. H. 2011. Tree species composition, diversity and aboveground biomass at Chini Watershed Forest, Pahang, Peninsular Malaysia. <i>Annual Meeting of the ATBC Asia-Pacific Chapter</i>, 12-15 March 2011, Bangkok. 5. Khairil, M. & Wan Juliana, W.A. 2009. Community structure and diversity of trees and soil status at Chini Watershed, Pekan, Pahang. <i>International Forum Integrated Lake Basin Management Of Tasik Chini</i>, 6th July 2009 Kuantan, Pahang.
Awards/Certificates	<ol style="list-style-type: none"> 1. Tasik Chini is awarded the status of Biosphere Reserve by the Man and Biosphere (MAB), UNESCO.
Additional Information	<p>Linkages:</p> <ol style="list-style-type: none"> 1) East Coast Economic Region (ECER), Pahang State Government

	<p>2) International Lake Ecosystem Committee, Japan</p> <p>Commercialisation: 1099</p> <p>The output of the research has been used to develop a part of the Strategic Implementation Plan (SIP) of Tasik Chini through consultation to the state government (ECER) as the client.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM) Pusat Pengajian Sains Sekitaran dan Sumber Alam, Fakulti Sains dan Teknologi, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.</p> <p>Office: 03-8921 3280 H/p: 019-338 0535 ayie@ukm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Beta-transformations and Chaos-based Cryptography
Project Number	06-01-02-SF0177
Project Leader and Team Members	Leader: Mohd Salmi Md Noorani Members: Muhammad Reza Kamel Arif, Syahida Che Dzul-Kifli, Ishak Hashim and Eddie Shahril Ismail
Field of Research	Mathematical Sciences
Project Summary/ Objectives	The main objective of this project was to study the dynamical properties via analytical and computational techniques such as the distribution of periodic points and chaotic properties of the beta-transformation. This study also developed a random bit generator and cryptosystem based on the beta-transformation.
Publications/Products/ Outcomes	Journal: 1. 2008. Modified Baptista type chaotic cryptosystem via matrix secret key. <i>Phys. Lett. A</i> 372: 5427-5430. Books : 1. 2011. Mathematical Treatment for Constructing a Countermeasure Against the One-Time Pad Attack on the Baptista Type Cryptosystem, in Banerjee S. (Ed). Chaos Synchronization and Cryptography for Secure Communications: Applications for Encryption (pp 463 – 475) IGI Global Publishers.
Awards/Certificates	1. Malaysia Technology Expo 2008 (MTE 2008): Silver Medal 2. International Invention, Innovation, Industrial Design and Technology Exhibition 2008 (ITEX 2008): Silver Medal
Additional Information	Linkages: Prof. KW Wong, City University of Hong Kong Prof. S. Banerjee, Politecnico di Torino, Italy
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Mathematical Sciences, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
Phone Number	Office: 03-8921 3706 H/p: 019-391 9861 msn@pkrisc.cc.ukm.my
e-Mail	msn@ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of a Continuous Deacidification Process for the Deodorisation of Noni Extract
Project Number	06-01-02-SF0182
Project Leader and Team Members	Leader: Mohamad Yusof Maskat Members: Liew Siew Ling, Wan Aida Wan Mustapha and Osman Hassan
Field of Research	Engineering Sciences
Project Summary/ Objectives	The study was carried out to determine the effects of process variables on the physico-chemical and sensory properties of noni extract during deacidification by using packed column of calcium carbonate and ion exchange. Furthermore, the performance of different deacidifying processes was also optimised and compared, together with its condition during storage purposes.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Chemical Science and Food Technology, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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e-Mail	yusofm@ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Media Literacy: Access and Interpreting of Media Messages among Malaysian Secondary School Students
Project Number	06-01-02-SF0212
Project Leader and Team Members	Leader: Mus Chairil Samani Members: Latiffah Pawanteh, Faridah Ibrahim, Normah Mustafa and Mohd Azul Mohamad Salleh
Field of Research	Social Sciences
Project Summary/ Objectives	The study was conducted with the aim to determine media literacy among Malaysian secondary school students. In order to ensure the integrity of data, the study also developed a new software to measure media literacy. With this tool the relationship between media literacy and patterns of media usage were successfully identified.
Publications/Products/ Outcomes	<p>Proceedings:</p> <ol style="list-style-type: none"> 1. Samani, M.C. 2007. Methodological issues in media literacy research. <i>USM Colloquium, School of Communication</i>, 10 February 2007, USM, Pulau Pinang. 2. Samani, M.C. 2009. Media Literacy: Does it really matter? <i>The 7th Biennial PACA (Pacific and Asian Communication Association) Conference</i>, 10-12 January 2009. Universiti Putra Malaysia. 3. Samani, M.C., Pawanteh, L., Ibrahim, F., Mustafa, N., and Mohamed Salleh, M.A. 2008. Literasi Media (Lite'Me): Mencapai dan Mentafsir Maklumat Di Kalangan Pelajar Sekolah Menengah di Malaysia. Pertandingan Poster di Universiti Kebangsaan Malaysia. <p>Others:</p> <ol style="list-style-type: none"> 1. Norazimah Abd Rashid, 2007. Literasi Media Di Kalangan Pelajar-Pelajar Sekolah Menengah di Malaysia: Suatu Kajian di Selangor dan Kuala Lumpur. <i>MA Thesis</i>. National University of Malaysia. 2. Norazirawati Ahmad, 2007. Literasi Visual: Satu Kajian Perbandingan Di Antara Pelajar Universiti Kebangsaan Malaysia (UKM) dan Kolej Universiti Islam Antarabangsa Selangor (KUIS). <i>MA Thesis</i>, National University of Malaysia. 3. Hafizahtul Akmar Yahya, 2009. Literasi Media: Mencapai dan Mentafsir Maklumat Media Massa Di Kalangan Pelajar Sekolah Menengah Di Johor. <i>MA thesis</i>. National University of Malaysia.

Awards/Certificates	1. Pertandingan Poster Penyelidikan 2008, Fakulti Sains Sosial dan Kemanusiaan, Universiti Kebangsaan Malaysia: Gold medal.
IP Status	1. <i>Lite'Me</i> Trade mark search, CRIM UKM 2. <i>Lite'me</i> software Patent Novelty Search CRIM, UKM
Additional Information	Linkages: Kementerian Pelajaran Malaysia
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Media and Communications, Faculty of Social Sciences and Humanities, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Toxicity of Heavy Metals and the Development of Permissible Standards for Freshwater Ecosystem
Project Number	06-01-02-SF0217
Project Leader and Team Members	Leader: Mohammad Shuhaimi Othman Members: Mushrifah Idris and Maimon Abdullah
Field of Research	Environmental Sciences
Project Summary/ Objectives	The study productively determined the toxicity of eight metals amongst eight freshwater organisms. It identified the suitable organism as bioindicator of heavy metals pollutions. Above all, this study has also formulated the permissible standard (criterion maximum concentration-CMC) for the eight identified metals.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Shuhaimi-Othman, M., Nadzifah, Y., Nur-Amalina, R., and Ahmad, A. 2011. Toxicity of metals to a freshwater ostracod, <i>Stenocypris major</i>. <i>Journal of Toxicology</i> 2011: 1-8. 2. Shuhaimi-Othman, M., Nadzifah, Y., Nur-Amalina, R., and Ahmad, A. 2011. Toxicity of eight metals to Malaysian freshwater midge larvae <i>Chironomus javanus</i> (Diptera, Chironomidae). <i>Toxicology and Industrial Health (accepted)</i>. 3. Shuhaimi-Othman, M., Nadzifah, Y., Nur-Amalina, R., and Ahmad, A. 2011. Sensitivity of the freshwater prawn, <i>Macrobrachium lanchesteri</i> (Crustacea: Decapoda), to heavy metals. <i>Toxicology and Industrial Health (accepted)</i>. 4. Shuhaimi-Othman, M., Nadzifah, Y., Nur-Amalina, R., and Ahmad, A. 2009. Ketoksikan logam kuprum dan nikel terhadap udang air tawar <i>Macrobrachium lanchesteri</i>. <i>Sains Malaysiana</i> 38 (3): 353-358. 5. Shuhaimi-Othman, M., Nadzifah, Y., and Ahmad, A.K. 2010. Toxicity of copper and cadmium to freshwater fishes. <i>World Academy of Science and Technology</i> 65: 1173-1176. <p>Proceedings:</p> <ol style="list-style-type: none"> 1. Shuhaimi-Othman, M., Nur-Amalina, R., and Ahmad, A.K. 2010. Sensitiviti organisma air tawar terhadap logam plumbum. <i>Prosiding Seminar UKM-UNRI ke-6</i>, 5-6 Oktober 2010, Puri Pujangga, UKM, Bangi

	2. Noor Amalina and M. Shuhaimi-Othman. 2008. Kajian ketoksikan akut dan biopemekatan logam plumbum dan zink dalam udang air tawar <i>M. lanchesteri</i> . <i>Prosiding Kolokium Siswazah Ke-8 (Proceedings of the 8th Graduate Colloquim)</i> , 1-2 Julai 2008, FST, UKM, Bangi.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Environmental and Natural Resource Sciences, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Eco-hydrology for Sustaining Ecotourism in Tasik Chini Watershed
Project Number	06-01-02-SF0220
Project Leader and Team Members	Leader: Mushrifah Idris Members: Muhammad Barzani Gasim and Mohd Ekhwan Toriman
Field of Research	Environmental Sciences
Project Summary/ Objectives	This study determined the best approach for functional assessment of rivers and the wetland ecosystem in Tasik Chini watershed. It examined the quantity, quality, timing and spatial distribution of water resource, with the intention to provide data for tourism purposes. This approach also helped to identify and sustain the location for any future tourism activities.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Modeling Local Urban Sustainability
Project Number	06-01-02-SF0228
Project Leader and Team Members	Leader: Abdul Samad Hadi Members: Shaharudin Idrus, Narimah Samat, Abdul Hadi Harman Sha, Ahmad Fariz Mohamed and Ruslan Ra
Field of Research	Social Sciences
Project Summary/ Objectives	This project developed a spatially dynamic model that used contemporary ecosystem modelling techniques to simulate the growth patterns of an urban community and 'grow' a city. A prototype urban sustainability management support system was developed, with the addition of an urban sustainability potential model within the prototype. The local urban dynamics sustainability indicators were also evaluated and alternative features using contemporary visualisation techniques that test edge interactions and policy changes which will improve the effectiveness future land-use sustainability of the city were applied. Technology transfer approach was planned for government agencies including local municipals and town; and country department.
Publications/Products/ Outcomes	Publications: 1. Lawrence, R.J. 2007. Building healthy cities & implementing sustainable urban development. 2. Hadi, A.S., Idrus, S., Harman Shah, A.H., and Faris,A. 2007. Shaping a livable city for Malaysia. 3. Hadi, A.S., Harman Shah, A.H., Idrus, S., and Mohamed, A.F. 2007. Modeling local urban sustainability: A conceptual framework.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Institute of Environment and Development (LESTARI), Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor.
Phone Number	Office: 03-8921 4148 H/p: 019-231 6995
e-Mail	asamad@pkrisc.cc.ukm.my/asamad@ukm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Developing Normative Data of Visual Evoked Potentials for Malaysian Population and Its Application
Project Number	06-01-02-SF0241
Project Leader and Team Members	Leader: Zainora Mohammed Members: Ropilah Abdul Rahman, Bariah Mohd AliandNorhani Mohidin
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This project successfully determined the visual evoked potential (VEP) of normal population in Malaysia. In addition, the effect of aging on VEP response for normal population and the changes in VEP of a special population, namely the Down Syndrome, was determined and compared with normal population.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Ahmad Zainuri, N.F., Mohammed, Z., and Mohd Ali, B. 2010. The effect of age on parameters of PRVEP. <i>The International Symposium of Health Sciences</i>. Kuala Lumpur, Malaysia. 2. Mohammed, Z., Mohd Ali, B., Mohidin, N. 2009. Visual Evoked Potential (VEP) Response in a sample of Down syndrome children. <i>First World Congress of Paediatric Ophthalmology and Strabismus</i>, Barcelona, Spain. 3. Ahmad Zainuri, N.F., Mohamed, Z., and Mohd Ali, B. 2008. Nilai normal pattern reversal-visual evoked potential (pr-VEP) bagi makmal VEP di Jabatan Optometri Universiti Kebangsaan Malaysia. <i>Buku Prosiding Simposium Sains Kesihatan Kebangsaan ke-7 (Proceedings for the 7th National Health Science Symposium)</i>. Kuala Lumpur.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Optometry, Faculty of Allied Health Sciences Universiti Kebangsaan Malaysia, Jalan Raja Muda Aziz, 50300 Kuala Lumpur.
Phone Number e-Mail	Office: 03-9289 7482 zainora@medic.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Imaging Subsurface Contaminants of Hydrocarbon-contaminated Sites
Project Number	06-01-02-SF0276
Project Leader and Team Members	Leader: Umar Hamzah Members: Abdul Ghani Md Rafek, Wan Zuhairi Wan Yaacob and Abdul Rahim Samsudin
Field of Research	Environmental Sciences
Project Summary/ Objectives	This project had completed the extent and depth of hydrocarbon-contaminated zone within near-surface materials using integrated geophysical survey techniques. Subsequently, it managed to determine the soil contaminant saturation.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Environmental and Natural Resources Sciences, Faculty of Science and Technology Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor.
Phone Number e-Mail	Office: 03-8921 5491 umar@ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Assessment on Ecosystem Changes and Landuse Pattern on Selected Highland Areas in Malaysia
Project Number	06-01-02-SF0279
Project Leader and Team Members	Leader: Jumaat Adam Members: Zulfahmi Ali Rahman, Ahmad Daman Huri Mohammad, Wan Juliana Wan Ahmad and Juhari Mat Akhir
Field of Research	Biological Sciences
Project Summary/ Objectives	This project determined the current land use changes for 10 years interval (1995-2005); and flora abundance and diversity based on forest clustering. The difference in soil properties and forest attributes of the vegetation types and landuse obtained have also been compared.
Publications/Products/ Outcomes	<p>Book chapters:</p> <ol style="list-style-type: none"> 1. Adam, J.H., Hairini, I., Othman, A.R., Mohamed, K.M., Ahmad Tarmidzi, S.N., A. Hamid, H., and Ali Rahman, Z. 2010. Assessment on changes in forest community structure along the slope on Pine Trail, Fraser's Hil, Pahang. In Adam, J.H., Gasim, M.B., Sakawi, Z., Choy, E.A., Ali Rahman, Z., Tambi, N., and Juhari, M.A.A (Eds). 2010. Bio-Kejuruteraan, Penilaian Ekosistem dan Spesies 2010 Bukit Fraser. 2. Khairul Muna Mohamed, Jumaat H. Adam, Zulfahmi Ali Rahman, Siti Norhafizah Ahmad Tarmidzi and Nur Maisarah Jantan. 2010. Ecology and physico-chemical characteristics of soil on post restoration of slope at UKM's Fraser Hill Research Centre, Pahang. In Adam, J.H., Gasim, M.B., Sakawi, Z., Choy, E.A., Ali Rahman, Z., Tambi, N., and Juhari, M.A.A (Eds). 2010. Bio-Kejuruteraan, Penilaian Ekosistem dan Spesies 2010 Bukit Fraser. 3. Adam, J.H., Lim, T.T., Ahmad Jalaludin, M., Ahmad Tarmidzi, S.N., Mohamed, K.M., Othman, A.R., Idris, W.R., and Ali Rahman, Z. 2011. Keputusan awal: aruhalitudterhadapstrukturkomunitihutanDenaiJeriau di PusatPenyelidikan Bukit Fraser, Raub, Pahang. In Adam, J.H., Gasim, M.B., Sakawi, Z., Choy, E.A., Ali Rahman, Z., Tambi, N., and Juhari, M.A.A (Eds). 2010. Bio-Kejuruteraan, Penilaian Ekosistem dan Spesies 2010 Bukit Fraser.

	<p>Journals:</p> <ol style="list-style-type: none"> 1. Adam, J.H., Mahmud, A.M., Edy Muslim, N., A. Hamid, H., and A. Jalaludin, M. 2007. Cluster analysis of floristic composition and forest structure of hill lowland forest at Lok Kawi, Sabah, State of Malaysia. <i>International J. of Botany</i>. 3(4): 351-359. 2. Halim, H., Adam, J.H., Juhari, M.A., Sahibin, A.R., Hafiza, A. H., Ramlan, O., Gires Kiber, G., Jumaat, S. and Barzani, Q. 2006. Detection of usefulness of intergrating remotely sensed data (Landsat TM) with GIS. <i>Information Technology Journal</i>. 5: 668-672. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. A. Latiff, Maimon Abdullah, Norhayati Ahmad & Jumaat H. Adam. 2009. Bukit Fraser Crown of the Titiwangsa Range. Bangi: Bukit Fraser Research Centre.(ISBN 978-967-5048-63-0). 2. Adam, J.H., Abd. Hamid, H., Edy Muslim, N., Jaafar, Z., and Othman, A.R. 2005. A study on landuse in Setiu, Terengganu. <i>Proceeding: Joint Seminar UKM-ITB ke-6</i> <p>Others:</p> <ol style="list-style-type: none"> 1. Mat Yusof, H. 2007. A study on community structure of pitcher plants and physico-chemical characteristics of soils at different altitudes on Gunung Ledang, Johor. MSc. Thesis. 2. Ahmad Jalaludin, M. 2010. A study on land use change, forest clustering and physico-chemical characteristics of soil at Cameron Highlands, Pahang. MSc. Thesis.
Additional Information	<p>Linkages:</p> <p>Collaboration with Jabatan Perhutanan Negeri Pahang and Jabatan Perhutanan Semenanjung Malaysia</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Kebangsaan Malaysia (UKM) School of Enviromental and Natural Resources Sciences, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor. Office: 03-8921 3222 H/p: 013-607 6669 adamj@ukm.my</p>



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Genotype-phenotype Correlation in Thalassaemia: Towards Development of a Lab-on-a-chip for Diagnosis and Prognostication
Project Number	06-01-02-SF0285
Project Leader and Team Members	Leader: A. Rahman A. Jamal Members: Syed Zulkifli Syed Za, Zarina Abdul Latiff, Hishamshah Ibrahim, Zubaidah Zakaria and Hamidah Alias
Field of Research	Biological Sciences
Project Summary/ Objectives	This study performed genotyping analysis amongst thalassaemia patients from PPUKM, HKL and HUS. The collection of thalassaemia patients' clinical data was still in progress, together with the result of genotype-phenotype correlation analysis. This technology transfer/commercialisation approach study has produced the detection of 28 mutations in beta gene by Sequenome technology, which can be used as a potential service in the near future.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Director, Institute of Molecular Medical Research (UMBI), HUKM, Jalan Yaacob Latif, 56000 Kuala Lumpur.
Phone Number	Office: 03-9170 2189 / 03-8921 5962 H/p: 013-342 6801
e-Mail	rahmanj@mail.hukm.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Laboratory and Field Studies of Sirih Lada (<i>Piper aduncum</i>) Extract and Household Spacespray for Controlling Dengue Vectors
Project Number	06-01-02-SF0305
Project Leader and Team Members	Leader: Sallehudin Sulaiman Members: Rasadah Mat Ali and Hidayatulfathi Othman
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The effect of <i>Piper aduncum</i> extract and aerosol can against dengue/DHF vectors, in the laboratory and field conditions had been successfully investigated. Apart from that, the repellent activity was also included in this study.
Publications/Products/ Outcomes	<p>Journals :</p> <ol style="list-style-type: none"> 1. Paper published in <i>Journal of Tropical Medicine and Parasitology</i> Vol.31:63-9.2008.The repellent activity of <i>Piper aduncum</i> Linn.(Fam:Piperaceae)essential oil against <i>Aedes aegypti</i> using human volunteer. 2. Repellency of essential oil of <i>Piper aduncum</i> against <i>Aedes albopictus</i> in the laboratory.<i>Journal of the American Mosquito Control Association</i> 25(4):442-447,2009. 4-5 March 2008, Paper presented at Malaysian Society of Parasitology and Tropical Medicine Annual Meeting. 3. The repellent activity of <i>Piper aduncum</i> Linn. (Fam: Piperaceae) essential oil against <i>Aedes aegypti</i> using human volunteer (abstract). <i>Paper presented at 7th National Health Symposium (SIHAT2008)</i> 18-19 June 2008,Kuala Lumpur. <p>Products: Aerosol spray of <i>Piper aduncum</i> essential oil</p>
Additional Information	Linkages: Sara Lee Sdn.Bhd.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Biomedical Science, Faculty of Allied Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Abdul Aziz, 50300 Kuala Lumpur.
Phone Number e-Mail	Office: 03-9289 7416 salsul@medic.ukm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Dietary Fats, Interesterification and Postprandial Lipaemia
Project Number	06-01-02-SF0313
Project Leader and Team Members	Leader: Tilakavati Karupaiah Members: Syed Fairus Syed Abu Bakar, Winnie Chee, Kalyana Sundram P Man and Nagendran Balasundram
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This study was completed with beneficial results. It managed to produce comparative evaluation of a variety of possible edible oils, including palm oil, soya bean, cocoa butter and corn oil.
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Department of Food and Dietetics , Faculty of Allied Health Sciences Universiti Kebangsaan Malaysia, Jalan Raja Muda Aziz, 50300 Kuala Lumpur.
Phone Number	Office: 03-8921 7245 H/p: 016-284 6982
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Body Composition, Energy Expenditure and Their Relationship with Metabolic Syndrome Indicators in Normal and Obese Malaysian Children
Project Number	06-01-02-SF0314
Project Leader and Team Members	Leader: Poh Bee Koon Members: Mohd Ismail Noor, Norimah A Karim, Andrew Hills, Ahmad Zawawi Zakaria and Kanaga Kumari Chelliah
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This study focused on body composition, energy expenditure and physical activity in normal and overweight children. The factors being compared were body fat, body mass index and energy expenditure among normal weight and obese children from different ethnicities. Subsequently, the relationship between body mass index and body fat among children was established and their association with indicators of metabolic syndrome was explored. The body fat measurements using bioelectrical impedance analysis was validated against the “gold standard” deuterium-labelled water (DLW) technique. The DLW technique is now being used for another energy requirement project involving pediatric leukemia patients.
Publications/Products/ Outcomes	Publications: <ol style="list-style-type: none"> 1. Quah, Y.V., Poh, B.K., and Mohd Noor, I. 2010. Metabolic Syndrome Based on IDF Criteria in a Sample of Normal Weight and Obese School Children. <i>Malaysian Journal of Nutrition</i>. 16(2):207-217. 2. Poh, B.K., Ahmad, N. J., Chong, L.K., Abd. Talib, R., Ismail, M.N., and McCarthy, D.H. 2011. Waist Circumference Percentiles for Malaysian Children and Adolescents aged 6.0 – 16.9 years. <i>International Journal of Pediatric Obesity</i>. (In Press). 3. Liu, A., Byrne, N.M., Kagawa, M., Ma, G., Poh, B.K., Ismail, M.N., Kijboonchoo, K., Nasreddine, L., Trinidad, T.P., and Hills, A.P. 2011. Ethnic differences in the relationship between body mass index and percent body fat among Asian children from different backgrounds. <i>British Journal of Nutrition</i>. (In Press). 4. Bee, S.W., Bee, K.P., Awang, B., Mohd Noor, I., Abdul, T.R. and Hills, A.P. 2011. Risk of metabolic syndrome among children living in metropolitan Kuala Lumpur: A case control study. <i>BMC Public Health</i>. 11:333.





	5. Liu, A., Byrne, N., Ma, G., Nasreddine, L., Trinidad, T.P., Kijboonchoo, K., Ismail, M.N., Kagawa, M., Bee, K.P., and Hills, A.P. 2011. Validation of bioelectrical impedance analysis for total body water assessment against the deuterium dilution technique in Asian children. European Journal of Clinical Nutrition.
Awards/Certificates	<ol style="list-style-type: none"> 1. Malaysian Association for the Study of Obesity (MASO) Scientific Conference on Obesity(2009): First, Second and Third Prizes, Poster competition 2. 25thNutrition Society of Malaysia (NSM) Conference(2010): First Prize, Young Investigators Symposium (Oral competition)
Additional Information	Linkages: International Atomic Energy Agency, United Nation's agency (coordinating nutrition projects related to stable isotopes); Queensland University of Technology, Australia (analysis of deuterium dilution samples from this project); Omron, Japan (sponsored a bioelectrical analysis equipment).
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Jabatan Pemakanan dan Dietetik, Fakulti Sains Kesihatan Bersekutu, Universiti Kebangsaan Malaysia, Jalan Raja Muda Aziz, 50300 Kuala Lumpur. Office: 03-9289 7686 / 7511 H/p: 012-307 1873 pbkoon@fskb.ukm.my/pbkoon@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Improving Reading Ability of Dyslexic Children in Malaysia Using Low Vision Aids
Project Number	06-01-02-SF0315
Project Leader and Team Members	Leader: Rokiah Omar Members: Victor Feizal Knight Victor Ernest @ Abd Shatar, Norhani Mohidin and Zainora Mohammed
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	Instrumen Semak Disleksia (ISD) was currently in use as a screening test by the Special Education Department, MOE. This study focused on the validation of the reading text used in testing reading speed and reading error of dyslexic school children. The reading ability of dyslexic children was assessed together with the effectiveness of typoscope, simple magnifier and simple magnifier of combined characteristic of typoscope and magnifiers in improving reading ability among dyslexic children.
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. Omar, R., Bauri, N., Knight, V.F., and Mohammed, Z. 2008. Developing A Standard UKM Non- Related Reading Text Test in Malay Language to be Used Among Primary School Children in Malaysia. <i>Prosiding 9th International Conference on Low Vision – Vision 2008</i>, 7-11 Julai 2008. Montreal, Quebec, Canada. 2. Noor Halilah, B, and Omar, R. 2008. The Standard Related Words Reading Text in Malay Language. <i>Prosiding Simposium Sains Kesihatan Kebangsaan Ke-7</i>, 18-19 Jun 2008, Legend Hotel, Kuala Lumpur. 3. Noor Halilah, B. and Omar, R. 2008. Optometric Management of Dyslexic Children. <i>2nd ASEAN Optometric Conference & 2008 Malaydian Optical Fair</i>, Sunway Pyramid Convention Centre 9-10 August 2008. 4. Omar, R., Bauri, N., Knight, V.F., and Mohammed, Z. 2008. Developing A Standard UKM Related Reading Text Test in Malay Language to Assess Reading Ability Among Primary School Children in Malaysia. <i>Lectures for 17th Asia Pacific Optometric Congress</i>, Hong Kong, 5-7 November 2009. <i>Clinical Exp. Optom</i> 93(2):113-126.





	Product: 1. Ujian Bacaan Teks Bahasa Melayu/Bahasa Melayu Reading Text Test
Awards/Certificates	1. The 20th International Invention, Innovation & Technology Exhibition 2009 (ITEX 09) : Bronze Medal 2. The Nusantara Educational Research Exhibition 2009: Silver Medal. 3. Best Research Poster FSKB Award 2009, 23 Dec 2009, Sri Pacific Hotel, Kuala Lumpur 4. Creative and Innovative Award, Universiti Kebangsaan Malaysia & Stevens Institute of Technology, 7-10 June 2010, UKM Bangi. 5. Anugerah Inovasi Penyelidikan 2011, Universiti Kebangsaan Malaysia 2011, 15 April 2011 Puri Pujangga UKM
IP Status	1. Ujian Bacaan Teks Bahasa Melayu / Bahasa Melayu Reading Text Test Copy Right & Trademark filed 21 June 2010
Additional Information	Linkages: Steven Institut of Technology, USA. Dalam proses perbincangan Commercialisation: Pre-commercialisation - Online Version of Reading Tools to Detect Child Reading Performance and Progress, Learning Disabilities & Eye Problems (KieVisionTM) Spin-off: R&D/IP Commercialisation Company – KieVision Sdn. Bhd. (Form By UKM monitor by UKM Technology) Launched 31 January 2011
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Department of Optometry, Faculty of Allied Health Sciences Universiti Kebangsaan Malaysia, Jalan Raja Muda Aziz, 50300 Kuala Lumpur. Office: 03-8921 5467 H/p: 012-303 6929 r_omar@medic.ukm.my/rokiahomar@gmail.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Pemindahan Kepakaran (Pengetahuan) kepada Pekerja Mahir Bumiputera di Industri Berteknologi Tinggi (Technopole) Cyberjaya, Taman Teknologikulim High Tech
Project Number	06-01-02-SF0394
Project Leader and Team Members	Leader: Abd. Hair Awang Members: Mohd. Yusof Hussain and Jalaluddin Abdul Male
Field of Research	Economics, Business and Management
Project Summary/ Objectives	This project has developed a new international benchmark for knowledge transfer activities from foreign expert workers to Bumiputeras. The benchmark, subsequently proposed an update of the current strategies and procedures for foreign direct investment, in order to expedite the international knowledge transfer. In addition, it comes with recommended policies to enhance the capacity of Bumiputera's professional staff and management in absorbing international knowledge transfer.
Publications/Products/ Outcomes	Journal: <ol style="list-style-type: none"> 1. Abdul Malek, J., Awang, A.H., and Hussain, M.Y. 2009. The development of k-workers in the technopoles of Malaysia's Cyberjaya and India's Bengaluru International Tech Park (BITP) – A comparison, <i>Geografia – Malaysian journal of society and space</i>, Vol 5 (2): 27-44 2. Awang, A.H., Hussain, M.Y., and Abdul Malek, J. 2009. Promoting knowledge transfer in science and technology: A case study of technology park Malaysia (TPM). <i>Croatian economic survey</i>, no 11: 95-114. 3. Abdul Malek, J., Awang, A.H., Hussain, M.Y., and Rusli, M. S. 2009. Menyemai Kepakaran Pekerja Tempatan. In Awang, A.H., Ismail, R., and MohdMakhbul, Z. <i>Pembangunan dan Pengurusan Modal Insan Negara</i>. UKM Bangi: Fakulti Ekonomi & Perniagaan. 263-282.
Additional Information	Linkages: <ol style="list-style-type: none"> 1. Bangalore Technology Parks, India 2. Kulim High-tech Park, Kulim, Kedah 3. Technology Park Malaysia, Serdang, Selangor 4. Multimedia Development Corporation, Cyberjaya



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Phone Number e-Mail	Office: 03- 89215683/ 8921 5682/ 8921 5481 hair@ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Chemical Modifications of Filler-matrix Interface in Thermoplastic Wood Composites
Project Number	06-01-02-SF0411
Project Leader and Team Members	Leader: Ibrahim Abdullah Members: Rusli Daik and Ishak Ahmad
Field of Research	Chemical Sciences
Project Summary/ Objectives	This project established a method to coat and chemically bond a rubber layer to the surface of rice husk and wood powder. From the study, the interaction between the fiber filler and the TPNR matrix was found to increase with the increase in the mechanical properties of the composites. The infrared analysis also had shown a similar effect. Morphological examination of the composite, SEM and TEM, indicated an increase in the filler distribution upon addition of silica or clay as co-filler.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Chong, E.L., Ahmad, I., Dahlan, H.M., and Abdullah, I. 2010. Reinforcement of natural rubber/high density polyethylene blends with electron beam irradiated liquid natural rubber-coated rice husk. <i>Radiation Physics and Chemistry</i> 79: 906-911 2. Chong, E.L., Ahmad, I., Dahlan, H.M., and Abdullah, I. 2011. Kesan modifikasi sekam padi dengan getah asli cecair dan dedahan kepada alur electron keatas sifat mekanik komposit NR/HDPE/Sekam padi. <i>Sains Malaysiana</i>, 40(9) 3. Syafri, R. Ahmad, I., and Abdullah, I. 2011. Modification of rice husk surface by LENR on the mechanical properties of NR/HDPE composite reinforced with rice husk. <i>Sains Malaysiana</i>, 40(7)
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Chemical Science and Food Technology, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor.
Phone Number	Office: 03-8921 5441 H/p: 013-326 0844
e-Mail	dia@pkrisc.cc.ukm.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Risk Factors and Development of Myopia in Urban and Rural Schoolchildren
Project Number	06-01-02-SF0448
Project Leader and Team Members	Leader: Norhani Mohidin Members: Saadah Mohamed Akhir and Rokiah Omar
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This project determined the risk factors associated with myopia progression. Myopic progression in urban and rural school children was compared and contrasted. The structural components that lead to myopia progression had also been identified.
Publications/Products/ Outcomes	Proceedings: <ol style="list-style-type: none"> 1. Mohd Akhir, S., M Fadzil, N., Omar, R., Mohidin, N. 2010. Visual Impairment and Refractive Error in Malay Schoolchildren. <i>International Symposium on Health Sciences (i-sihat) 2010</i>, Kuala Lumpur. 2. Mohd Akhir, Mohidin, N. 2010. Myopia and risk factors in Malay Schoolchildren. <i>World Congress On Refractive Errors (WCORE)</i>, Durban South Africa, 20-22 Sept 2010 3. Mohidin, N, Mohd Akhir, S. 2009. Refractive errors in rural Malay schoolchildren in Malaysia. <i>17th Asian Pacific Optometry Congress</i>. Hong Kong, 5-7 Nov 2009. 4. Mohd Akhir, S., Mohidin, N. 2008. Factors related to myopia progression in Malay schoolchildren. <i>12th International Myopia Conference</i>. Brisbane, Australia. 8-12 July 2008.
Additional Information	Commercialisation: Book on myopia progression in Malay schoolchildren (in preparation)
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) Prof. Dr. Norhani binti Mohidin, Faculty of Allied Health Sciences, Universiti Kebangsaan Malaysia, Jalan Raja Muda Aziz, 50300 Kuala Lumpur.
Phone Number	Office: 03-8921 7687 H/p: 012-202 9548
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	A Biomechanical Model of School Children's Walking Posture: The Effects of Load Carriage (School Backpack)
Project Number	06-01-02-SF0452
Project Leader and Team Members	Leader: Azmin Sham Rambely Members: Juliana Usman, Wan Rosmanira Ismail, Wan Abu Bakar Wan Abas, Roslinda Mohd. Naza, Rokiah@Rozita Ahmad
Field of Research	Mathematical Sciences
Project Summary/ Objectives	This project focused on the development of a multi-segment model of human movement during walking for Malaysian primary school children age 6-12 years old. It investigated the biochemical effects of load carriage dynamics on school children's walking posture. A mathematical model of the load carriage (school backpack) dynamics and a prototype of a smartbag system was developed.
Publications/Products/ Outcomes	Product: 1. A Smart Backpack System
Awards/Certificates	Bronze Medal – Malaysian Technology Exhibition (MTE) 2009
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Mathematical Sciences, Faculty of Science & Technology, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor.
Phone Number	Office: 03-8921 3244 H/p: 012-283 0511
e-Mail	asr@pkrisc.cc.ukm.my/asr@ukm.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Application of Actuarial Models in Assessing the Feasibility of Insurance Pricing
Project Number	06-01-02-SF0482
Project Leader and Team Members	Leader: Noriszura Ismail Members: Abdul Aziz Jemain, Hamizun Ismail and Saiful Hafizah Jaaman
Field of Research	Mathematical Sciences
Project Summary/ Objectives	This project has achieved all of its objectives. Specifically, the pricing models under various economic and marketing scenarios were derived, and the algorithms for conducting feasibility studies on insurance pricing models were constructed. The actuarial methods in assessing the feasibility of insurance pricing models were developed.
Publications/Products/ Outcomes	Publications: <ol style="list-style-type: none"> 1. Zamani, H., and Ismail, N. 2010. Negative binomial-Lindley distribution and its application. <i>Journal of Mathematics and Statistics</i>, 6(1), 4-9. 2. Zamani, H., and Ismail, N. 2010. Poisson-weighted exponential distribution and its application on claim count data. <i>Journal of Quality Measurement and Analysis</i>, 6(2), 57-65. 3. Resti, Y., Ismail, N., and Jaaman, S.H. 2010. Handling the dependence of claim severities with copula models. <i>Journal of Mathematics and Statistics</i>, 6(2), 136-142. 4. Resti, Y., Ismail, N., and Jaaman, S.H. 2010. odelanklaimasuransi kenderaan bermotor dengan regresi ZAIG. <i>Statistika</i>, 10(2), 93-97. 5. Mohamed, M.A., Razali, A.M., and Ismail, N. 2010. Approximation of aggregate losses using simulation. <i>Journal of Mathematics and Statistics</i>, 6(3), 233-239. 6. Ismail, N., and Anuar, A.A.A. 2009. Insolvency probability in reinsurance treaty: a case study in Malaysia. <i>Perspective of Innovations, Economics and Business</i>, 3, 62-64.
Additional Information	Linkages: <ol style="list-style-type: none"> 1. Casualty Actuarial Society (CAS) - through publication of articles in the CAS website (year 2009 and year 2007)

	<ol style="list-style-type: none"> 2. Insurance Services Malaysia Berhad (ISM) – the data is provided by ISM and in return, research reports are submitted to ISM 3. Malaysian Insurance Institute
Contact Institution/Entity Address	Universiti Kebangsaan Malaysia (UKM) School of Mathematical Sciences, Faculty of Science and Technology, Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	The Evaluation of Occupational and Environmental Risk Indicators for Pesticides Exposure in Paddy Growing Areas of the IADP Kerian-Sg.Manik
Project Number	06-01-02-SF0511
Project Leader and Team Members	Leader: Ismail Sahid Members: Norela Sulaiman, T. Norbrilliant T. Mok, Mohd Rafee Baharudin and Mohamad Azhar Mohd
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This study assessed and evaluated the risk indicator and the Chemical Health Risk Assessment (CHRA) in estimating the potential risk of selected pesticides on pesticides handlers in paddy growing areas of the IADP Kerian-Sg.Manik. The risk indicator from selected pesticides was examined and the result was proposed as the recommendations for further use and harmonisation of the occupational and environmental pesticide risk indicators as decision tools in strengthening the IPM strategies in paddy growing areas.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Kebangsaan Malaysia (UKM) Universiti Kebangsaan Malaysia, 43600 Bangi, Selangor. Office: 03-8921 5864 ismail@pkrisc.cc.ukm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Risk Models and Management Strategies for Oral Cancer Patients
Project Number	06-01-03-SF0089
Project Leader and Team Members	Leader: Rosnah Mohd Zain Members: Zainal Ariff Abdul, Nicholas Saunders, Haizal Mohd Hussaini, Cheong Sok Ching, Norlida Abdullah and Mohd Amin Jalaludin
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This study successfully developed risk model and management strategies for oral cancer patients. It resulted from comprehensive studies on risk parameters such as gene polymorphisms, HPV status, risk habits/dietary/clinicopathological. A Quality of Life (QOL) measure was developed to assess social/psychological impact of oral cancer for Malaysian population. It was tested to see the application of values of this measure in predicting QOL of patients. This study also consolidated Malaysian Oral Cancer Database and Tissue Bank System (MOCDTBS) for continual collection of data and tissues. On the other hand, the continual collection, processing and storage of data/specimen to support current and future researches are still on-going. For further consolidation of the MOCDTBS, a software for specimen tracking and retrieval was successfully obtained, implemented and integrated with the MOCDTBS to facilitate accessibility of data/specimen.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Cheong, S.C., Chandramouli, G.V.R, Saleh, A., Zain, R.B., Lau, S.H., Sivakumaren, S., Pathmanathan, R., Prime, S.S., Teo, S.H., Patel, V., and Gutkind, J.S. 2009. Gene expression in human oral squamous cell carcinoma is influenced by risk factor. <i>Oral Oncol</i> 45(8): 712-719. 2. Amtha, R., Cheong, S.C., Zain, R.B., Razak, I.A., Basuki, B., Roeslan, B.O., Gautama, W., and Purwanto, D.J. 2009. GSTM1, GSTT1 and CYP1A1 polymorphism and risk of oral cancer: a case-control study in Jakarta population, Indonesia. <i>Asian Pacific Journal of Cancer Prevention</i> 10(1): 21-26.





	<ol style="list-style-type: none"> 3. Hamid, S., Yang, Y.H., Karen-Ng, L.P., Ismail, S.M., Zain, R.B., Lim, K.P., Abraham, M.T., Wan-Mustaffa, W.M., Teo, S.H., and Cheong, S.C. 2009. MDM2 SNP309 does not confer an increased risk to oral squamous cell carcinoma but may modulate the age of disease onset. <i>Oral Oncology</i> 45: 496-500. 4. Zain, R.B., Ghani, W.M.N., Razaz, I.A., Raja Latifah, R.J., Samsuddin, A.R., Cheong, S.K., Abdullah, N., Ismail, A.R., Hussaini, H., Norain, A.B., and Jallaludin, A. 2009. Building partnership in oral cancer research in a developing country - processes and barriers. <i>Asian Pacific J Cancer Prev</i> 10(3): 513-518. 5. Amtha, R., Zain, R.B., Razak, I.A., Basuki, B., Roeslan, B.O., Gautama, W., and Purwanto, D.J. 2009. Dietary patterns and risk of oral cancer: a factor analysis study in Jakarta population Indonesia. <i>Oral Oncology</i> 45(8): 49-53.
<p>Awards/Certificates</p>	<ol style="list-style-type: none"> 1. Young Investigator Award – Awarded to Gan Chai Phei at the Regional Conference on Molecular Medicine 2007, Kuala Lumpur for paper titled ‘The potential use of HDAC Inhibitors in oral cancer’ (Authors: Hamid S, Ismail SM, Zain RB, Cheong SC) 2. Zaini ZM, Queck KL, Zain RB. TNF a-308 Polymorphism in Malaysian and Taiwanese oral cancer patients. 10th Debtal Students Scientific Conference, 17-18 December 2008, Universiti Malaya. Recipient of 2nd Place, Oral presentation Category 3. Bronze medal at the University of Malaya Research and Innovation Expo 2009 for paper titled ‘Gene expression in human oral squamous cell carcinoma is influenced by risk factor exposure’ (Authors: Zain RB, Cheong SC, Chandramouli GVR, Saleh A, Lau SH, Sivakumeran S, Pathmanathan R, Prime SS, Teo SH, Patel V, Gutkind JS.) 4. Bronze medal at the University of Malaya Research and Innovation Expo 2009 for paper titled ‘MDM2 SNP309 does not confer an increased risk to OSCC but may modulate the age of disease onset.’ (Authors: Zain RB, Hamid S, Yang YH, Karen-Ng LP, Ismail SM, Lim KP, Mustafa WMW, Abraham MT, Teo SH, Cheong SC)

	<ol style="list-style-type: none"> 6. Silver medal at the University of Malaya Research and Innovation Expo 2009 for paper titled 'Factors influencing physical and social functions among oral cancer patients prior to treatment' (Authors: Raja Latifah RJ, Cheong SC, Survashe MR, Zain RB, Razak IA, Sallam A, Doss JG, Ghani WMN, Saub R, Ismail R) 7. Travel Award to Japan 2009 for paper titled Single Nucleotide Polymorphisms (SNPs) Discovery in Oral Squamous Cell Carcinoma (OSCC). (Authors: Karen-Ng LP, Rahman ZAA, Prepagaran N, Hercus R, Anwar A, Aisyah N, Saidin A, Ismail SM, Merican AF, Tay KK, Mustaffa WMW, Norain AT, Cheong SC, Zain RB) 8. Won 1st prize worth USD 500.00 for presentation of abstract titled 'Genetic polymorphism and risk of oral cancer' presented at 1st Malaysian Oncology Society-Egyptian Oncology Society, 1-2 May 2010
Additional Information	Linkages: <ol style="list-style-type: none"> 1. Kaohsiung Medical University, Taiwan 2. University of Otago, New Zealand
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaya (UM) Pengarah, Institut Pengurusan Penyelidikan dan Perundingan, Universiti Malaya, C313, Bangunan IPS, 50603 Kuala Lumpur. Office: 03-7967 4896 H/p: 012-609 5428 rosnahmz@um.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Modeling and Detecting Influential Observations in Bilinear Models with the Application on Environmental Data
Project Number	06-01-03-SF0165
Project Leader and Team Members	Leader: Ibrahim Mohamed Members: Mohamad Said Zainol, Mohd Sahar Yahya and Azami Zaharim
Field of Research	Mathematical Sciences
Project Summary/ Objectives	This study formulated the effect of additive outlier, innovational outlier, temporary change and level change on observations generated from BL (p,0,1,1) process and residuals from fitted BL (p,0,1,1) model. It derived the measures of outliers' effect for each type and proposed an outlier detection procedure for the model. Through this study, the bilinear model can be used as an alternative model if compared to linear model when fitted on environmental data system. Upon completion, complete set of toolbars program in SPlus was written. This was to encourage more practitioners to use the proposed detection procedure that will improve modelling and forecasting data in various areas including finance and environment.
Publications/Products/ Outcomes	Proceedings/Coferences/Seminars: 1. Ismail, M.I., Mohamed, I.B. and Yahya, M.S. 2009. "TS outlier detector", Expo UM, Kuala Lumpur, 14-15 Januari, 2009.
Contact Institution/Entity Address	Universiti Malaya (UM) Pengarah, Institut Pengurusan Penyelidikan dan Perundingan, Universiti Malaya, C313, Bangunan IPS, 50603 Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Novel Strategies for Complex Indole and Lactam Formation via Radical Cations; towards a Synthesis of Molecules Related to Isoeburnamine, from Malaysian <i>H. Zeylanica</i> , and Rhazinilam, from Malaysian <i>Kopsia</i>
Project Number	06-01-03-SF0167
Project Leader and Team Members	Leader: Noel Francis Thomas Members: Jean-Frederic Faizal Webe, Ibrahim Ali Noorbacha, Azhar Ariffin and Khalijah Awang
Field of Research	Chemical Sciences
Project Summary/ Objectives	This study has generated more than fourteen novel E-olefins which shows encouraging levels of activity on cancer cell lines HT-29 and P388. Apart from that, it had accomplished in finding the conditions for Heck Coupling and FeCl ₃ oxidative cyclisation via radical cation yielded structurally interesting compounds and published two hitherto unknown indole. Above all, the study was believed to be the first time demonstrated conditions for lactam formation resulting from exposure of orthofurancarboxamido stilbenes to FeCl ₃ .
Contact Institution/Entity Address	Universiti Malaya (UM) Pengarah, Institut Pengurusan Penyelidikan dan Perundingan, Universiti Malaya, C313, Bangunan IPS, 50603 Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Environmental Degradation and Landscape Conservation Approaches for Biodiversity
Project Number	06-01-03-SF0175
Project Leader and Team Members	Leader: Wong Khoon Meng Members: Philip Lepun and Abd Aziz Othman
Field of Research	Environmental Sciences
Project Summary/ Objectives	All project objectives were achieved successfully. This study had investigated biodiversity thresholds as indicated by tree diversity in residual vegetation patches of various sizes and different ages/ecological maturity in severely impacted landscape represented by the Klang Valley and adjacent region. It also compared plant species diversity in naturally developing secondary vegetation with that in cultivated tree stands, and thus assessed the potential use of artificial tree stands for biodiversity recapture and maintenance in the landscape. This study had helped to gain understanding on how special biodiversity regions can be recognised on a broad landscape basis by applying biogeographical approaches to assist natural landscape management.
Contact Institution/Entity Address	Universiti Malaya (UM) Pengarah, Institut Pengurusan Penyelidikan dan Perundingan, Universiti Malaya, C313, Bangunan IPS, 50603 Kuala Lumpur.
Phone Number e-Mail	Office: 03-7967 4687 wong@um.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Synthesis, Kinetics and Mechanism of Homogeneous Catalysis in Organic Reactions Which are Model to Enzyme Catalyzed Reactions
Project Number	06-01-03-SF0179
Project Leader and Team Members	Leader: Azhar Ariffin Member: Mohammad Niyaz Khan
Field of Research	Chemical Sciences
Project Summary/ Objectives	This project had achieved the targeted objective and had published the results in international journals. It had synthesised selected N-substituted phthalimide and N-substituted phthalamic acid and investigated the mechanism of hydrolysis and aminolysis of imides, amic acids in the absence and presence of micelles.
Contact Institution/Entity Address	Universiti Malaya (UM) Pengarah, Institut Pengurusan Penyelidikan dan Perundingan, Universiti Malaya, C313, Bangunan IPS, 50603 Kuala Lumpur.
Phone Number	Office: 03-7967 4080 H/p: 017-615 6030
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	The Search for New Tin and Related Mineral Resources
Project Number	06-01-03-SF0191
Project Leader and Team Members	Leader: Teh Guan Hoe Members: Azhar Hussin and Goh Swee Heng
Field of Research	Earth Sciences
Project Summary/ Objectives	This project was focused on identifying the main areas of tin mineralisation in Peninsular Malaysia. It defined and characterised the nature, besides determining the grade and extent of mineralisation. Upon completion, it provides recommendation areas for follow-up on geochemical exploration so that initial geochemical exploration in areas proposed can be carried out to initiate geoenvironmental aspects of rehabilitation of mined areas.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Teh Guan Hoe., Cheng KwongKiong. and Jasmi Hafiz bin Abd Aziz. 2008. Characterization of Nb-Ta-Ti ore, struverite, from Peninsular Malaysia. <i>Bull. Geo. Soc. of Malaysia</i>, No.53, 125-128. 2. Teh Guan Hoe., Cheng KwongKiong. and Jasmi Hafiz bin Abd Aziz, 2007. EPMA characterization of struverite from among of Peninsular Malaysia. <i>Bull. Geo. Soc. of Malaysia</i>, No.53, 125-128. 3. Teh Guan Hoe., Cheng KwongKiong. and Jasmi Hafiz bin Abd Aziz. 2009. EPMA characterization of the REE-containing among minerals, monazite and xenotime. <i>Bull. Geo. Soc. of Malaysia</i>, in press. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Teh Guan Hoe, Cheng KwongKiong and Jasmi Hafiz bin Abd Aziz, 2008. EPMA characterization of the among minerals, monazite and xenotime. <i>National Geosciences Conference 2008 (NGC 2008)</i>, 1-3 June 2008, Perak. 2. Teh Guan Hoe., Cheng KwongKiong. and Jasmi Hafiz bin Abd Aziz. 2009. EPMA characterization of Monazite and Xenotime – the REE-containing minerals. <i>The 1st AUN/SEED-Net Regional Conference on Materials 2009 (RCM 2009)</i>, 16-17 February 2009, Penang.

	<ol style="list-style-type: none"> 3. Teh Guan Hoe.and Cheng KwongKiong, 2010. X-Ray mapping and EPMA characterization of the struverite. <i>International Conference On X-rays & Related Techniques In Research And Industry (ICXRI 2010)</i>, 9–10 June 2010, Langkawi. 4. Teh Guan Hoe.andTeh Jin Yuan, 2010. Iron mineralization, south GunungJerai area, Kedah, implication of genesis. <i>National Geosciences Conference 2010</i>, 11–12 June 2010,Selangor. 5. Teh Guan Hoe. and Cheng KwongKiong 2010. Electron probeMicroanalyses (EPMA) characterization of among from different localities in Peninsular Malaysia. <i>19th Scientific Conference of Electron Microscopy Society of Malaysia, EMSM 2010</i>.
Awards/Certificates	<ol style="list-style-type: none"> 1. International Exposition of Research and Inventions of Institutions of Higher Learning 2007 (Pecipta 2007): 1 Silver Medal 2. EkspoPenyelidikanRekaciptadanInovasi 2007: 1 Bronze Medal
Additional Information	Linkages: Centre of Ore Deposits Excellence, CODES, University of Tasmania
Contact Institution/Entity Address Phone Number e-Mail	Universiti Malaya (UM) Pengarah, Institut Pengurusan Penyelidikan dan Perundingan, Universiti Malaya, C313, Bangunan IPS, 50603 Kuala Lumpur. Office: 03-7967 4139 H/p: 019-305 0337 tehgh@um.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Capillary Discharge Soft X-ray Laser
Project Number	06-01-03-SF0202
Project Leader and Team Members	Leader: Kwek Kuan Hiang
Field of Research	Physical Sciences
Project Summary/ Objectives	This project focused on the plasma dynamics of a fast capillary discharge. The soft x-ray emission of the high temperature and high density plasma produced was characterised. This study also developed a compact soft x-ray laser source based on the capillary discharge.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. C.A. Tan and K.H. Kwek. 2008. A giga-watt high voltage generator for coherent soft x-ray generation. <i>IEEE Transactions on Instrumentation and Measurement</i>, vol. 57 1023-1028 (2008) 2. K.H. Kwek and C.A. Tan. 2007. Discharge driven soft x-ray laser in neon-like argon, <i>Presented in 3rd Asian Symposium on Intense Laser Science (ASILS3)</i>, 2nd – 6th July 2007, Kuala Lumpur. 3. K.H. Kwek and C.A. Tan. 2008. Lasing in Ne-like Argon Capillary Discharge at Low Current and the effect of Current Prepulse. Presented in <i>Dense Z-Pinches: 7th International Conference</i>, 18-21 August 2008, U.S.A. 4. C.A. Tan and K.H. Kwek. 2007. Influence of current prepulse on capillary-discharge extreme-ultraviolet laser. <i>Physical Review A</i>, vol. 75, 043808 5. C.A. Tan and K.H. Kwek. 2007. Development of a low current discharge-driven soft x-ray laser” <i>Journal of Physics D: Applied Physics</i>, vol. 40 4787-4792. <p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. K.H. Kwek and C.A. Tan. 2009. Lasing in Ne-like Argon Capillary Discharge at Low Current and the effect of Current Prepulse. <i>AIP Conference Proceedings CP1088, Dense Z-Pinches: 7th International Conference</i>.
Additional Information	Linkages: Imperial College, London, U.K.

<p>Contact Institution/Entity Address</p>	<p>Universiti Malaya (UM) Pengarah, Institut Pengurusan Penyelidikan dan Perundingan, Universiti Malaya, C313, Bangunan IPS, 50603 Kuala Lumpur. Office: 03-7967 4287 khkwek@um.edu.my</p>
<p>Phone Number e-Mail</p>	





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Assessing Knowledge, Attitude and Perceptions of School Female Adolescents About Dysmenorrhea and Premenstrual Syndrome in Federal Territory Kuala Lumpur
Project Number	06-01-03-SF0206
Project Leader and Team Members	Leader: Wong Li Ping
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This study was conducted with a total of 1092 girls from 15 schools in Federal Territory of Kuala Lumpur. The respondents selected are aged between 15 to 20 years old with regard to dysmenorrhea and menstrual hygiene.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Wong, L.P. and Khoo, E.M. Dysmenorrhea in a multiethnic population of adolescent Asian girls, <i>Int J Gynecol Obstet</i> 2010;108(2):139-142 doi:10.1016/j.ijgo.2009.09.018. 2. Li Ping Wong, Ee Ming Khoo. Menstrual-Related Attitudes and Symptoms Among Multi-racial Asian Adolescent Females. <i>International Journal of Behavioral Medicine</i> 2011 DOI 10.1007/s12529-010-9091-z. 3. Wong LP. 2011. Knowledge of and attitudes toward the HPV vaccine among multi-ethnic women from urban/ university and rural areas. <i>Int J GyneObs</i>, 146-147.
Contact Institution/Entity Address	Universiti Malaya (UM) Pengarah, Institut Pengurusan Penyelidikan dan Perundingan, Universiti Malaya, C313, Bangunan IPS, 50603 Kuala Lumpur.
Phone Number	Office: 03-7967 5738 H/p: 012-250 0073
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Pharmacogenomics of Beta2-adrenoceptor in Malaysian Asthmatics
Project Number	06-01-03-SF0212
Project Leader and Team Members	Leader: Vijaya Lechimi Raj T. M. Rajagopal Members: Ammu Kutty Chandrika, Liam Chong Kin, Mohd Rais Mustafa and Rakesh Naidu Kuppusamy
Field of Research	Biotechnology
Project Summary/ Objectives	This project was carried out to determine the frequencies of the various polymorphisms of the beta2-adrenoceptor for 432 healthy volunteers and 435 asthmatic patients. The relationship between serum IgE and IL-4 levels have been measured in 268 volunteers and 278 asthmatic patients. The effect of beta2-adrenoceptor genotype on receptor functionality and gene expression was determined. Subsequently, the effect of the genotype on the lung function was determined with the methacholine challenge in volunteers as the patients' asthma was too severe for them to participate in the study.
Contact Institution/Entity Address	Universiti Malaya (UM) Pengarah, Institut Pengurusan Penyelidikan dan Perundingan, Universiti Malaya, C313, Bangunan IPS, 50603 Kuala Lumpur.
Phone Number	Office: 03-7967 4705 H/p: 016-273 2654
e-Mail	rajvl@um.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Mixture Models and Their Statistical Inference for Applications in Finance and Industry
Project Number	06-01-03-SF0264
Project Leader and Team Members	Leader: Ong Seng Huat Members: Sim Chiaw Hock and Nor Aishah Hamzah
Field of Research	Mathematical Sciences
Project Summary/ Objectives	Classes of mixture models, in particular, zero-inflated models have been formulated. Applications to finance and process control have been examined. Computer generation of random samples for the negative binomial distribution by using a new and innovative technique was obtained.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ong, S.H. and Lee, W.J. 2008. Computer generation of negative binomial variates by envelope rejection, <i>Computational Statistics and Data Analysis</i>, 52, 4175-4183. 2. S.H. Ong, K. Shimizu, Choung Min Ng. 2008. A Class of Discrete Distributions Arising from Difference of Two Random Variables, <i>Computational Statistics and Data Analysis</i>, Vol. 52/3, 1490-1499. 3. Khang, T.F. and Ong, S.H. 2007. A new generalization of the logarithmic distribution arising from the inverse trinomial distribution. <i>Communications in Statistics, Theory and Methods</i>, 36, 3- 21. 4. Sim, C. H. and Lim, M. H. 2008. Attribute Charts for Zero-Inflated Processes. <i>Communications in Statistics: Simulation and Computation</i>, 37:1439-1451. 5. Kazuki Aoyama., K. Shimizu. and S.H. Ong. 2008. A first-passage time random walk distribution with five transition probabilities: a generalization of the shifted inverse trinomial, <i>Annals Inst. Stat. Math.</i>, 60, 1-20. 6. Sim, C. H. and Hamzah, N.A. 2008. Control charts with Robust Probability Limits. <i>Malaysian Journal of Science</i>, 27: 129-142.
Additional Information	Linkages: Professor Ramesh C. Gupta, University of Maine, Orono, USA

<p>Contact Institution/Entity Address</p>	<p>Universiti Malaya (UM) Pengarah, Institut Pengurusan Penyelidikan dan Perundingan, Universiti Malaya, C313, Bangunan IPS, 50603 Kuala Lumpur. Office: 03-7967 4306 ongsh@um.edu.my</p>
<p>Phone Number e-Mail</p>	





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Narrating Historical Change in Malaysia Through Maps: Different Perceptions
Project Number	06-01-03-SF0277
Project Leader and Team Members	Leader: Danny Wong Tze Ken Members: Mardiana Nordin, Loh Wei Leng and Mohammad Raduan Mohd Ariff
Field of Research	Social Sciences
Project Summary/ Objectives	This project had created a database of historic maps of Malaysia. Maps (approximately 130) for the study of Malaysian history was collected and perceptions of different groups over time can be found in papers presented in conferences and published articles.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Danny Wong Tze Ken. 2007. From Gaya to Jesselton: <i>A Preliminary Study on the Establishment of a Colonial Township, Borneo Research Journal</i>, Vol. 1, 31-42. 2. Mardiana Nordin. 2008. Undang-Undang Laut Melaka: A Note on Malay Maritime Law in the 15th Century', in Danny Wong Tze Ken (ed.), <i>Memory and Knowledge of the Sea in Southeast Asia</i>, Kuala Lumpur: <i>Institute of Ocean and Earth Sciences</i>, University of Malaya, 15-22. 3. Mohammad Raduan Mohd Ariff., Yeap Hock Lai. and Mazlan Majid, <i>Aplikasi Sistem Maklumat Geografi (GIS) Dalam Pengurusan Sektor Perikanan Negeri Sabah , dalam Borneo Research Journal</i>, Bilangan 3, 2009. 4. Mohammad Raduan bin Mohd Ariff. and Mohammad Sharir bin Mohammad Raduan. 2009. Perusahaan PukatTunda di Semananjung Malaysia, 1965-2005: Ditelan Mati Emak Di luah Mati Bapak. Politics of the Trawl Fishing Industry in Peninsular Malaysia 1965-2005. <i>Jurnal Jabatan Pengajian Asia Tenggara (JATI)</i>, Bil. 14, 89-102. 5. Mohammad Raduan Mohd Ariff., Mazlan Majid. and Yeap Hock Lai, Penglibatan Buruh Perikanan Filipina Dalam Perusahaan Perikanan Pukat Tunda di Kudat, Sabah , <i>Borneo Research Journal</i>, Vol.1, 2007, 159-171.

Proceedings/Conferences/Seminars:

1. Danny Wong Tze Ken. 2007. From Gaya to Jesselton: The Establishment of the Jesselton Township, *5th International Convention for Asian Scholars (ICAS)*, 2 - 0 Aug 2007, International Institute of Asian Studies and Universiti Kebangsaan Malaysia, Selangor.
2. Mardiana Nordin. 2007. Political Changes in the Kingdom of Johor from 16th to 18th Centuries: A Consideration of Malay Classical Text (Tuhfat al-Nafis), *International Conference of Asia Scholar (ICAS)*, 2 - 5 Aug 2007, ICAS.
3. Loh Wei Leng. 2007. Mapping Malaysian History: Merchant Networks of the Straits Chinese of Penang along the Western Littoral of Southeast Asia, *5th International Convention for Asian Scholars (ICAS)*, 2 - 5 Aug 2007, International Institute of Asian Studies and Universiti Kebangsaan Malaysia, Selangor.
4. Mardiana Nordin. 2009. Objektif dan Objektiviti dalam Naskhah Melayu, *Bengkel Pascasiswazah 2009*, 25 Jul 2009, Jabatan Sejarah, Fakulti Sastera dan Sains Sosial, Universiti Malaya. Kuala Lumpur.
5. Mardiana Nordin. 2009. Perkongsian dan Penyatuan Budaya Merentas Lautan: Penelitian daripada Tuhfat al-Nafis dalam Dialog sejarahan Membangkitkan Memori Kolektif Kesenjarahan Indonesia – Malaysia, 7-10 Oktober 2009, Indonesia.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	A Shearographic Interferometer for Foot Pressure Distribution Measurement
Project Number	06-01-03-SF0296
Project Leader and Team Members	Leader: Kwek Kuan Hiang Member: Bernardine Renaldo Wong
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	In this project, a high resolution foot pressure distribution sensor was successfully designed and developed. A patent on the interferometer designed was filed as part of technology transfer activity.
Publications/Products/ Outcomes	Proceedings/Coferences/Seminars: <ol style="list-style-type: none"> 1. K.U. Hii. and K.H. Kwek. 2008. A Double-Prism Lateral Shear Interferometer for Wavefront Analysis and Collimation Testing. <i>Ninth International Symposium on Laser Metrology</i>. Proc. of SPIE Vol. 7155, 71551A. 2. K. U. Hii .and K. H. Kwek. 2008. Wide Dynamic Beam Size Range Lateral-Shear Interferometer. <i>Interferometry XIV: Techniques and Analysis</i>. Proc. of SPIE Vol. 7063, 706318. 3. K.U. Hii. and K.H. Kwek. 2008. A Double-Prism Lateral Shear Interferometer for Wavefront Analysis and Collimation Testing. <i>Presented in Ninth International Symposium on Laser Metrology</i>, 30 June – 2 July 2008, Singapore. 4. K. U. Hii., and K. H. Kwek. 2008. Wide Dynamic Beam Size Range Lateral-Shear Interferometer” Presented in <i>International Symposium on Optical Engineering and Applications</i>, 10-14 August, U.S.A. 5. K. U. Hii. and K. H. Kwek. 2009. Dual-prism interferometer for collimation testing, <i>Applied. Optics</i>, vol. 48 397-400.
IP Status	1. Wide Dynamic Beam Size Range Lateral-Shear Interferometer, Inventors: PI: 20072123
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Knowledge-based Information on the Major Export Market Potentials for Differentiated, Value-added Halal Food Products from Malaysia
Project Number	06-01-03-SF0303
Project Leader and Team Members	Leader: Pazim@Fadzim Othman Members: Wan Sabri Wan Hussin and Nur Annizah Ishak
Field of Research	Economics, Business and Management
Project Summary/ Objectives	This project had developed knowledge-based information on Malaysia high value-added and differentiated Halal food product, with specific focus on the Halal meat and meat-based products. This was to support the domestic Halal food companies, agro-based entrepreneurs and helping relevant decision makers in Malaysia in formulating marketing strategies for Halal food products; and identifying the optimal distribution channel for differentiated and value-added Halal food products in the global export markets. As part of the technology transfer activities, the findings of the study have been shared with other relevant parties in the Halal food industry.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Pelaksanaan Penerapan Nilai-nilai Islam dan Pendekatan Islam Hadhari: Kesannya ke atas Penghayatan Islam di Kalangan Masyarakat Melayu, 1982-2006
Project Number	06-01-03-SF0361
Project Leader and Team Members	Leader: Mohammad Redzuan Othman Members: Hasanudin Daud, Mohd Shauki Abd Majid and Azami Zaharim
Field of Research	Social Sciences
Project Summary/ Objectives	The objectives of this study are successfully achieved. All the important elements or roles in Islam that creating awareness among the Malay community have been reviewed. Both, the good values and limitations from Islamic teaching and Islam Hadhari approach, was developed into a proposal for the implementation of Islam in the national agenda.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Role of Stochastic Fluctuations on Charge-exchange Dynamics in Low Temperature Radio-frequency (RF) dusty plasma
Project Number	06-01-03-SF0367
Project Leader and Team Members	Leader: Sithi Vinayakam Muniandy Members: Ng Kim Hooi and Wong Chiow San
Field of Research	Physical Sciences
Project Summary/ Objectives	This project had constructed a capacitively coupled RF discharge system for studying fundamental dust-plasma interactions. Diagnostic measurements under different discharge conditions and particle parameters have been performed and theoretical models for change and density fluctuations using stochastic dynamics approaches have been derived.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Chatterjee, P., Roy, K., Muniandy, S.V., Yap, S.L. and Wong, C.S. 2009. Effect of ion temperature on arbitrary amplitude ion acoustic solitary waves in quantum electron-ion plasmas. <i>Journal of Physics of Plasmas</i> 16:042311 2. Asgari, H., Muniandy, S.V. and Wong, C.S. 2009. Effects of strength of dispersion and dust density on the formation of solitons. <i>Journal of Physics of Plasmas</i> 16:073702. 3. Prasanta Chatterjee, Kaushik Roy, Muniandy, S. V. and Wong, C. S. 2009. Dressed soliton in quantum dusty pair-ion plasma, <i>Journal of Physics of Plasmas</i>, 16:112106. 4. Chatterjee, P., Roy, K., Mondal, G., Muniandy, S.V., Yap, S.L. and Wong, C.S. 2009. Dressed solitons in quantum electron-positron-ion plasmas. <i>Journal of Physics of Plasmas</i> 16:122112. 5. Asgari, H., Muniandy, S.V. and Wong, C.S. 2010. Dust acoustic dressed soliton with dust charge fluctuations. <i>Journal of Physics of Plasmas</i> 17:063704. 6. Asgari, H., Muniandy, S.V. and Wong, C. S. 2011. The role of dust charging frequency in the linear and nonlinear propagation of dust acoustic waves. <i>Journal of Wave Motion</i> 48:268-274.





	Proceedings: <ol style="list-style-type: none"> 1. Progress of Physics Research In Malaysia <i>AIP Proc. CP1250 (2010)</i>. 2. H. Asgari, S.V. Muniandy, C. S. Wong and S.L. Yap. 2009. Effects Of Relative Strength Of Dispersion On The Formation Of Nonlinear Waves In Dusty Plasmas. <i>AIP Conference Proceedings</i>. 1150: 432-435. 3. <i>4th Asian Physics Symposium AIP Proc. CP1325 (2010)</i>.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Application of Material Flow Analysis (MFA) for Decision Support Tool for Planning and Sustainable Regional Solid Waste Management
Project Number	06-01-03-SF0374
Project Leader and Team Members	Leader: Noor Zalina Mahmood Members: Fatimah Kari, Sharifah Aishah Syed A. K and Sumiani Yusoff
Field of Research	Environmental Sciences
Project Summary/ Objectives	In this project, how much P was accumulated and flow in Malaysia's system had been recognised. The results show that the reserve of P in Malaysia was not known. It also revealed that several factors such as poor legislation, low recycling and etc. are the factors that contributed to P excess sources in this region. New software of material flow analysis (MFA) shall be established for the use of Malaysia's policy maker and the development of a systematic record for statistics in Malaysia's system, as part of technology transfer activity.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Incorporation of the Soil-root Matrix Reinforcement Effect into the Slope Stability Analysis
Project Number	06-01-03-SF0387
Project Leader and Team Members	Leader: Normaniza Osman Member: Faisal Hajil Ali
Field of Research	Engineering sciences
Project Summary/ Objectives	This project had managed to quantify the magnitude of root reinforcement and deduced the relationship between root mechanical properties and root morphologies. The effects of root reinforcement in slope stability analysis was incorporated and assessed. The selected potential slope plants with outstanding soil-root reinforcement properties will be suggested to government organisations and highway operators who are involved directly in slope management.
Publications/Products/ Outcomes	<p>Journals :</p> <ol style="list-style-type: none"> 1. Normaniza, O., Nordin, A and CheHassandi, A, 2011. Pull-out and tensile strength properties of two selected tropical plants. <i>SainsMalaysiana</i>. 40 (6): 577-585. 2. Nordin, A, Normaniza, O, and Faisal, H.A. 2011. Soil-root shear strength properties of some slope plants. <i>SainsMalaysiana</i>. Accepted. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Siti Sara, S.M.K., Faisal, H.A. and Normaniza, O. 2009. Model Study on Root Pull-out Failure. <i>International Conference for Technical Postgraduates 2009</i>. 14-15 Dec, Kuala Lumpur, Malaysia. 2. Faisal, H.A. and Normaniza, O. 2009. Application of Bio-engineering for slope stabilization: pull-out and field shear box tests on rooted soils. <i>Proceedings of the 3rd. Japan-Malaysia Symposium on Geohazard and Geo-environmental Engineering</i>. Kyoto, Japan. 3. Normaniza, O., Faisal, A. and Barakbah, S.S. 2008. Root reinforcement properties of three potential slope plants. <i>Proceedings of the International Conference on Slopes</i>, 4-6 Nov, Kuala Lumpur.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Helminth Infection and Asthma in the Orang Asli Communities
Project Number	06-01-03-SF0415
Project Leader and Team Members	Leader: Yvonne Lim Ai Lian Members: Chow Sek Chuen, Jessie Anne de Bruyne, Rohelah Mahmud, Liam Chong Kin and Fong Mun Yik
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This project had assessed the epidemiological distribution of helminth infection and asthma among rural and urban Orang Asli. The association of helminth infection in reducing the risk of asthma had also been determined. Based on the studies, it was found that 73.6% of 716 Orang Asli was infected with at least one parasitic infection, and 1.4% of 716 Orang Asli was asthmatic.
Publications/Products/ Outcomes	Journals : <ol style="list-style-type: none"> 1. Romano Ngui, Saidon Ishak, Chow Sek Chuen, Rohela Mahmud and Yvonne Lim Ai Lian. 2011. Prevalence and risk factors of intestinal parasitism in rural and remote West Malaysia. <i>Plos Neglected Tropical Diseases (NTD)</i> 5 (3): e974. 2. N Romano, YAL Lim, SC Chow and CK, Liam. 2011. Prevalence of bronchial asthma among Orang Asli (indigenous people) of Peninsular Malaysia. <i>The Medical Journal of Malaysia (in press)</i>. 3. Romano Ngui, Yvonne A. L. Lim, Noor Farahani Amir,cVeeranoot Nissapatorn and Rohela Mahmud. 2011. Seroprevalence and sources of toxoplasmosis among Orang Asli (Indigenous) Communities in Peninsular Malaysia. <i>American Journal of Tropical Medicine and Hygiene (in press)</i> 4. Romano, N., Nor Azah, M.O., Rahmah, N., Lim, Y.A.L., and Rohela, M, 2010. Seroprevalence of toxocariasis among Orang Asli (Indigenous people) in Malaysia using two immunoassays. <i>Tropical Biomedicine</i> 27 (3): 585-594. 5. Y.A.L. Lim, R. Ngui, C. Nicholas, S.C .Chowand H.V. Smith. 2009. Intestinal parasitic infections amongst Orang Asli (indigenous) in Malaysia: Has socioeconomic development alleviated the problem? <i>Tropical Biomedicine</i> 26(2):110-122.
Additional Information	Linkages: <ol style="list-style-type: none"> 1. London School of Tropical Medicine and Hygiene (Dr. Simon Brooker)

	<ol style="list-style-type: none"> 2. University of Melbourne (Prof. Robin Gasser) 3. University of Brisbane (Dr. Rebecca Traub) 4. University of Wurzburg (Dr. Dennis Tappe) 5. 5.Jabatan Kemajuan Orang Asli (Dato Hj. Mohd Sani bin Mistam)
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Isolation and identification of bioactive saponins from xerospermum noronhianum, a Malaysian sapindaceae
Project Number	06-01-04-SF0069
Project Leader and Team Members	Leader: Khozirah Shaari Members: Intan Safinar Ismail and Md Nordin Lajis
Field of Research	Chemical Sciences
Project Summary/ Objectives	The project had managed to isolate new oleanolic type bidesmosidic saponins successfully together with other classes of compounds (oleanolane, ursane and lupine-type triterpenes, benzoic acid derivatives and favonoid glycosides). The structures of the new saponins and the other compounds were unambiguously identified and the acetylcholinesterase activities of the saponins as well as the other compounds were evaluated using a bioautographic assay.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Heuristic and Metahueristic Approcahes for Non-oriented Two-dimensional Rectangular Single Bin Size Bin Packing Problem with Due Dates
Project Number	06-01-04-SF0085
Project Leader and Team Members	Leader: Lee Lai Soon Member: Leong Wah June
Field of Research	Mathematical Sciences
Project Summary/ Objectives	This research had solved the dilemma often faced in the industrial application which involves the trade-off between the customers' satisfaction and the manufacturer's efficiency. The classic two-dimensional rectangular single bin size bin packing problem refers to the problem of packing a set of small rectangles, without overlap, into one or more larger objects. This research had looked at a new variant of the problem by including a due date for each rectangle and a fixed processing time for each bin. As a result, the problem of bicriteria optimisation had found the optimal solution for minimising the maximum lateness of the rectangles and the number of bins used. Apart from that, it was also developed a new heuristic placement routine that can be used with the proposed MultiCrossover Genetic Algorithm (MXGA).
Publications/Products/ Outcomes	<p>Journals :</p> <ol style="list-style-type: none"> 1. Lee Lai Soon. 2008. A Genetic Algorithm for Two-Dimensional Bin Packing Problem. <i>Math Digest Research Bulletin of Institute for Mathematical Research</i>, 2(1): 34 -39. 2. L.Wong and L.S. Lee. 2009. Heuristic Placement Routines for Two-Dimensional Bin Packing Problem. <i>Journal of Mathematics and Statistic</i>, 5(4): 334 – 341. 3. M. Sarabian and L.S. Lee. 2010. A Modified Partially Mapped MultiCrossover Genetic Algorithm for Two-Dimensional Bin Packing Problem. <i>Journal of Mathematics and Statistics</i>. 6(2): 157 – 162. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Lai-Soon LEE. 2008. New Heuristic Placement Routine for Two-Dimensional Bin Packing Problem. <i>Prosiding Seminar Kebangsaan Aplikasi Sains dan Matematik 2008</i>, 24 – 25 Nov 2008, Batu Pahat , Malaysia.



	<ol style="list-style-type: none"> 2. L. Wong, and L.S. Lee. 2008. A New Heuristic Placement Routine for Non-Oriented Two-Dimensional Rectangular Bin Packing Problem. <i>Prosiding Pengoptimuman Berangka dan Penyelidikan Operasi</i> 2, 13 – 14, Universiti Malaysia Terengganu, Malaysia 3. Lily Wong, Lai-Soon LEE. 2009. Heuristic for Oriented Two-Dimensional Bin Packing Problem. <i>In Proceedings of Fundamental Science Congress</i>, 17 – 18 June, Universiti Putra Malaysia, Malaysia 4. L. Wong and L.S. Lee. 2009. Placement Routine for Two-Dimensional Bin Packing Problem. <i>In Proceedings of the 5th Asian Mathematical Conference</i>, 22 – 26 June, Kuala Lumpur, Malaysia 5. M. Sarabian and L.S. Lee. 2009. An Improved MultiCrossover Genetic Algorithm for Two-Dimensional Rectangular Bin Packing Problem. <i>In Proceedings of the 5th Asian Mathematical Conference</i>, 22 – 26 June, Kuala Lumpur, Malaysia 6. L. Wong and L.S. Lee. 2009. Placement Routines For Two-Dimensional Rectangular Bin Packing Problem. <i>In Proceedings of the 4th International Conferences on Research and Education in Mathematics</i>, 21 – 23 Oct, Kuala Lumpur, Malaysia <p>Others :</p> <ol style="list-style-type: none"> 1. L. Wong. 2009. Heuristic Placement Routines for Two-Dimensional Rectangular Bin Packing Problems. MSc Thesis, Universiti Putra Malaysia. 2. M. Sarabian. 2010. Improved Multicrossover Genetic Algorithm for Two-Dimensional Rectangular Bin packing Problem. MSc. Thesis, Universiti Putra Malaysia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Dynamic Scaling Based Preconditioning for Truncated Newton Methods in Large Scale Unconstrained Optimisation
Project Number	06-01-04-SF0086
Project Leader and Team Members	Leader: Leong Wah June Member: Malik Abu Hassan
Field of Research	Mathematical Sciences
Project Summary/ Objectives	All of the project objectives were achieved to an extent that a new class of preconditioners are derived and proven to be able to enhance the performance of the truncated Newton methods. An executable optimisation code based on the new algorithm was also developed.
Publications/Products/ Outcomes	Journals : <ol style="list-style-type: none"> 1. MahboubbehFarid, Wah June Leong and Malik Abu Hassan .2010. A new two-step gradient-type method for large-scale unconstrained optimization, <i>Computer and Mathematics with Applications</i> 59: 3301-3307. 2. Wah June Leong, Malik Abu Hassan and MahboubbehFarid .2010. A monotone gradient method via weak secant equation for unconstrained optimization, <i>Taiwanese Journal of Mathematics</i> 14: 412-423. 3. Wah June Leong and Malik Abu Hassan. 2009. A restarting approach on symmetric rank one update for unconstrained optimization, <i>Computational Optimization and Applications</i> 42: 327-334. 4. Malik Abu Hassan, Wah June Leong and MahboubbehFarid .2009. A new gradient method via quasi-Cauchy relation which guarantees descent, <i>Journal of Computational and Applied Mathematics</i> 230: 300-305.
Additional Information	Linkages: <ol style="list-style-type: none"> 1. Prof. Dr. Kok Lay Teo (Curtin University of Technology, Australia) 2. Prof. Dr. Yuhong Dai (Chinese Academy of Sciences, P.R. China)



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Utilisation of Bioactive Constituents from <i>Spermacoce Articularis</i> and <i>Spermacoce Exilis</i>
Project Number	06-01-04-SF0102
Project Leader and Team Members	Leader: Mohd Aspollah Sukari Members: Abdul Manaf Ali, Atan Mohd Sharif, Gwendoline Cheng Lian Ee and Md Nordin Lajis
Field of Research	Chemical Sciences
Project Summary/ Objectives	The project had accomplished all the objectives listed. The chemical constituents of the plants were isolated after extensive chromatographic procedures and the structures elucidated based on the spectroscopic evidences. The bioactivities of the crude extracts and pure compounds were evaluated.
Publications/Products/ Outcomes	<p>Journals :</p> <ol style="list-style-type: none"> 1. M.A.Sukari, S.Saad, N.H.Lajis, M.Rahmani, R.muse and U.K.Yusof.2007. Chemical constituents and bioactivity of <i>Curcuma aeruginosa</i> Roxb., <i>Natural Product sciences</i>,13(3), 175-179. 2. M.A.Sukari, S.W.Tang, A.L.C.Yap, M.Rahmani.G.C.L.Ee and N.H.Lajis. 2008. Phytochemicals and antileukimic activity of selected Zingiberaceae species, <i>Science Putra Bulletin</i>, 16(1), 49-57. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. M.A.Sukari, N.H.Abu Bakar,K.Khalid,M.Rahmani and R.Muse. 2008. Essential oils of fresh curry leaves: comparisoan using microwave-assisted hydrodistillation and conventional hydrodistillation techniques, Abst. <i>5th International Conference on Essential Oils, Fragrances and Flavour Materials (MICEOFF5)</i>,PW. 2. A.Y.L.Ching, S.W.Tang, M.A.Sukari, G.C.L.Ee, M.Rahmani and K.Khalid. 2007.Characterization of flavonoid derivatives from <i>Boesenbergia rotunda</i> L., <i>Proc. International Seminar of Malaysian Analytical Society</i> , Melaka.





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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Green Technology: Development of Biocoating Materials of Wax Esters for Wood Based Industries
Project Number	06-01-04-SF0108
Project Leader and Team Members	Leader: Mohd Basyaruddin Abdul Rahman Members: Abu Bakar Salleh and Paridah Md. Tahir
Field of Research	Biotechnology
Project Summary/ Objectives	This project had enhanced the activity of the immobilised lipase for synthesis of wax esters, which is non-hazardous compounds and biodegradable. It determined the high value-added products of the enzymatic reaction and formulated wax esters as ingredients in coatings for wooden surfaces, with a minimum pollutants and substrates from renewable resources. The performance of wax esters as wood coating in a surface had tested. This project had also applied the formulation of wax ester as a radiation curing coating, with growth spurred environmental regulations.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Mohd Basyaruddin Abdul Rahman, Noraini Abd Ghani, Nik Ghazali Nik Salleh, Mahiran Basri, Raja Noor Zaliha Raja Abdul Rahman and Abu Bakar Salleh. 2011. Development of Coating Materials from Liquid Wax Esters for Wood Top-Based Coating. <i>Journal of Coatings Technology and Research</i> Vol8 : Issue 2 (2011) : 229-236. 2. Naz Chaibakhsh, Mohd Basyaruddin Abdul Rahman, Mahiran Basri, Abu Bakar Salleh and Suraini Abd-Aziz. 2010. Response Surface Modeling and Kinetic Study of Lipase-Catalyzed Dimethyl Adipate Synthesis. <i>Biotechnology Journal</i> 2010, 5(8), 848-855. 3. Naz Chaibakhsh, Mohd Basyaruddin Abdul Rahman, Farzaneh Vahabzadeh, Suraini Abd-Aziz, Mahiran Basri and Abu Bakar Salleh. 2010. Optimization of Operational Conditions for Adipate Ester Synthesis in a Stirred Tank Reactor. <i>Biotechnology and Bioprocess Engineering</i> 2010 15: 846-853. 4. Mohd Basyaruddin Abdul Rahman, Naz Chaibakhsh Loongradi, Mahiran Basri, Abu Bakar Salleh and Raja Noor Zaliha Raja Abdul Rahman. 2009. Application of Artificial Neural Network for Yield Prediction of Lipase Catalyzed Synthesis of Dioctyl Adipate. <i>Applied Biochemistry and Biotechnology</i>, 2009, 158 (3), 722-735.



	<ol style="list-style-type: none"> Naz Chaibakhsh Loongradi, Mohd Basyaruddin Abdul Rahman, MahiranBasri, Abu BakarSalleh and Raja Noor Zaliha Raja Abdul Rahman. 2009. Effect of Alcohol Chain Length on the Optimum Conditions for Lipase-catalyzed Synthesis of Adipate Esters. <i>Biocatalysis and Biotransformation</i>, 2009, 27 (5-6), 303-308. Naz Chaibakhsh Loongradi, Mohd Basyaruddin Abdul Rahman, SurainiAbd Aziz, Mahiran Basri, Abu Bakar Salleh and Raja Noor Zaliha Raja Abdul Rahman. 2009. Optimized Lipase Catalyzed Synthesis of Adipate Ester in a Solvent-Free System. <i>Journal of Industrial Microbiology and Biotechnology</i>, 2009, 36, 1149-1155.
Awards/Certificates	<ol style="list-style-type: none"> Intellectual Property Right Exhibition - (winner of National Patent Award (Individual)). Invention and New Product Exposition Expo (INPEX 2008), Silver Medal) Invention and New Product Exposition Expo (INPEX 2008), Exhibition of Invention, Research & Innovation (PRPI 2008), (winner of Gold Medal) Innovation Nuclear, (winner of Silver Award)
IP Status	<ol style="list-style-type: none"> Malaysian Patent Application No P1 20072081 (23rd Nov 2007) Malaysian Patent Application No P1 20072080 (23rd Nov 2007)
Additional Information	<p>Linkages:</p> <ol style="list-style-type: none"> Professor Dr. Rajni Hatti-Kaul (Lund University, Sweden) GREENCHEM Sweden Akzonobel, Sweden
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 6798 H/p: 013-436 1209 basya@fsas.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Thermal Phonon Behavior in Non-metal Solids at Low Temperatures
Project Number	06-01-04-SF0111
Project Leader and Team Members	Leader: Mohd Maarof H.A. Moxsin Member: Azmi Zakaria
Field of Research	Physical Sciences
Project Summary/ Objectives	This study was conducted to calculate the thermal diffusivity from total phonon mean free path. The selected non-metals thermal diffusivity was measured by using photoflash technique. This process had used to verify the theoretical thermal diffusivity by using the experimental data.
Publications/Products/ Outcomes	<p>Book:</p> <ol style="list-style-type: none"> 1. Moxsin, M.M. Metrology at Nanoscale: Thermal Wave Probe Made It Simple. <i>Inaugural Lecture Series</i>, Penerbit Universiti Putra Malaysia. <p>Journals:</p> <ol style="list-style-type: none"> 1. Haydari, M., Moxsin, M.M., Abdelrahman, A.E., Deraman, M., Yunus, W.M.M., Grozescu, I.V. 2008. Thermal diffusivity of carbon pellets (CPs) treated with KOH. <i>American Journal of Applied Sciences</i> 5 (2), pp. 165-168. 2. Haydari, M., Moxsin, M.M., Yunus, W.M.M., Grozescu, V.I., Wahab, Z.A., Azmi, B.Z. 2008. Application of square optical heating pulse model in measuring thermal diffusivity of SiC/B4C composites by using photoflash technique, <i>Nondestructive Testing and Evaluation</i>, 23(3), pp 163-173. 3. M Haydari, MM Moxsin, N Yahya, IV Grozescu and WMM Yunus. 2005. Thermal wave study on carbon nanotube filled polymer film at low temperatures by using flash technique, <i>American Journal of Applied Sciences (Special Issue)</i>, pp. 49-52. 4. M Haydari, MM Moxsin, WMM Yunus, VI Grozescu and SA Halim. 2004. A New Photoflash Technique for thermal diffusivity measurement of BSCCO superconductor from 300K to below critical temperature, <i>Sains Malaysiana</i> 32(2), 175-181.





	<p>5. M Haydari, MM Maksin, WMM Yunus, IV Grozescu, I Hamadneh and SA Halim. 2004. Thermal diffusivity measurement of BSCCO superconductor from 85 to 300K using PVDF transducer, <i>PERTANIKA J. Sci. Technol.</i> 45, 129-135.</p> <p>Proceeding/Conference/Seminar:</p> <p>1. M Haydari, MM Maksin, WMM Yunus, IV Grozescu, I Hamadneh and SA Halim. 2004. Sintering time effect on thermal diffusivity in BSCCO doped with Sm at low temperature as revealed by flash method, <i>SPIE Proceedings Volume 5581</i>, 315-322.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 6674 maarof@science.upm.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Generalisations of lindelöf Properties in Bitopological Spaces
Project Number	06-01-04-SF0115
Project Leader and Team Members	Leader: Kamel Ariffin Mohd Atan
Field of Research	Mathematical Sciences
Project Summary/ Objectives	This project was focused on defining the Lindelöfness and its generalisations in bitopological spaces. The fundamental relationship among the new concepts had helped the continuity and generalised continuity in bitopological spaces. This project had studied the characterisations of the image of generalised pairwise Lindelöf spaces under the generalised pairwise continuity.
Publications/Products/ Outcomes	Journal: 1. Kamel Ariffin Mohd Atan. 2009. A Note on Pairwise Continuous Mappings and Bitopological Spaces, <i>European Journal of Pure and Applied Mathematics</i> 2(3) : 325-337.
Awards/Certificates	1. On Pairwise Almost Regular-Lindelof Spaces, <i>Scientiae Mathematicae Japoicae Online</i> , e-2009, 1-1 2. On The Pairwise Weakly Lindelof Bitopological Spaces, online. 3. A Note on pairwise Continuous Mappings and Bitopological Spaces, <i>European Journal of Pure</i>
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 6872 kamel@inform.upm.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Classification Problems of Finite Dimensional Loday Algebras
Project Number	06-01-04-SF0122
Project Leader and Team Members	Leader: Rakhimov Isamiddin Members: Sharifah Kartini and Witriany Basri
Field of Research	Mathematical Sciences
Project Summary/ Objectives	The study of algebraic classification of finite dimensional complex Leibniz algebras was completed through this project. It had completed the description of orbits under an action of algebraic group $GL_n(C)$ on variety of finite dimensional complex Leibniz algebras. Besides established classification of low dimensional diassociative algebras, the isomorphic classes of finite dimensional Zinbiel algebras have been also defined. The action $GL_n(C)$, generated by isomorphism, on the variety of finite dimensional diassociative algebras was defined and the study of its properties was completed.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Survival Data Mining for Predicting Customer Churns and Fraud Detection in Telecommunications Industry
Project Number	06-01-04-SF0123
Project Leader and Team Members	Leader: Mohd Rizam Abu Bakar Members: Noor Akma Ibrahim and Isa Daud
Field of Research	Mathematical Sciences
Project Summary/ Objectives	This project was successfully produced the Expectation and Maximization (EM) algorithm to the Gaussian Mixed Models (GMM) which is a probabilistic model normally used in fraud detection. It applied the survival analysis techniques to data mining. This study had developed a method for detecting outliers and way to formulate method of data analysis. The new data modelling technique was modified to ensure the new method was valid to be used for survival data mining for predicting customer churns and fraud detection in telecommunications industry.
Publications/Products/ Outcomes	Journal: 1. Mohd Izhan bin Mohd Yusoff, Mohd. Rizam Abu Bakar and Abu Hassan Shaari Mohd Nor. 2009. The Use of Expectation Maximization (EM) Algorithm in Gaussian Mixed Models (GMM). <i>Pertanika Journal of Science and Technology (JST)</i> , Vol. 17 (2)
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number	Office: 03-8946 6824 H/p: 012-335 1695
e-Mail	rizam@math.upm.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Efficacy of Soy Isoflavones on Bone Mineral Density in Premenopausal Women in the Klang Valley
Project Number	06-01-04-SF0137
Project Leader and Team Members	Leader: Zaitun Yassin Members: Chan Siew Pheng and Chan Yoke Mun
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This study was carried out to determine efficacy of isoflavone-rich soy protein on bone mineral density in premenopausal women. The bone health status of 200-300 subjects during screening was obtained using the QUS-2. Bone health status of 50 eligible subjects recruited had been measured at baseline using the DEXA machine and other biochemical profile was measured and analysed.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Tee, Y.Y.S. and Zaitun, Y. 2009. Selected Health-related Characteristics and Bone Health Status of a Sample of Chinese Women in an Urban Area. Presented at 24th Scientific Conference of Nutrition Society of Malaysia, 26-27 March 2009, Kuala Lumpur, <i>Malaysian Journal of Nutrition</i>, 15(2): S38. <p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. Tee, Y.Y.S, Zaitun, Y., Norhaizan, M.E., Chan, Y.M., and Zanariah, O. 2011. Bone health status of Chinese premenopausal women in the Klang Valley: preliminary data. <i>26th Scientific Conference of Nutrition Society of Malaysia</i>, 24-25 March, Kuala Lumpur.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number	Office: 03-8947 2463 H/p: 012-624 3777
e-Mail	zaitun@medic.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Intellectual Capital (IC) Management: Identifying, Measuring and Reporting of Intellectual Capital
Project Number	06-01-04-SF0143
Project Leader and Team Members	Leader: Foong Soon Yau Member: Loo Sin Chun
Field of Research	Economics, Business and Management
Project Summary/ Objectives	<p>This project has 2 phases. In phase 1, content analysis was used to examine the status of voluntary disclosure of intellectual capital (IC) information by public-listed companies in Malaysia and the organisational characteristics that influence. The results of the phase 1 indicate that the extent of IC disclosure is still scanty and unorganised possibly due to the lack of specific guidelines as those on sustainability reporting provided by Bursa Malaysia. The quantity and quality of IC information disclosed were affected by certain organisational factors. In phase 2 of the study, the level of awareness of the strategic importance of IC management was assessed and the relationship between innovations in accounting practices and IC management initiatives in organisations was also examined. A questionnaire was designed to collect data on management processes, procedures and activities relevant for the development of IC and management accounting innovations in organisations. The results generally suggest that IC strategic orientation affects the extent of both IC development initiatives and adoption of innovative management accounting practices. However, the extent of implementation of innovative management accounting practices was explained by the extent of IC development initiatives implemented, rather than by IC strategic orientation.</p>
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none">1. Foong, S. Y., Loo, S. C., and Balaraman, R. 2009. Intellectual Capital and Corporate Characteristics of Public-listed Companies In Malaysia, <i>Journal of Financial Reporting and Accounting</i>, 7(1), 2009, pp. 17-35.



	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Balaraman, R., Foong, S.Y. and Loo, S.C. 2007. Intellectual capital disclosure and corporate characteristics of public-listed companies in Malaysia. <i>Proceedings of 19th Asian-Pacific Conference</i>, 11 – 14 Nov, Kuala Lumpur. 2. Foong, S.Y. and Wong, S.W. 2009. Value creation efficiency and firm's market value and financial performance. <i>Proceedings of the 11th MFA Conference</i>, 3 - 5 June, Penang. 3. Foong, S.Y. and Tan, W.T. 2009. Intellectual capital initiatives and innovative management accounting practices in Malaysia. <i>Proceedings of the 5th International Management Accounting Conference</i>, 19-21 Oct, Kuala Lumpur. <p>Others:</p> <ol style="list-style-type: none"> 1. Foong, S.Y. and Wong, S.W. (2009). "Value Creation Efficiency and Firm's Market value and Financial Performance", in <i>Selected Readings on Issues & Challenges in Corporate Governance & Corporate Finance</i> compiled by Cheng Fah Fah & Murali Sambasivan, pp. 17-34, Universiti Putra Malaysia Press
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Putra Malaysia (UPM)</p> <p>Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.</p> <p>Office: 03-8946 7442</p> <p>H/p: 019-351 0076</p> <p>syfoong@putra.upm.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Preparation and Characterisation of New Series of Banana- and Discotic Liquid Crystal Compounds
Project Number	06-01-04-SF0144
Project Leader and Team Members	Leader: Sidik Silong Members: Kamaliah Sirat, Mohamad Zaki Ab. Rahman and Md. Lutfor Rahman
Field of Research	Material Sciences
Project Summary/ Objectives	This project had managed to designed, synthesised and characterised a new class of mesogenic compounds based upon discotic and banana-shaped basic structures. The mesomorphic properties of the synthesised liquid crystal compounds have been studied using microscopy, thermal and x-ray analyses.
Publications/Products/ Outcomes	<p>Journals :</p> <ol style="list-style-type: none"> 1. Sidik Silong, Abdulsalam Abubakar Salisu, Muhamad Zaki Ab Rahman, Lutfor Rahman and Mansor Ahmad. 2009. Nematic and Smectic Mesophase from Calamitic Bisazobenzene Liquid Crystal: Synthesis and Characterization of 1 Methoxyhexyloxy-4'-(4-Phenylazo) Azobenzene Hybrid Molecule. <i>American J. of Applied Sciences</i> 6(4): 561-564. 2. Rahman, Md Lutfor, Asik, Jahimin, Kumar, Sandeep, Silong, Sidikand Rahman, Mohd Zaki Ab. 2009. Synthesis and mesomorphic properties of nonsymmetric liquid crystalline dimers containing azobenzene groups. <i>Phase Transitions</i>, 82:3, 228 -239. 3. Abdulsalam Abubakar Salisu, Mansor Bin Ahmad, Md. Rahman Lutfor, Mohamad Zaki Ab Rahman and Sidik Silong. 2009. Synthesis and Characterization of Two Series of Non-Symmetric Liquid Crystal Dimer Containing Bisazobenzene Moiety. <i>Current Research in Chemistry</i> 1 (1): 15-21. 4. Abdul salam Abubakar Salisu, Mansor Bin Ahmad, Md. Rahman Lutfor, Mohamad Zaki AbRahman and Sidik Silong. 2009. Novel Non-Symmetric Liquid Crystal Containing Bisazobenzene Moieties: Synthesis and Characterisation. <i>Molecular Crystals and Liquid Crystals (MCLC) Journal</i>, Vol 509, 134/[876] - 144/[886].





	<p>5. A.A. Salisu, M.Z. Ab. Rahman, S. Silong, M.R. Lutfor and M.B. Ahmad. 2009. CalamiticAzobenzene Liquid Crystal Series: Synthesis and Mesomorphic Properties of 1-Methoxyalkyloxy-4'-(4-phenylazo)acetophenone. <i>Asian J. of Material Science</i> 1(1) : 22-28.</p> <p>6. M.Z.A. Rahman, A.A. Salisu, S. Silong, M.R. Lutfor and M.B.A. Ayub. 2009. Nematic Calamitic Bisazobenzene Liquid Crystal: Synthesis and Mesomorphic Properties of 1-Methoxybutyloxy-4'-(4-Phenylazo) Azobenzene. <i>Asian Journal of Applied Sciences</i> 2(2): 177-183.</p>
<p>Contact</p> <p>Institution/Entity</p> <p>Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Putra Malaysia (UPM)</p> <p>Universiti Putra Malaysia,</p> <p>43400 UPM Serdang,</p> <p>Selangor.</p> <p>Office: 03-8946 6806</p> <p>H/p: 013-368 4601</p> <p>sidik@science.upm.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Malaysian Farmers Mental Models and How They Influence Development of New Knowledge and Skills
Project Number	06-01-04-SF0150
Project Leader and Team Members	Leader: Azimi Hamzah Members: Turiman Suandi, Steven Eric Krauss, Ismi Arif Ismail and Zoharah Omar
Field of Research	Agricultural Sciences
Project Summary/ Objectives	This project determine the underlying beliefs, values, knowledge and skills that represents farmers mental model, and the learning process that contributes to enhancing or transforming farmers mental model. Furthermore, it also investigates how farmers' mental model influences their practices in improving viability and profitability of their farms.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Constraints and Challenges in Strategising Agriculture Technology Delivery to Farmers: Developing a Participatory Technology Transfer Model
Project Number	06-01-04-SF0156
Project Leader and Team Members	Leader: Azimi Hamzah Members: Ezhar Tamam, Mahmud Tengku Muda, Norsida Man and Nordin Abd Rahman
Field of Research	Agricultural Sciences
Project Summary/ Objectives	This project determines to what extent agricultural research and technology delivery process meet the farmers' both felt and unfelt needs. It also identifies the farmers' participation in the research delivery process and the level of technology adoption among farmers.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	The Environmental and Economic Impact of SFM Practices on the Growth of Malaysian Wood-based Industry
Project Number	06-01-04-SF0159
Project Leader and Team Members	Leader: Abdul Rahim Abdul Samad Members: Zariyawati Mohd Ashhari and Mohd Shahwahid Othman
Field of Research	Economics, Business and Management
Project Summary/ Objectives	In this project, the ARDL model for the timber market modelling was developed to analyse the short run and long run effects of SFM practices on timber market. The result of this study shows that the cost constitutes under sustainable harvest was higher than under conventional harvest. Incremental average per ha total cost rose by 46.86% to RM13,576/ha. While the incremental average per m3 total cost increased by 57.41% to RM267.80/m3. With increasing fuel prices and other cost related to labour, the logging cost was expected to increase in the near future. This situation will have adverse affect on the profitability of the practice of Sustainable Forest Management (SFM). The results indicate that full adoption of SFM could lead to substantial reduction of supply of logs. Furthermore, a sustained price increase in the long run does not seem to have significant impact on the demand side. In conclusion, the ongoing adaptation of West Malaysian forestry to the standards of the SFM-certification programs could have substantial effects only on the log supply. The result shows that sawntimber supply was statistically influenced by SFM practices. Furthermore, reducing of harvested area of forest had significant effect on sawntimber supply. This may to some extent pull down the West Malaysian sawntimber supply together by bringing the forest harvests to sustainable level.
Publications/Products/ Outcomes	Journals : <ol style="list-style-type: none"> 1. Abdul Rahim, A.S. and MohdShahwahid H.O. 2009. Short run and long run effects of sustainable forest management practices on West Malaysian log supply: An ARDL approach. <i>Journal of Tropical Forest Science</i>, 22(4), 369-376. 2. Abdul Rahim A.S, MohdShahwahid H.O. and Zariyawati M.A. 2009. A comparison analysis of logging cost between conventional and reduce impact logging practices. <i>International Journal of Economics and Management</i>, 3(2), 354-366.





	<ol style="list-style-type: none"> 3. Abdul Rahim A.S, Zariyawati M.A. and MohdShahwahid H.O. 2009. Sustainable forest management practices and West Malaysian log market. <i>Asian Social Science</i>, 5(6), 69-76. 4. Abdul Rahim Abdul Samad and MohdShahwahid Othman. 2009. Financial and Economic Analysis of Conventional and NEw Technology Harvesting Systems. <i>Proceedings of the Dubai, Unuted Arab Emirates</i>, Volume Vol 1. pp. 180-183. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Abdul Rahim Abdul Samad, Mohd Shahwahid Othman and Zariyawati Mohd Ashhari. 2008. Cost Analysis of Compliance With New Logging System Particularly Using 'Logfisher'. <i>Proceedings of the Applied International Business Conference 2008</i>, Labuan, Sabah.
Awards/Certificates	<ol style="list-style-type: none"> 1. Exhibition of Invention, Research & Innovation UPM (PRPI 2010) : Silver Medal
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 7654 H/p: 019-2090970 abrahim@econ.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Market Study on the Supply Chain Management of the Malaysian Meat Based Industries
Project Number	06-01-04-SF0183
Project Leader and Team Members	Leader: Zainal Abidin Mohamed Members: Nolila Mohd Nawi, Ismail Abd Latiff and Mohd Ghazali Mohayidin
Field of Research	Economics, Business and Management
Project Summary/ Objectives	This project had identified the changes in current meat based industries marketing system and structures. The creation added value activities in the food chain system and the share of marketing margin for those whom involved along the supply chain have been determined. Based on the supply chain management paradigm, there are prospects and strategies in integrating the small farmers to the marketing system.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Characterisation of Fatty Acid Methyl Ester (FAME) Signatures in <i>Escherichia coli</i> O157 to Develop a Rapid Detection Technique/Kit
Project Number	06-01-04-SF0192
Project Leader and Team Members	Leader: Goh Yong Meng Members: Zunita Zakaria and Tan Do Yew
Field of Research	Biological Sciences
Project Summary/ Objectives	This project had determined the bacterial fatty acid profile of selected local strains of <i>Escherichia</i> . A bacterial acid methyl ester reference library for selected strains of <i>Escherichia coli</i> had been constructed and established. The project members are preparing to publish the correlation between DNA identifications of the <i>E.coli</i> strains and the BAMEs characteristics of the <i>E. coli</i> strains found in this study.
Publications/Products/ Outcomes	Proceeding/Conference/Seminar: 1. Goh Yong Meng.2008. Preliminary detection of <i>Escherichia coli</i> O157:H7 in beef using immunomagnetic separation and molecular methods. <i>20th VAM Congress Proceedings</i> , 15-17 Aug, Bangi Selangor.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development and Evaluation of Biomaterials from Bovine Pericardium and Tunica Vaginalis for the Repair of Abdominal Wall Defect in Animal Model
Project Number	06-01-04-SF0203
Project Leader and Team Members	Leader: Md Zuki Abu Bakar@Zakaria Members: Noordin Mohamed and Norimah Yusof
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	This project involve the development and evaluation of the effectiveness of biomaterial grafts originated from bovine pericardium and tunica vaginalis, which have been exposed to different methods of processing in the repair of abdominal wall defect using animal model. The biomaterial was successfully developed. However, only one method of processing was selected i.e lyophilize (freeze-drying method) for further evaluation and the biomechanical properties was not evaluated, instead it replaced with cell culture activities. The myoblast cell from skeletal muscle was cultured, proliferates and seeded onto the scaffolds and the post implantation was evaluated.
Publications/Products/ Outcomes	Journals : <ol style="list-style-type: none"> 1. T Ayele, ABZ Zuki, BMA Noorjahan and MM Noordin. 2010. Tissue engineering approach to repair abdominal wall defects using cell-seeded bovine tunica vaginalis in a rabbit model. <i>Journal of Materials Science: Material in Medicine</i>, 21 : 1721-173 2. T Ayele, ABZ Zuki, MM Noordin and BMA Noorjahan. 2010. Engineering of skeletal muscle tissue using myoblast-seeded bovine pericardium for reconstruction of abdominal wall defect in a rabbit model. <i>Journal of Biomedical Biomaterial and Tissue Engineering</i>, 8 : 9-21 3. Ayele T, ABZ Zuki, M MNoordin and BMA Noorjahan. 2011. A comparative study of lyophilized bovine pericardium and tunica parietalisvaginalis for repair of large abdominal wall defects in a rabbit model, <i>African Journal of Biotechnology (in press)</i>. 2. ABZ Zuki, M Azmil and Y Norimah. 2008. Comparative evaluation of biomaterial properties of bovine pericardium influenced by different methods of preservation. <i>Proceeding of 20th VAM Congress</i>, 15-17 Ogos, Equatorial Hotel, Bangi





Awards/Certificates	<ol style="list-style-type: none"> 1. Bronze medal, UPM PRPI 2010. Myoblast Seeded Bovine Pericardium for Repair of Abdominal Wall Defect 2. Bronze Medal, UPM PRPI 2010. Myoblast Seeded Bovine Tunica Vaginalis for Repair of Abdominal Wall Defect 3. Bronze medal, ITEX 2011. Myoblast Seeded Bovine Pericardium for Repair of Abdominal Wall Defect
IP Status	<ol style="list-style-type: none"> 1. Myoblast Seeded Bovine Pericardium for Repair of Abdominal Wall Defect (PI20093590) 2. Myoblast Seeded Bovine Tunica Vaginalis for Repair of Abdominal Wall Defects and method for preparing the same (PI20093591)
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8947 3405 zuki@vet.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Fermentation Process for Hyaluronic Acid Production by <i>Streptococcus spp.</i> Using Stirred Tank Bioreactor
Project Number	06-01-04-SF0239
Project Leader and Team Members	Leader: Rosfarizan Mohamad Members: Arbakariya Ariff, Raha Abdul Rahim, Nurasyidah Hairuldin and Lai Zee Wei
Field of Research	Biotechnology
Project Summary/ Objectives	This project had successfully optimised bioprocessing strategies to improve hyaluronic acid production using a bioreactor. Kinetics modeling study to describe the growth of the bacterium, substrate consumption and hyaluronic acid production had also been developed.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Hairuldin, N., Rosfarizan, M., Ariff, A. and Raha, A.R. 2010. Optimization of carbon and nitrogen sources for hyaluronic acid production by <i>Streptococcus zooepidemicus</i> ATCC 39920. <i>International Symposium on Lactic Acid Bacteria</i>, 25 – 27 July, Serdang, Selangor, Malaysia. 2. Wei, L. Z., Raha, A.R. Ariff, A. and Rosfarizan, M. 2010. Influence of glucose and nitrogen concentration on hyaluronic acid production by <i>Streptococcus zooepidemicus</i> ATCC 39920 using 2 L stirred tank bioreactor. <i>International Symposium on Lactic Acid Bacteria</i>, 25 – 27 July, Serdang, Selangor, Malaysia.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number	Office: 03-8946 7518 H/p: 013-263 6029
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Scattering States and Geodesics on Simple Punctured Surfaces and Hyperbolic Orbifolds
Project Number	06-01-04-SF0256
Project Leader and Team Members	Leader: Hishamuddin Zainuddin Member: Zuriati Ahmad Zukarnain
Field of Research	Physical Sciences
Project Summary/ Objectives	This project had constructed scattering and quantum bound states on simple punctured surfaces or hyperbolic orbifolds. The eigenvalue structure for simple punctured surfaces or hyperbolic orbifolds in relation to symmetries and cusps had also been determined. Furthermore, the relationship between eigenvalues, bound states with symmetries and the presence of cusps was partially elucidated.
Publications/Products/ Outcomes	Proceeding/Conference/Seminar: 1. N.M. Shah, H. Zainuddin and Z.A. Hassan. 2006. Tessellation Structure of Singly Punctured Torus and Triply Punctured Two Sphere. <i>Proceedings of PERFIK</i> .
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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e-Mail	hisham@fsas.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Testing the Adaptability of GBtool for Assessing the Sustainable Performance of Commercial Buildings in Malaysia
Project Number	06-01-04-SF0274
Project Leader and Team Members	Leader: Elias Salleh Members: Zalina Shari, Mohamad Fakri Zaky Jaafar and Lim Chin Haw
Field of Research	Environmental Sciences
Project Summary/ Objectives	This study was carried out to conduct the testing on adaptability of GBtool for assessing the sustainable performance of commercial buildings in Malaysia. In order to complete the project, a prototype was developed and tested to evaluate the practicability and adaptability in assessing the buildings tailored according to Malaysian context.
Publications/Products/ Outcomes	Journal: 1. Shari, Z., MFZ Jaafar, E. Salleh and CH Lim. 2008. The Potential of Sustainable Building Rating System in the Malaysian Building Industry. <i>Journal of Sustainable Tropical Design Research and Practice</i> , Vol 3(1) : 3-14. Proceeding/Conference/Seminar: 1. Shari, Z., MFZ Jaafar, E. Salleh and CH Lim. 2007. Establishing Local Weighting Values of GBTool for Application in Malaysia. <i>Proceedings of the Conference on Sustainable Building South East Asia (SB07 SEA)</i> , 5-7 Nov, Kuala Lumpur.
Additional Information	Linkages: Nils Larson, iiSBE
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Department of Architecture, Faculty of Design and Architecture, 43400 UPM Serdang, Selangor.
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e-Mail	elsall06@gmail.com



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	An Econometric Appraisal of Single Currency Models on Asian Countries
Project Number	06-01-04-SF0289
Project Leader and Team Members	Leader: Azali Mohamed Members: Lee Chin and Shafinaz Ahmad Naza
Field of Research	Economics, Business and Management
Project Summary/ Objectives	This study was conducted to determine the readiness of selected Asian economies to form a monetary union by using the Maastricht Convergence Criteria as a benchmark. It had examined the suitability of the proposed criteria to serve as qualifying standard for Asian economies.
Publications/Products/ Outcomes	<p>Book:</p> <ol style="list-style-type: none"> 1. M. Azali, Royfaizal Razali Chong and Lee Chin. The Future of East Asian Single Currency. (Eds). In <i>Monetary, Trade & Macroeconomic Performances of East Asian Economies</i>. (pp. 49-58). Universiti Putra Malaysia Press: UPM Serdang, <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. M. Azali, Kelly Wong Kai Seng, Lee Chin and Shafinaz Ahmad Nazar. 2007. Could East Asian Countries Form A Single Currency?". <i>Paper presented at Seminar Faculty of Economics and Management 2007</i>, 4 - 6 Dec, Lumut, Perak. 2. M. Azali, Kelly wong Kai Seng, Lee Chin, and Shafinaz Ahmad Nazar. 2007. The ASEAN-5 Future Currency: Maastricht Criteria. <i>Malaysian Finance Association's 10th Annual Symposium</i>, 5-6 June, University Malaysia Sarawak (UNIMAS), Malaysia. 3. M. Azali, Royfaizal Razali Chong and Lee Chin. 2007. The Future of Asian Single Currency. <i>Seminar Faculty of Economics and Management 2007</i>, 4 - 6 Dec, Lumut, Perak.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 7626 azali@putra.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Post Slaughter Carcass Electrical Stimulation Technique to Produce "electro-tender" and Enhanced Quality Halal Meat of Different Major Skeletal Muscles in Cattle
Project Number	06-01-04-SF0291
Project Leader and Team Members	Leader: Awis Qurni Sazili Members: Mohd Asyraf Che Doi, Dahlan Ismail and Roselina Karim
Field of Research	Agricultural Sciences
Project Summary/ Objectives	This study was concluded with determination of the effects of carcass electrical stimulation on rigor development and biochemical aspects of post mortem meat tenderisation among different major skeletal muscles. It had included the conventional and modern halal slaughter practices for the comparison to see the major attributes of meat eating quality among different major skeletal muscles.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	The Social Costs and Benefits of Peatland Cultivation Towards Sustainable Agriculture Development
Project Number	06-01-04-SF0293
Project Leader and Team Members	Leader: Khalid Abdul Rahim Members: Audrey Liwan, Ahmad Shuib and Alias Radam
Field of Research	Economics, Business and Management
Project Summary/ Objectives	This project was carried out by using farmers in Kuala Selangor for oil palm and in the Division of Samarahan for pineapple to be the focus of the study. The parameters discussed are the economical and environmental values of current agricultural practice were directly obtained from farmers' perception and awareness. The social benefits and costs from both crop cultivation were compared based on the ex post internal rate of returns. The result shows that the farmers were too dependent on agricultural subsidies; any change in policy to reduce subsidies was very difficult to achieve.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Financial Development, Poverty and Human Capital in Malaysia
Project Number	06-01-04-SF0310
Project Leader and Team Members	Leader: Law Siong Hook Member: Tan Hui Boon
Field of Research	Economics, Business and Management
Project Summary/ Objectives	The focus for this study was financial development, poverty and human capital in Malaysia. It determined the role of financial market development in reducing the gap of income inequality. The investigation was focused on the impact of financial development on poverty reduction, while the examination was compared on the effectiveness of financial development in promoting the accumulation of human capital.
Publications/Products/ Outcomes	Journals : 1. Law, S. H. 2008.Does a Country's Openness to Trade and Capital Accounts Lead to Financial Development? Evidence from Malaysia. <i>Asian Economic Journal</i> , 22 : 61 – 177.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number	Office: 03-8946 7768 H/p: 017-412 7777
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Off-farm Employment and Structure of Farm Household Labor Force in Granary Areas
Project Number	06-01-04-SF0313
Project Leader and Team Members	Leader: Norsida Man Members: Md. Ariff Hussien, Zainal Abidin Mohamed and Muhamad Fadzil Repin
Field of Research	Economics, Business and Management
Project Summary/ Objectives	This study was focused on the determination of off-farm employment activities in major granary areas and also analysed the labor forces of farm households.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. NorsidaMan.2009. Off-farm Employmentamong the Paddy Farmers in Muda Agriculture Development Authority (MADA) and kemasin Semerak Grananary Areas of Malaysia. <i>Asia-Pasific Development Journal</i>, Vol. 16 : No. 2. 2. NorsidaMan.2009. Factors Affecting the Decision Making in Off Farm Employment among Paddy Farmers in Kemasin Semerak. <i>Pertanika Journal of Social Sciences & Humanities</i>,17(1) : 7-15. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Norsida Man and Sadiya Sami Ismaila. 2008. Participation in Off Farm Employment among Paddy Farmers in KemasinSemerak Granary Areas, Kelantan and Agriculture Education. <i>International Agriculture Extension Conference 2008</i>, APEEC, Selangor, Malaysia.
Awards/Certificates	<p>Invention, Research & Innovation Exhibition 2010</p> <ol style="list-style-type: none"> 1. The Muda Agricultural Development Authority and Kemasin Semarak Granary Areas of Malaysia : Bronze
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-89471804 norupi@agri.upm.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Developing Professional Teacher Learning for Educational Change
Project Number	06-01-04-SF0315
Project Leader and Team Members	Leader: Mohd. Majid Konting Members: Wan Zah Wan Ali and Habsah Ismail
Field of Research	Social Sciences
Project Summary/ Objectives	This project had identified the teacher's conception of teaching and their perception of need and desire to change. Based on the findings, an Interactive CD of teacher professional learning was developed for educational change.
Publications/Products/ Outcomes	<p>Books :</p> <ol style="list-style-type: none"> 1. Mohd. Majid Konting and Mokhtar Nawawi. Bab 8: Keberkesanan Pengajaran: Kepercayaan Guru Sekolah Rendah Tentang Input Pendidikan dan Persekitaran Sekolah. In Shafee Mohd Daud, Sharifah Mohd Nor, Habsah Ismail and Mohd Hazwan Mohd Puad, Pengajaran dan Pembelajaran: Pelbagai Perspektif. Serdang: Penerbit UPM. 2. Mohd. Majid Konting and Mokhtar Nawawi. Bab 9: Perbandingan Kepercayaan dan Pengetahuan Kraf Pengajaran Guru Sekolah Rendah. In Shafee Mohd Daud, Sharifah Mohd Nor, Habsah Ismail and Mohd Hazwan Mohd Puad, Pengajaran dan Pembelajaran: Pelbagai Perspektif. Serdang: Penerbit UPM. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ismail, H., Konting, M.M., Wan Ali, W.Z. and Hassan, R. 2010. Comparison of teachers' aspiration towards change in teaching and learning and the implementation of their teaching practice. <i>Proceedings of the 11th WSEAS International Conference</i>. 2. Mohd. Majid Konting, Habsah Ismail, Wan Zah Wan Ali and Roshafiza Hassan. 2009. Teacher Aspiration Towards Change in Teaching and Learning in Secondary Schools. <i>Proceeding International Conference on Educational Research and Practice (INCERP09)</i>, 10-11 June, Marriot Hotel, Putrajaya. 3. Habsah Ismail, Mohd. Majid Konting, Wan Zah Wan Ali & Roshafiza Hassan. 2009. Comparison of Teaching and Learning Practices among Teachers of the National



	and Cluster Secondary Schools in Malaysia. <i>Proceeding International Conference on Educational Research and Practice (INCERP09)</i> , 10-11 June, Marriot Hotel, Putrajaya.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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e-Mail	majid@educ.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Assessing Consumers' Purchasing Behavior Toward Local Agricultural Products
Project Number	06-01-04-SF0322
Project Leader and Team Members	Leader: Wong Foong Yee
Field of Research	Economics, Business and Management
Project Summary/ Objectives	The research aimed to study the consumer behavior towards the purchasing of local agricultural products in Malaysia. It also aimed to isolate the underlying reasons or factors which, may account for differences in spending plan and purchasing behavior towards local agricultural products. The factors used for this research were socioeconomic and spending plan, in which the relationship were investigated to see the various patterns of the behaviours that occur during the purchasing of local agricultural products were evaluated.
Publications/Products/ Outcomes	<p>Books :</p> <ol style="list-style-type: none"> 1. Siti Rahayu, H., Wong, F.Y. and Jamil, B. Retail Patronage of Fresh Produce Shoppers in Malaysia. In Adilah, A.R., Dahlia, Z. and Raja Nerina, R.Y. (Ed.), In Search of good practices: Weaving through current perspectives in business (pp.187-195). Universiti Putra Malaysia Press. 2. Wong, F.Y., Siti Rahayu, H. and Jamil, B. Consumer purchasing behaviour of fresh produce in Malaysia. In Azmawani, A.R., Noor Azman, A. and Han, C.K. (Ed.), Management research issues (pp.139-147). Universiti Putra Malaysia Press. <p>Journal:</p> <ol style="list-style-type: none"> 1. Siti Rahayu, H., Wong, F.Y. and Jamil, B. 2010. Essential quality attributes in fresh produce purchase by Malaysian consumers. <i>Journal of Agribusiness Marketing</i>, 3, 1-19. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Wong, F.Y., Siti Rahayu, H. and Jamil, B. 2007. Consumer Behaviour of Fresh Produce in Malaysia. <i>Proceedings of the Asia Pasific Marketing Conference</i>, 2-3Nov. Universiti Malaysia Sarawak, Kuching.



	2. Siti Rahayu, H., Wong, F.Y. and Jamil, B. 2007. Retail Patronage Behaviour of Fresh Produce Shoppers in Malaysia. <i>Proceedings of the Asia Pasific Marketing Conference</i> , 2-3Nov. Universiti Malaysia Sarawak, Kuching.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 7714 H/p: 012-326 6576 fywong@econ.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	The Psychological Well-being and Academic Achievement of Early Adolescent Orphans from Widow Families
Project Number	06-01-04-SF0325
Project Leader and Team Members	Leader: Maznah Baba Members: Asmah Ismail and Rusnani Abdul Kadir
Field of Research	Social Sciences
Project Summary/ Objectives	This survey identified the following psychological profile of early adolescent orphans (EOs) from widow families: Stressors and stress levels experienced after fathers' death, coping strategies used and coping efficacy, psychological well-being (PWB), academic achievement, and maternal PWB. This study also explored the inter-relationships between EOs' stress levels, EOs' PWB, maternal PWB, and academic achievement. Qualitative methodology used at the initial phase of the study to understand EOs' stressors yielded problem-checklists for EOs. A national survey followed thereafter, involving 648 EOs. However, only 125 mothers participated voluntarily. The EOs, from randomly selected secondary schools in capital cities of Peninsular Malaysia, were initially screened to identify their mothers' marital status. The study found that PWB including grief and self-esteem measures, and level of stress significantly correlated with EOs' academic achievement.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Maznah Baba. 2008. Stressors among Malay widows: Implications for counselling, <i>APECA Midterm Seminar-workshop</i>, Feb 1-2, Kota Kinabalu, Sabah. 2. Maznah Baba, Asmah Ismail, Rusnani A Kadir and Shazarina Zdainal Abidin. 2008. Problems of Malay Adolescent Orphans: Implications for Bereavement Counseling. <i>Asia Pacific Educational & Psychological Counselors' Association</i>, Kota Kinabalu, Sabah. 3. Maznah Baba and Shazarina Zdainal Abidin. 2007. Pengalaman Pelajar Remaja Yatim Melayu. <i>PERKAMA Convention</i>, 24-26 July, UUM, Kedah, 4. Maznah Baba, Asmah Ismail, Rusnani Abdul Kadir. 2009. <i>Experiences of Bereaved Adolescents and Implications for Counseling Research & Practice, International Counseling & Social Work Symposium</i>, 6-7 Jan, USM, Penang.



Awards/Certificates	1. UPM PRPI 2009 : Silver Medal
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 8158 H/p: 012-373 9790 mazb@putra.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Family-friendly Employment Policies: A Comparative Study in Public and Private Organisations
Project Number	06-01-04-SF0339
Project Leader and Team Members	Leader: Aminah Ahmad Member: Zoharah Omar
Field of Research	Social Sciences
Project Summary/ Objectives	<p>This study was conducted with the intention to describe and compare the family-friendly employment policies in selected public and private organisations. Three broad categories of policies were studied including work arrangements, family care benefits, child care facilities and related benefits. This study also examined employees' perception of the usefulness of the policies adopted and its relationship with work-family interference, commitment towards organisation and turnover intention. The findings reveal that the government has been more generous than the private organizations in terms of providing family-friendly facilities. The findings also reveal that employees who perceive the family-friendly policies adopted as useful tend to perceive the organization as family-supportive and this could result in reduced interference of work with family roles, reduced turnover intention as well as increased commitment towards the organization. Employees who perceive that their organizations are family-supportive also experience less stress at the workplace. The results of this study have been communicated to the public through selected international and national journals as well as conferences.</p>
Publications/Products/ Outcomes	<p>Journals :</p> <ol style="list-style-type: none"> 1. Aminah Ahmad & Zoharah Omar. 2010. Perceived family-supportive work culture, affective commitment and turnover intention of employees. <i>Journal of American Science</i>, 6(12) : 839-846. 2. Aminah Ahmad & Zoharah Omar. 2010. Perceived workplace culture as an antecedent of job stress: The mediating role of work-family conflict. <i>Journal of Social Sciences</i>, 6(3) : 369-375. 3. Zoharah Omar & Aminah Ahmad. 2009. Why organizations adopt family-friendly policy? A case of on-site childcare center in a manufacturing company. <i>Unitar E-Journal</i>, 5(1) : 1-19.



	<ol style="list-style-type: none"> 4. Aminah Ahmad & Zoharah Omar. 2008. Gender differences in work-family conflict and familyfriendly employment policy practices. <i>The International Journal of the Humanities</i>, 6 (3) : 15-26. 5. Aminah Ahmad. 2007 .Work-family conflict, life-cycle stage, social support, and coping strategies among women employees. <i>The Journal of Human Resource and Adult Learning</i>, 3(1) : 70-79. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Aminah Ahmad, Khateejah Mohd Yazid & Muhammad Khairuddin Lim. 2006. Family-friendly employment policies: Practices in selected private organizations. In Maimunah Ismail, Aahad M. Osman-Gani, Shamsuddin Ahmad, Abdul Lateef Abdullah, Ismi Arif Ismail & Jamilah Othman (Eds.), <i>Human Resource Development in Asia: Thriving on Dynamism and Change</i>, Vol. II, (876-882). Universiti Putra Malaysia Press, Serdang. 2. Aminah Ahmad and Zoharah Omar. 2008. Work-family conflict, gender and family-friendly employment policy practices. <i>The Sixth International Conference on New Directions in the Humanities</i>, 15-18 July, Istanbul, Turkey. 3. Nurul Fathiyah, Aminah Ahmad and Zoharah Omar. 2008. Employer Characteristics associated with the adoption of work-family programs and policy. <i>Seminar on Educational Research and Human Resource Development</i>, 22 Oct. UPM. 4. Farah Liyana Noor Azman, Aminah Ahmad and Zoharah Omar. 2008. A model of family-friendly work environment and non-work related outcomes. <i>Seminar on Educational Research and Human Resource Development</i>, 22 Oct. UPM. 5. Zoharah Omar and Aminah Ahmad. 2007. The Influence of family supportive environment and work-family conflict on employees intention to remain in an organization. <i>Seventh Conference of the Asian Association of Social Psychology</i>, 25-28 July, Kota Kinabalu, Sabah, Malaysia.
Awards/ Certificates	<ol style="list-style-type: none"> 1. Exhibition on Invention, Research and Innovation, Universiti Putra Malaysia 2009 : Gold Award
Additional Information	<p>Linkages: Federation of Malaysian Manufacturers</p>

Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Utilisation of Underutilised Oil Palm Trunk from Plantation Waste for High-performance Solid Wood Material
Project Number	06-01-04-SF0358
Project Leader and Team Members	Leader: Edi Suhaimi Bakar Members: Mohd Hamami Sahri and Zaidon Ashaari
Field of Research	Forestry Sciences
Project Summary/ Objectives	This project had determined the optimum working condition in quality enhancement processes of oil palm wood. The mechanical, machining and finishing properties of treated oil palm wood had also been assessed. Furthermore, the potential use of treated oil palm wood had been identified. The resulted treated oil palm woods have shown to have good characteristic in not only performance but also in appearance.
Publications/Products/ Outcomes	<p>Journals :</p> <ol style="list-style-type: none"> 1. Chong, Y.W., Bakar, E.S.,Ashaari, Z., and Sahri, M.H. 2010. Treatment of Oil Palm Wood with Low-Molecular Weight Phenol Formaldehyde Resin and Its Planing Performance. Wood Research. <i>Journal of Indonesian Wood Research Society</i> 1(1) : 7-12. 2. Amarullah, M., Bakar, E.S.,Ashaari, Z., Sahri, M.H. and Febrianto, F. 2010. Reduction of Formaldehyde Emission from Phenol Formaldehyde Treated Oil Palm Wood Through Improvement of Resin Curing State. <i>Journal of Tropical Wood Science and Technology</i>, Vol. 8 (1) : 9-14. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Bakar, E.S.,Paridah, M.T., Sahri, M.H., Yap, H.S. 2007. Properties Enhancement of Oil Palm Lumber through the Modified Compreg Method. <i>Proceedings of the Research Colloquium of Faculty of Forestry</i>, 26-28 Jun. UPM. 2. Bakar, E.S., Sahri, M.H., Ashaari, Z., Febrianto, F. 2007. Oil Palm Trunks – a New Alternative Material for Solid Wood Products. In Proceedings of IUFRO- All Division 5 Conference. <i>Forest Product and Environment: A Productive Symbiosis</i>. 29 Oct – 2 Nov, Taipei, Taiwan.

	<ol style="list-style-type: none"> 3. Bakar, E.S., Ashaari, Z., Sahri, M.H, Paridah, M.T. 2007. Quality Improvement of Oil Palm Wood: A Conversion from Waste to Wealth. <i>POSTER: Presented at Pameran Rekacipta Penyelidikan dan Inovasi (PRPI)UPM 2007</i>, 27 Nov. 2007. 4. Bakar, E.S., Paridah, M.T, Febrianto, F, Sahri, M.H, Tang, WC. 2007. Properties Enhancement of Oil-Palm Wood Through Modified Compreg Method: A Comprehensive Solution to Oil Palm Wood's Properties Flaws. In <i>Proceeding of the 7th National Conference on Oil Palm Tree Utilization: Strategizing for Commercial Exploitation</i>. 13-15 Nov, Petaling Jaya 5. Cong Yi Way, E.S. Bakar, Z. Ashaari, M.H. Sahri. 2009. Machining Characteristic of Lmw-PF Treated Oil Palm Wood. <i>7th Pacific Regional Wood Anatomy Conference</i>. 3-5 Aug, Kuala Lumpur. <p>(total : 13)</p>
Awards/Certificates	Gold Medal: Bakar, E.S., Ashaari, Z., Sahri, M.H, Paridah, M.T. 2007. Quality Improvement of Oil Palm Wood: A Conversion from Waste to Wealth. Pameran Rekacipta Penyelidikan dan Inovasi UPM 2007, 27 Nov. 2007.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Exploring the foundation of human-wildlife relationship in Malaysia
Project Number	06-01-04-SF0362
Project Leader and Team Members	Leader: Manohar Mariapan Members: Mohamed Zakaria Hussin and Noor Azlin Yahya
Field of Research	Social Sciences
Project Summary/ Objectives	This project had assessed the wildlife value orientations of Malaysians. From the study, an overall picture of Malaysian attitudinal model was developed and the attitudes towards forms of wildlife management have been assessed. The potential for these types of benefit when a follow up research was carried out to look into the same matter but studied accross- culture and the potential differences discovered might be more revealing of the true nature of wildlife value orientation among ethnicities.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Exchange Rate, Monetary Fundamentals and Development Strategies for the Asean Countries
Project Number	06-01-04-SF0414
Project Leader and Team Members	Leader: Ahmad Zubaidi Baharumshah
Field of Research	Economics, Business and Management
Project Summary/ Objectives	This project had investigated the role of fundamental variables in tracking the movement of exchange rates. The forecasting performance of the monetary model had also been evaluated and the impact of currency devaluation on the manufacturing and agriculture output was determined.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Ahmad Zubaidi Baharumshah, Raj Aggarwal and Chan Tze Haw. 2007. East Asian Real Exchange Rates and PPP: New Evidence from Panel-data Tests, <i>Global Economic Review</i>, vol. 36 : no. 2 : 103-119. 2. Baharumshah, A.Z. and Wooi, H.C. 2007. Exchange rate volatility and the Asian financial crisis: Evidence from South Korea and ASEAN-5, <i>Review of Pacific Basin Financial Markets and Policies</i>, 10(2) : 237-264. 3. Ahmad Zubaidi Baharumshah, Venus Khim-Sen Liew and Chan Tze Haw. 2008. The Real Interest Rate Differential: International Evidence Based On Nonlinear Unit Root Tests, <i>Bulletin of Economic Research</i> (In press) 4. Baharumshah, A.Z., Tze-Haw, C. and Fountas, S. 2008. Re-examining purchasing power parity for East-Asian currencies: 1976-2002, <i>Applied Financial Economics</i>, 18(1) :75-85.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
e-Mail	zubaidi@putra.upm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Capital Mobility and Saving-investment Correlation: The Experience of Southeast Asian Economies
Project Number	06-01-04-SF0424
Project Leader and Team Members	Leader: Marial Awou Yol Member: Ahmad Zubaidi Baharumshah
Field of Research	Economics, business and management
Project Summary/ Objectives	This project had estimated the saving investment correlation. Furthermore, it also measured the extent of capital mobility.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number	Office: 03-8946 7629 H/p: 012-907 5610
e-Mail	yol40@yahoo.com

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	National Ethos and Media Use of 15-25 Years At-risk Youth: Implication on NationBuilding
Project Number	06-01-04-SF0434
Project Leader and Team Members	Leader: Ezhar Tamam Members: Jusang Bolong, Saodah Wok and Abdul Muati@Zamri Ahmad
Field of Research	Social Sciences
Project Summary/ Objectives	This project had determined the strength of identification with national ethos of 15-25 years youth at risk. Furthermore, the level of exposure to public affairs news and the contribution of exposure to public affairs news on strength of identification with national ethos of 15-25 years youth at risk have also been determined. The consequences of strength of identification with national ethos and level of exposure to public affairs news of 15-25 years at risk youth on nation building had also been identified.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Saodah Wok, Ezhar Tamam, Jusang Bolong, Abdul Muati @ Zamri Ahmad and Fazil Imran. 2009. Media use among youth: A comparative study. <i>International Conference of the Pacific and Asian Communication Association</i>, UPM, Selangor, Malaysia. 2. Ezhar Tamam. 2009. Understanding the relationships between attention and exposure to local news in television and newspaper with national pride among Malaysian youth. <i>World Communication Association Conference</i>, Dublin, Ireland. 3. Ezhar Tamam, Saodah Wok, Jusang Bolong, Abdul Muati @ Zamri Ahmad and Fazil Imran. 2008. National pride and the viewing of news of public and national affairs in television and newspapers among 15-25 years youth. <i>International Conference on Youth Research</i>, UKM. Bangi
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number e-Mail	Office: 03-8946 8729/8574 ezhar@fbmk.upm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Family Communication and Use of Computer among Malaysian Farm Families
Project Number	06-01-04-SF0435
Project Leader and Team Members	Leader: Siti Zobidah Omar Members: Narimah Ismail, Jusang Bolong, Musa Abu Hassan and Saodah Wok
Field of Research	Social Sciences
Project Summary/ Objectives	This project successfully determined the content of family communication among Malaysian farm families and the typologies of Malaysian farm families based on family communication patterns. The use of computers and internet among farm families was also investigated and the relationship between the use of computer and internet with time spent for family communication among farm families was determined.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Narimah Ismail, Saodah Wok, Siti Zobidah Omar, Jusang Bolong and Musa Abu Hassan (2008). 'Communication patterns among Malaysian farm families: Parents view', In CD ROM proceeding of <i>International Conference on Agricultural Extension 2008</i>, 15-19 June, 2008, Bangi, Malaysia. 2. Siti Zobidah Omar, Narimah Ismail, Saodah Wok, Jusang Bolong and Musa Abu Hassan (2008). 'Penggunaan computer dalam pencarian maklumat pertanian dalam kalangan keluarga tani, In CD ROM proceeding of <i>International Conference on Agricultural Extension 2008</i>, 15-19 June, 2008, Bangi, Malaysia. 3. Narimah Ismail, Saodah Wok, Jusang Bolong, Siti Zobidah Omar and Musa Abu Hassan (2008). 'Use of new communication technology among Muslim farming families'. In CD ROM proceeding of <i>International Conference on the representation of Islam and Muslims in the Media</i>, 29-30 July, 2008, Kuala Lumpur, Malaysia.
Awards/Certificates	Exhibition of Invention, Research & Innovation (PRPI) UPM: Silver Medal

Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number	Office: 03-8946 8797 H/p: 012-237 7529
e-Mail	zobidah@fbmk.upm.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	The development of the mediated employer-employee language profile (melp) as a mechanism to benchmark english language needs of the Malaysian service sector industry
Project Number	06-01-04-SF0437
Project Leader and Team Members	Leader: Rosli Talif Members: Rohimmi Noor, Ain Nadzimah Abdullah, Sabariah Md. Rashid, Chan Swee Heng and Wong Bee Eng
Field of Research	Social Sciences
Project Summary/ Objectives	The results were obtained through a detailed language audit in relation to English language skills. The language audit presented a range of language attributes ranked and identified as important by tertiary level students and employees. The overall picture of the status and role of English was related to the issue of employability. It encompassed an attitudinal survey and self-reports on language ability and domains of use. The status and role of the English language in Malaysia was described and reported in the context of a shared language in the repertoire of the speakers. The programme evaluation identified details about course organisation and human resources involved in the curriculum. The analysis highlighted the relevancy, adequacy and efficiency of courses offered in selected tertiary institutions which reflect the current practice in English language training and preparation of graduates for gainful employment. A measure of the adequacy and efficiency of the language programmes under evaluation was attained from the study. The results from the programme evaluation provided salience into generic language and communication knowledge for the present giving definitive leads into the future and offering a clearer understanding of what was already happening, and what could and need to be done.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number	Office: 03-8946 8729 H/p: 019-281 5654
e-Mail	rosli@fbmk.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Management Communication Practices and Language Use in Agriculture Based and Agriculture Related Malaysian Multinational Corporations (MNCS)
Project Number	06-01-04-SF0438
Project Leader and Team Members	Leader: Shameem Begum Mohd Rafik Khan@Rafik-Galea Members: Raduan Che Rose, Md. Salleh Hassan, Afida Mohamad Ali and Wong Bee Eng
Field of Research	Humanities
Project Summary/ Objectives	This project generated a guide for effective management communication practices in the agricultural sector. It identified the factors that contribute to this issue, the influence of organisational structure, the factors affecting communicative situations and the channels used. This study also includes observation on how power was concealed or demonstrated in management communication practices.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Rafik-Galea, S.2010. An Investigation into Selected-Agricultural Organization's Use of Language on Their Operational Activities. <i>7th International Language for Specific Purposes Seminar</i>, May 2010, UTM Skudai, Malaysia. 2. Rafik-Galea, S., et.al. 2010. An Investigation into Selected Agricultural Organization's Use of Language in Their Operational Activities. <i>7th International Language for Specific Purpose Seminar</i>, May 2010, UTM Skudai, Malaysia. 3. Mohd Ali, A., et.al. 2009. Promotional Discourse of Agricultural-based Industries. <i>International Conference on Languages (UPALS ICL) 2009</i>, May 2009, Pulau Pinang, Malaysia. 4. Wong, B. E. 2009. Communication through Websites of Agriculture-related Organisations. <i>International Conference on Languages (UPACS ICL) 2009</i>, May 2009, Pulau Pinang, Malaysia. 5. Rafik-Galea, S., et.al. 2009. Language Use in Agricultural related Organizations. <i>International Conference on Language (UPACS ICL) 2009</i>, Pulau Pinang, Malaysia.





	<p>6. Rafik-Galea, S., et.al. 2009. Language Choice in the Agricultural Sector. <i>6th Malaysia International Conference on Languages, Literatures, and Cultures (MICOLLAC) 2009</i>, April 2009, UPM Serdang, Malaysia.</p> <p>7. Mohd Ali, A., et.al. 2009. Realizing Sustainable Development through Company Strengths versus Global Weaknesses; A Genre Analysis of Multi-national Agricultural-based Company Brochures. <i>6th Malaysia International Conference on Languages, Literatures, and Cultures (MICOLLAC) 2009</i>, UPM Serdang, Malaysia.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 6129 shameem@fbmk.upm.edu.my shameem@gmail.com</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Mobilising e-Community for Inculcating First Class Mentality
Project Number	06-01-04-SF0440
Project Leader and Team Members	Leader: Musa Abu Hassan Members: Jusang Bolong, Rusli Abdullah, Siti Zobidah Omar and Narimah Ismail
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	This study developed a model for e-community portal in calculating first class mentality after the existing requirement was determined. This study also managed to identify the best practices for establishing e-community portal implementation.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Abdullah, R., Abu Hassan, M., Omar, S.Z., Ismail, N., and Bolong, J. 2010. E-community system towards first class mentality development: An infrastructure requirements analysis. <i>Computer and Information Science</i> 3(1):160 – 167. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Abdullah, R., Abu Hassan, M., Omar, S.Z., Ismail, N., and Bolong, J. 2008. Infrastructure requirements in developing e-community portal towards first class mentality. <i>Second ICT conference</i>, 12 - 13 Dec, 2008. UiTM, Penang. 2. Abu Hassan, M., Omar, S.Z., Ishak, M.S., Bolong, J., Ismail, N. and Abdullah, R. 2009. Embracing new culture: Inculcating first class mentality among the Malays through the use of ICT. <i>WCA Biennial conference – Translations and transformations: Communicating culture through daily practices</i>, 24th – 28th July 2009, Maynooth, Ireland.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number	Office: 03-8946 8911 H/p: 012-289 3114
e-Mail	musa@putra.upm.edu.my



COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Economic Analysis of Beekeeping Project in Malaysia: The case of Apis mellifera
Project Number	06-01-04-SF0449
Project Leader and Team Members	Leader: Mohd Mansor Ismail Members: Mad Nasir Shamsudin, Ismail Abd Latif and Zainal Abidin Mohamed
Field of Research	Economics, Business and Management
Project Summary/ Objectives	This project carried out a baseline study on availability of resources for beekeeping projects, input used and output gained from rearing apis mellifera in Malaysia. From the study, the implicit and explicit costs and benefits were gathered. The cost-benefit analysis, financially and economically; was evaluated.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Ismail, M.M., Mardan, M., and Mohamed, Z. 2007. Forest Conservation through Honey Hunting and Ecotourism in Malaysia. <i>Malaysian Journal of Agricultural Economics</i>, Vol. 20. 2. Radam, A., Sidique, S.F., and Ismail, M.M. 2008. Consumer Willingness to Pay for Locally Produced Pure Tualang Honey in Malaysia. <i>International Applied Economics and Management Letters (IAEML)</i>, 1(2). 3. Ismail, M.M. and Alias, E.F. 2009. Economic Potential of Apiculture in Malaysia. <i>OPTIONS</i>, 4(2), 12-14. 4. Ismail, M.M. 2009. Production and Trade Potential of Natural Honey in Malaysia. <i>Corporate Agriculture Directory (Telekom Malaysia) 2009/2010</i>, 35-48. 5. Ismail, M.M. 2009. Potensi Penternakan Madu di Bagan Datoh. <i>Agro Search Research Bulletin</i>, 14(1): 49-52. 6. Ismail, M.M. 2010. Beekeeping in Pineapple Smallholdings: A Case of Apis Mellifera. <i>Agro Search Research Bulletin</i>, 14(2). <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ismail, M.M. 2009. The Impact of Government Incentives on Beekeeping Project in Malaysia: A Case of Apis Mellifera. <i>30th Malaysian Society of Animal Production (MSAP) Conference</i>.

	<ol style="list-style-type: none"> 2. Ismail, M.M. 2009. Trade Potential of Natural Honey in Malaysia. <i>3rd Asia Pasific Marketing Conference</i>, Santubong, Sarawak. 3. Ismail, M.M., and Mardan, M. 2011. The Potential Of Beekeeping Projects for Rural Development. <i>International Conference on Rural Development and Entrepreneurship 2011 (ICORE 2011)</i>, 28-30 May, Kuching, Sarawak.
Awards/Certificates	<ol style="list-style-type: none"> 1. Invention, Research, and Innovation 2010 (PRPI 2010): Silver Medal 2. Invention, Research, and Innovation 2008 (PRPI 2008): Silver Medal 3. Invention, Research, and Innovation 2008 (PRPI 2008): Silver Medal 4. Bronze Medal Invention, Research, and Innovation 2007 (PRPI 2007): Bronze Medal 5. Invention, Research, and Innovation 2007 (PRPI 2007): Bronze Medal
Additional Information	<p>Linkages: USM, UM, UITM. Department of Agriculture</p> <p>Commercialisation: Organic honey</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Putra Malaysia (UPM)</p> <p>Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.</p> <p>Office: 03-8946 4123</p> <p>mmi@agri.upm.edu.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Theoretical and Empirical Studies to Model Supply Chain Relationships in Malaysian Manufacturing and Service Sectors
Project Number	06-01-04-SF0454
Project Leader and Team Members	Leader: Murali Sambasivan Member: Arfah Salleh
Field of Research	Economics, Business and Management
Project Summary/ Objectives	This project developed a supply chain framework for an empirical study that would be conducted through surveys and interviews in Malaysian manufacturing and service sectors. Various types of relationship that exist between the members in the supply chain; between suppliers and manufacturers, between distributors and manufacturer, between distributors and customers were identified. Furthermore, the strategies required for establishing, maintaining and measuring the success of different supply chain relationship was also determined.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Sambasivan, M., Loke, S. P., Mohamed, Z.A., and Yee, C. L. 2011. Relationship between interdependence and strategic alliance outcomes in a manufacturing supply chain: Role of relationship capital as a mediating construct, <i>Management Decision</i> 23(4): 548-569 2. Sambasivan, M., and Ching, N. Y. 2010. Strategic Alliances in a manufacturing supply chain: Influence of organizational culture from the manufacturer's perspective, <i>International Journal of Physical Distribution and Logistics Management</i> 40(6): 456-474 <p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. Loke, S. P., Murali, S., Yee, C.L., and Mohamed, Z. A. 2008. Factors Influencing Strategic Alliance Outcomes: An Integrative Approach. <i>Academy of Management Conference</i>, 8–13 August, 2008, Anaheim, California, USA. <p>Other:</p> <ol style="list-style-type: none"> 1. Loke, S.P. 2011. Formation, maintenance and success of strategic alliances in a manufacturing supply chain. <i>PhD Thesis</i>, Universiti Putra Malaysia

Awards/Certificates	Literati Network Awards for Excellence 2011: Highly recommended award.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 7698 murali@econ.upm.edu.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	GIS: Perancangan Sosial Perkhidmatan Keluarga dan Masyarakat (Social Planning in Family and Community Services)
Project Number	06-01-04-SF0456
Project Leader and Team Members	Leader: Zumilah Zainalaludin Members: Bukryman Sabri, Asnarulkhadi Abu Sama and Abdul Rashid Mohamed
Field of Research	Social Sciences
Project Summary/ Objectives	This project developed a database in access format and ready to be use for GIS application. This database contained social indicators of society and family development at the district level. The system was equipped with up-to-date and valid data.
Publications/Products/ Outcomes	Database of indicators for the whole states in Peninsular Malaysia
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number	Office: 03-8946 7110 H/p: 019-258 2304
e-Mail	zumilah@putra.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Three Dimensional Boundary Value Problems for Cracks
Project Number	06-01-04-SF0457
Project Leader and Team Members	Leader: Nik Mohd Asri Nik Long Member: Zainidin K. Eshkuvatov
Field of Research	Mathematical Sciences
Project Summary/ Objectives	The project constructed mathematical models for cracks having smooth edges. It also analysed the problems of mathematical formulation and numerical algorithm, besides providing numerical examples for various crack structures.
Publications/Products/ Outcomes	Journals : <ol style="list-style-type: none"> 1. Abdulkawi, M., Eshkuvatov, Z.K., Nik Long, N.M.A. 2009. A method for the numerical solution of Cauchy singular integral Equations, <i>International Journal of Applied Mathematics</i>, 22(2): 287- 297. 2. Nik Long, N.M.A., Eshkuvatov, Z.K., Sapar, H.S. 2009. Reduction technique for $n \times n$ complex matrix system, <i>Int. Math. Forum</i> 4(8):363-366. 3. Nik Long, N.M.A., Eshkuvatov, Z.K., Abdulkawi, M. 2009. Semi-bounded solutions of singular equations of Cauchy type, <i>International Journal of Contemporary Mathematical Sciences</i> 4(22): 1059-1066. 4. Nik Long, N.M.A., Eshkuvatov, Z.K., Yaghibifar, M., Hasan, M. 2009. Numerical solution of infinite boundary integral equation by using Galerkin Method with Laguerre polynomials, <i>Int. J. of Computational and Mathematical Sciences</i> 3(1): 21-24. 5. Nik Long, N.M.A, and Eshkuvatov, Z.K. 2009. Hypersingular integral equations for multiple curved cracks in plane elasticity, <i>Int.J. Solids Structures</i>, 46: 2611-2617
Awards/Certificates	<ol style="list-style-type: none"> 1. Pameran Rekacipta, Penyelidikan dan Inovasi UPM 2009 (PRPI 2009): Gold Medal 2. Pameran Rekacipta, Penyelidikan dan Inovasi UPM 2009 (PRPI 2009): Silver Medal 3. Pameran Rekacipta, Penyelidikan dan Inovasi UPM 2009 (PRPI 2009) : Gold Medal 4. Pameran Rekacipta, Penyelidikan dan Inovasi UPM 2009 (PRPI 2009): Gold Medal





Additional Information	Linkages: Prof C.Y. Chen, Division of Engineering Mechanics, Jiangsu University of Science and Technology, Zhenjiang, China.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. Office: 03-8946 6863 H/p: 012-676 8040 nmasri@science.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Determinants of Childhood Obesity: Influence of Family and Social Environment
Project Number	06-01-04-SF0460
Project Leader and Team Members	Leader: Shamarina Shohaimi Member: Norhasni Zainal Abiddin
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	This study focused on determinants of childhood obesity, specifically the influence of family and social environment. This study showed that the current prevalence of childhood obesity at 16% was higher compared to previously reported. The prevalence of obesity for parents was 14%, and parent's weight status was found to be one of the predictors of childhood obesity. Familial factors such as parent's weight status, parental control such as concern about child's weight, restriction, pressure to eat, parent's fast food consumption, children's meat consumption and socio-environmental factors such as neighbourhood safety perception were found to be associated with children's weight status and the increase risk of overweight and obesity in children. Parent's weight status was found to be the most robust factor that predicted children's weight status, indicating that when parents have higher weight status; children are more likely to be at risk of being overweight and obese.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Investigation of the Transport Mechanism of Polycrystalline Metal Chalcogenide Compounds (CuSe, CuInSe) Thin Films
Project Number	06-01-04-SF0466
Project Leader and Team Members	Leader: Zainal Abidin Talib Members: W.Mahmood Mat Yunus and Abd Halim Shaari
Field of Research	Material Sciences
Project Summary/ Objectives	The focus of this study was to investigate the transport mechanism of polycrystalline metal chalcogenide compounds (CuSe, CuInSe) thin films. The CuSe, SnSe, CuSnSe thin films were synthesised using thermal evaporation technique. The transport mechanisms (thermal and carrier diffusion coefficient, minority carrier lifetime, front surface recombination velocity, activation energy, I-V and C-V characteristic, AC and DC conductivity, electronic and ionic conduction) were successfully measured using photoacoustic, 2-point probe and 4 point probe techniques. Subsequently, the study also investigated the temperature dependence of the transport mechanism of the metal chalcogenide compounds (CuSe, SnSe and CuSnSe) thin film from low temperature to high temperature.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. 7th Pacific Rim Conference on Ceramic and Glass Technology, 11-14 Nov. 2007, Shanghai, China 2. Seminar Sains 2007, 4 August 2007, Dewan Kuliah Akademik Pusat, UPM 3. Regional Annual Fundamental Science Seminar 2007, Johor 4. National Physics Conference 2007, 26-28 December 2007, Kuala Terengganu, Terengganu 5. American Institute of Physics Conference Proceedings 909 (USA) 6. The 23rd Regional Conference on Solid State Science and Technology, 27-29 November 2007, Johor Bahru, Johor. 7. Solid State Science and Technology, Vol. 16, No 1, 147-152, 2008 8. Jurnal Fizik Malaysia Vol. 29, Number 3&4 2008 9. PERTANIKA J. Sci & Technol. 17(1): 125-129 (2009) 10. Central European Journal of Physics, 7(2) 2009 379-384

Awards/Certificates	Pameran Reka Bentuk, Penyelidikan dan Inovasi (UPM) – Perak Understanding the Correlation between the Structural, Electric and Thermal Properties of (CuSe) _{1-x} Sex Metal Chalcogenide Semiconductor Composites
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Automation and Portability of Thermal Wave Resonance Cavity Technique
Project Number	06-01-04-SF0470
Project Leader and Team Members	Leader: Azmi Zakaria Members: Mohd Maarof H.A. Moks and Zaidan Abdul Wahab
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	This study established a relationship between the thermal wave spread (angle) and the diameter size of thermal wave generator. It managed to automate the thermal wave resonance cavity (TWRC) technique and measure the thermal diffusivity of various liquids.
Publications/Products/ Outcomes	Journal: 1. Zakaria, A.2008.Simple TWRC technique by using optical fiber Infrared <i>Physics & Technology</i> 51(2): 270-275.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number	Office: 03-8946 6650 H/p: 012-287 0402
e-Mail	azmizak@fsas.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Mental Strength Profile of Malaysian Football Players
Project Number	06-01-04-SF0475
Project Leader and Team Members	Leader: Mohd Sofian Omar Fauzee Members: Aminuddin Yusof, Mohd Salleh Aman and Kwame Ampofo Boateng
Field of Research	Social Sciences
Project Summary/ Objectives	The focus of this study was to investigate the mental strength profile using the Psychological Performance Inventory in analysing mental strength among Malaysian footballers. The method used for this study was face-to-face interviews. The collected data was developed into a new Mental Strength Inventory for Malaysians.
Publications/Products/ Outcomes	Proceedings: <ol style="list-style-type: none"> 1. Asmuni, M.N., Omar-Fauzee, M.S., Yusof, A. & Abu Samah, B. 2009. The mental strength of Malaysian football players in the Malaysian Cup for 2007/2008 season. <i>Southeast Asia Psychology conference 2009</i>, 9-11 July 2009, School of psychology and social works, Universiti Malaysia Sabah. 2. Asmuni, M.N., Omar-Fauzee, M.S., and Yusof, A. 2008. The mental strength of Super League Malaysian players 2007/2008. <i>Teluk Danga International Games Convention 2008</i>, 18-20 Feb 2008, Johor Bharu, Malaysia. 3. Omar-Fauzee, M.S., Daud, W.R.B., Abdullah, R., Rashid, S. A. 2009. The effectiveness of imagery and coping strategies in sport performance. <i>European Journal of Social Sciences</i>, 9(1):97-108.
Additional Information	Linkages: Football Association of Malaysia
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Patterns of Social Relationships and Psychological Well-being Among Older Persons in Peninsular Malaysia
Project Number	06-01-04-SF0479
Project Leader and Team Members	Leader: Nurizan Yahya Members: Bukryman Sabri, Asnarulkhadi Abu Sama, Mumtazah Othman and Tengku Aizan Tengku
Field of Research	Social Sciences
Project Summary/ Objectives	This social study aimed to investigate the patterns of social relationships among the elderly in Peninsular Malaysia. The elements investigated were the reciprocal forms of social support and the relationship between the patterns of social relationships, forms of social support, psychological well being and life satisfaction among the elderly.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
Phone Number e-Mail	Office: 03-8946 7107 nurizan@putra.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Perception, Awareness and Risk Factors of Elder Abuse
Project Number	06-01-04-SF0482
Project Leader and Team Members	Leader: Tengku Aizan Tengku Abdul Hamid Members: Asnarulkhadi Abu Sama, Nurizan Yahya and Mariani Mansor
Field of Research	Social Sciences
Project Summary/ Objectives	This study was performed to identify and define abuse among the elderly. It managed to determine the types, risk factors and the relationship between risk factors and incidence of abuse among the elderly.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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e-Mail	aizan@putra.com.my





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Design and Construction of a Novel 3-phase Unified Power Flow Controller (UPFC) System Using Multilevel Structure
Project Number	06-01-04-SF0491
Project Leader and Team Members	Leader: Senan Mahmod Abdullah Members: Norhisam Misron and Norman Mariun
Field of Research	Engineering Sciences
Project Summary/ Objectives	All objectives for this project were achieved. For shunt connected inverter, 6 bridge line commutated thyristor was chosen, in the other hand for series connected inverter, 3 level Neutral-Point-Clamped inverter was chosen as the structure of the UPFC. Space Vector Modulation was adopted as the control strategy due to its advantage where it can be operated at system frequency. Simulation model and scale-down version of laboratory model was successfully simulated and constructed. A good agreement between the two of them was obtained.
Publications/Products/ Outcomes	Journal: 1. Mailah, N.F., Bashi, S.M., Mariun, N., and Aris, I. 2008. Simulation of a Three-Phase Multilevel Unified Power Flow Controller (UPFC). <i>Journal of Applied Sciences</i> 8(3): 503-509.
Contact Institution/Entity Address e-Mail	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor. senan@eng.upm.edu.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Intelligent Predictive Control of an Autonomous Mobile Robot Navigation
Project Number	06-01-04-SF0535
Project Leader and Team Members	Leader: Mohammad Hamiruce Marhaban Members: Marzuki Khalid, Azura Che Soh and Samsul Bahari Mohd Nor
Field of Research	Engineering Sciences
Project Summary/ Objectives	A four wheel skid steer mobile robot was designed and developed. The robot uses a laptop computer as its main processor, connected with the sensors and actuators via a data acquisition system. A neuro-fuzzy navigation system was developed to achieve all the objectives stated above.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars <ol style="list-style-type: none"> 1. Abd. Rahman, M.A., Marhaban, M.H., Raja Ahmad, R.M.K. 2007. Real-time Navigation of Autonomous Robot using Fuzzy Logic Controller. <i>The 2nd National Intelligent Systems And Information Technology Symposium (ISITS'07)</i>, Oct 30-31, ITMA-UPM, Malaysia 2. Che Soh, A., Khalid, M.H.M.M., Yusof, R. Modelling and Optimisation of a Traffic Intersection Based on Queueing Theory and Markov Decision Control Methods. <i>Asia Modelling Symposium AMS2007</i>, 22-30 March 2007, Phuket, Thailand.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Penghayatan Semangat Patriotisme dan Nasionalisme : Pelatih Program Latihan Khidmat Negara (PLKN)
Project Number	06-01-04-SF0543
Project Leader and Team Members	Leader: Mohd Mahadee Ismail Members: Nurdeng Deuraseh, Sarjit Singh Darshan and Adlina Ab. Halim
Field of Research	Social Sciences
Project Summary/ Objectives	This research has achieved all its objectives, as the spirit of patriotism and nationalism among the National Service trainees were initially highly commendable and was highly improved after undergoing National Service. Through this research, a number of obstacles in achieving an excellent spirit of patriotism and nationalism amongst the trainees were identified. This includes issues in self-esteem, racism, few interaction and integration amongst the trainees themselves, individualism, development and uncontrolled use of ICT, threat of globalisation and influence by the mass media. In conclusion, the National Service programme has succeeded in overcoming these issues and instilled a highly improved spirit of patriotism and nationalism in youths.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Attitude Towards Exercise among School Teachers in Malaysia
Project Number	06-01-04-SF0545
Project Leader and Team Members	Leader: Mohd Sofian Omar Fauzee Members: Soh Kim Geok, Mohd Salleh Aman, Kwame Ampofo Boateng and Aminuddin Yusof
Field of Research	Social Sciences
Project Summary/ Objectives	A research was carried out to examine the differences between primary and secondary school teachers' behavior towards physical activity. It also identified the exercise behavior, process of change, self efficacy and decision balance among teachers towards physical activities. The research work had accumulated sufficient data to help understand the exercise behavior amongst teachers. The discussions had also identified a few suggestions that can be expanded to the need of exercising among teachers in Malaysian schools.
Publications/Products/ Outcomes	Journal: 1. Aleah Mohammad., Mohd Sofian Bin Omar Fauzee., Rozita Abd Latif., Lydiawati Mansor., Mohd Razif Abdul Satar. and Wan Nurul Syima Wan Azaman. 2008. <i>Exercise behavior change among secondary school children and teachers: An examination of self efficacy and barriers towards physical activity</i> , Volume 7, (4).
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Pengetahuan dan Amalan Penggunaan Lestari di kalangan Pelajar Sekolah Menengah
Project Number	06-01-04-SF0547
Project Leader and Team Members	Leader: Mumtazah Othman Members: Nurizan Yahya, Shamsul Azahari Zainal Badari, Naimah Mohd Salleh and Aziah Hashim
Field of Research	Social Sciences
Project Summary/ Objectives	Sustainable consumption is the use of goods and services that satisfy basic needs and improve quality of life while minimising the use of irreplaceable natural resources and the byproducts of toxic materials, waste, and pollution. The objective of this study is to analyse the level of knowledge, practices and life style of sustainable consumption among adolescents, as well as factors that contribute toward their sustainable consumption lifestyle. A total of 1,492 secondary school students were randomly, selected from schools in Peninsular Malaysia. The data were collected using self-administered questionnaire. The results indicated that respondents had high knowledge concerning sustainable consumption which is very likely to influence their perception and attitudes towards sustainable consumption practices and life style. However majority of them have moderate level of sustainable consumption practices. Regression analysis showed seven predictor variables accounted for 17.1% of variance in the sustainable consumption lifestyle score including sustainable consumption practices, academic achievement and gender. They were significantly related to sustainable consumption lifestyle but not father's and mother's educational and level of knowledge on sustainable consumption. In conclusion, sustainable consumption practices make a better predictor for the sustainable consumption lifestyle among adolescents.
Publications/Products/ Outcomes	Journals: 1. Mumtazah O. and Norhafidah A. 2009. Bagaimanakah Amalan Penggunaan Lestari Remaja Sekolah? <i>Malaysian Journal of Consumer</i> . 7: 33-41. 2. Mumtazah, O., Naimah, M.S. and Nurizan, Y. 2009. Amalan dan Gaya Hidup Lestari dalam kalangan Remaja Sekolah. <i>Malaysian Journal of Consumer and Family Economics</i> 12: 40- 54.

	<p>Proceedings/Coferences/Seminars:</p> <ol style="list-style-type: none"> 1. Mumtazah, O., Shyhaily,O., Naimah, S., Aziah, H., Nurizan, Y. and Zainal Badari, S. A. 2008. Factors Affecting Sustainable Consumption Practices among Female Adolescents in Peninsular Malaysia. <i>Presented at 10th International Conference on Women</i>, 3-9 July, Spain. 2. Mumtazah, O., Naimah, M.S.,Nurizan, Y., Shamsul Azahari, Z.B. and Norhafidah, A. 2008. Amalan Penggunaan Lestari Dalam Kalangan Remaja Sekolah Menengah Malaysia. <i>Presented at 12th MACFEA Conference</i>. 12 August 2008,Selangor. 3. Naimah, S., Mumtazah, O., Nurizan, Y.,Aziah, H.and Shamsul Azahari, Z.B. 2008. Kajian Perbandingan Gaya Hidup di Kalangan Remaja. <i>Presented at 12th MACFEA Conference</i>. 12 August 2008,Selangor. <p>Others:</p> <ol style="list-style-type: none"> 1. Mumtazah O. dan Nurizan Y. 2011. Penggunaan Lestari: Bagaimana Amalan Remaja?. Penerbit Universiti Putra Malaysia.
Awards/Certificates	<ol style="list-style-type: none"> 1. Kajian Perbandingan Gaya Hidup di Kalangan Remaja di Semenanjung Malaysia (Invention & Research Exhibition 2007): Bronze Medal Award
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Modelling of Karst Landform for Engineering Purpose
Project Number	06-01-04-SF0552
Project Leader and Team Members	Leader: Husaini Omar Members: Shattri Mansor and Azlan Abdul Aziz
Field of Research	Engineering Sciences
Project Summary/ Objectives	This research project has achieved the Karst Database, digital Topography of Landform Changes and visualisation modelling of Karst Landform.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Alkouri, O., Omar, H., Mohamed, A.A.,Rodzi, A.M. and Mansor, S. 2010.Geostatistical Analysis of Karst Landscape.<i>The Electronic Journal of Geotechnical Engineering (EJGE)</i>, Volume 15. 2. Omar, H., Alkouri, O., Mohamed, A.A., Muhammad, R.F. and Rodzi, A. 2009. Engineering and Environmental Impacts of Sinkholes on Karst Features in Kinta Valley. <i>ICASTOR Journal of Engineering</i>:Vol. 2, No. 3:1 3. Omar, H. and Abu-Shariah, M. 2008.Geohazard Assessments in Kuala Lumpur Limestone Formation. <i>Global Journal of Engineering & Technology</i>, Vol. 1, No. 1: 50-59. 4. Alkouri, O., Omar, H., Abu-Shariah, M., Mahmud, A.R. and Mansor, S. 2008. Change Detection of Karst Visualization Model. <i>Global Journal of Engineering & Technology</i>. Vol. 1, No. 2: 105-114. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Zeinab, B., Omar, H. and Yusof, Z. 2008. Delineation Karst Terrain Using Geoelectromegnetic Techniques. <i>Proceedings of An International Conference on Recent Advances in Engineering Geology (EG '08)</i>, Kuala Lumpur, Malaysia. 2. AlKouri, O., Omar, H., Fatihah, R., Komoo, I.andRodzi, M. 2008. Visualisation of Karst Landscape of Kinta Valley – a National Heritage to be Preserved. <i>Proceedings of An International Conference on Recent Advances in Engineering Geology (EG '08)</i>, Kuala Lumpur, Malaysia.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Amalan Tradisional Masyarakat Pribumi dan Pemeliharaan Biodiversiti di Sabah
Project Number	06-01-04-SF0555
Project Leader and Team Members	Leader: Adlina Ab. Halim Members: Normala Othman, Sri Rahayu Ismail, Jayum Anak Jawan and Nurul Nadia Ibrahim
Field of Research	Social Sciences
Project Summary/ Objectives	<p>This research has achieved all its objectives. This research has identified the traditional practices of indigenous communities in preserving biodiversity. Among the identified systems were <i>Tagal, tuba, bubu, buah liposu, pohon babas, telinting</i> and etc. Through this research, the impact on biodiversity as a result of abandoning traditional practices such as the Tagal system has been determined. The results shows that abandoning the traditional system had brought many negative effects on the river and its ecosystem. Now the traditional system has been applied again at Sungai Muroli in Kampung Luanti Baru, Ranau. Among the measures that can be taken to maintain the traditional practices of indigenous communities is to extend the traditional knowledge and to provide an understanding about the importance and impact of the traditional practices on biodiversity. Therefore, all parties should play an important roles and work together to preserve and promote traditional knowledge of the indigenous communities of Sabah.</p>
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none">1. Adlina Ab. Halim. 2009. Pengetahuan Tradisional dan Pemeliharaan Biodiversiti dalam kalangan Masyarakat Pribumi Sabah, <i>Jurnal Manusia dan Masyarakat</i>, Vol. 17. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none">1. Adlina Ab. Halim. 2008. Indigenous Knowledge and Biodiversity Conservation in Sabah. <i>Lestari Abstract No.4: Cities and Conservation Partnership towards sustainable cities</i>. UKM.2. Adlina Hj. Abd. Halim, Jayum Anak Jawan, Normala Othman and Sri Rahayu Ismail. 2008. Amalan Sistem Tagal dan Penjagaan Biodiversiti di Sabah. <i>Prosiding Sains Sosial Teras Pembangunan Modal Insan</i>.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Design and Development of OSCDM Transponders for Metro Networks
Project Number	06-01-04-SF0562
Project Leader and Team Members	Leader: Makhfudzah Mokhtar Members: Ahmad Fauzi Abas, Makhfudzah Mokhtar, Mohd Hanif Yaacob and Syed Alwee AlJunid
Field of Research	Engineering Sciences
Project Summary/ Objectives	This research designed and developed an OCDM Transponder and introduced a new OCDMA code called 'KS-code' which can be used together with the existing systems in a medium-distance Metropolitan Area Network. The architecture of the whole OCDMA transmission system has been completed. The point to point OCDM transmissions using KS-code was successfully analysed. The experimental work on the basic encoder and decoder has also been completed and analysed.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Ahmad Fauzi Abas., Ariya Hidayat., David Sandel., Biljana Milivojevic. and Reinhold Noe. 100 km Fiber Span in 292 km, 2.38 Tb/s (16 x 160 Gb/s) WDM DQPSK Polarization Division Multiplex Transmission Experiment without Raman Amplification. <i>Elsevier Journ. of Optical Fiber Technol</i>, Vol. 13. 2. Mohammad M. N., Hamarsheh, Mohamad K., Abdullah, Sabira Khatun. and Hossam. M. H. Shalaby, Fast Frequency Modulation Code Division Multiple Access Communication System. <i>Journal of Optics and Laser Technology</i>, Volume 39, Issue 3, 605-609. 3. Abdullah M. K., Aljunid S. A., S. A. Anas., Sahbudin R. K. Z. and Mokhtar M. A New Optical Spectral Amplitude Coding Sequence: Khazani-Syed (KS) Code. <i>ICICT 2007</i>, 266-278. 4. R.K.Z. Sahbudin., M.K.Abdullah., M.D.A.Samad., M.A.Mahdi. dan M. Mokhtar. <i>Incoherent Hybrid Subcarrier Multiplexed Spectral-Amplitude-Coding Optical CDMA System using Direct Decoding Detection Technique, ICICI 2007</i>. 16-150.

	Proceedings/Conference/Seminars: 1. M.K.Abdullah., ZainebA.Taki., M.D.A.Samad. and M.Mokhtar. 2007. Optimum Transmit Power for Optical CDMA Transmission Systems Considering SRS Effects. <i>IEEE International Conference on ICIAS 2007</i> , 25-28 Nov 2007.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Economic Well-being and Human Capital Investment of Female-headed Households
Project Number	06-01-04-SF0568
Project Leader and Team Members	Leader: Sharifah Azizah Haron Members: Jariah Masud, Zumilah Zainalaludin and Mansor Abu Talib
Field of Research	Social Sciences
Project Summary/ Objectives	The research was carried out to identify and measure the economic resources available to female-headed households (FHH). The data obtained were used to measure the human capital investment (mother's and children's education and skill development) among FHH; to determine FHH's knowledge and accessibility to familial and social support; the economic adjustments undertaken and constraints experienced by FHHs. To date, the research had produced three journal publications and have been presented at the 6th International Malaysian Studies Conference. Two more articles are in the process of submission to two international journals and two Master's theses are in progress.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mansur A.T., Sharifah Azizah H., Jariah M., Y. F. Chan. 2008 Who extends supports to the female headed household? <i>Malaysian Journal of Social Policy and Society</i>, Vol 5: 207. 2. Noorin, Y. M., Thamarai., M. Sharifah Azizah H. and Y. F. Chan. 2010. Human Capital Investment Expenditure among Women of Female Headed Household in Peninsular Malaysia, <i>Asian Social Science</i>, Vol 6:4 31-38. <p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. Sharifah Azizah H., Jasmine Adela M., Jariah M., Y. F. Chan. and Mansur A.T. 2008. Profile of Single Mothers in the Peninsula. The 6th International Malaysian Studies Conference (MSC6), 5-7 August 2008, Sarawak.
Awards/Certificates	1. Silver - PRPI UPM 2009

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Voltage Collapse Point Determination Technique Using Fuzzy-based Formulation
Project Number	06-01-04-SF0569
Project Leader and Team Members	Leader: Hashim Hizam Members: Norman Mariun, Jasronita JasniandSamsul Bahari Mohd No
Field of Research	Engineering Sciences
Project Summary/ Objectives	The project had successfully obtained the voltage stability limit from the PV curves from the studies done on several IEEE reliability bus systems and a practical system. A method based on Krylov subspace method was developed and can solve the convergence problem faced by conventional method in tracing the solution curves. A small reduction in computational effort was achieved using the new method.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. J. Jasni., N. Azis., H. Hizam., M. Z. A. Kadir., M. N. Mariun., S. B. M. Noor. and S. Sobri. 2008. An Efficient Generalized Minimized Residual Simulation Technique for Continuation Power Flow Studies. <i>Asian Journal of Applied Sciences</i>, v1(2): 136-146. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. J. Jasni., H. Hizam., M. Z. A. Kadir., N. Mariun and S. B. M. Noor. 2009. The Application Of Biconjugate Gradient Stabilized Method On Continuation Power Flow Algorithm. <i>International Engineering Convention</i>, 11-14 May 2009, Syria. 2. J. Jasni., H. Hizam., M. Z. A. Kadir., N. Mariun. and S. B. M. Noor. 2008. Determination Of Proximity To Static Voltage Collapse Using CPF-GMRES Method. <i>2nd IEEE International Conference on Power and Energy (PECon 08)</i>, Johor Bahru. 3. Hashim Hizam, Jasronita Jasni, Norhafiz Azis, M. Zainal Ab Kadir and W F Wan Ahmad. 2007. Determination Of Proximity To Static Voltage Collapse Using Continuation Power Flow Method. <i>World Engineering Congress 3 (Wec 3)</i>, 5-9 August 2007, Penang.

Awards/Certificates	1. Silver Medal, Pameran Rekacipta Penyelidikan dan Inovasi (PRPI) UPM 2007, A Tool to Determine Voltage Collapse Point using CPF-BICGSTAB (Hashim Hizam, Jasronita Jasni, Norhafiz Azis, Samsul Bahari Mohd Noor, Norman Mariun)
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of a Computer-based System for Design and Management of Vegetated Waterways
Project Number	06-01-04-SF0575
Project Leader and Team Members	Leader: Badronnisa Yusuf Members: Abdul Halim Ghazali, Megat Johari Megat Moh, Thamer Ahmed Mohammed, Katayon Saed and Roslizah Ali
Field of Research	Engineering Sciences
Project Summary/ Objectives	The effect of vegetations of varying characteristics on the flow velocity and flow resistant coefficient was quantified using computer simulation. However, the studies on the effect of vegetations of varying characteristics to water quality parameters (TSS) through computer simulation were only partially achieved. The results of computer simulation need to be validated by experimental results but the reliable experimental results available were insufficient. An interactive computer-based system for quick calculation of flow velocity and resistance coefficient in vegetated channel was built.
Publications/Products/ Outcomes	Proceeding/Conference/Seminar: 1. Badronnisa Yusuf., Othman A. Karim. and Siti Aminah Osman. 2007. Computer Simulation of Open Channel Flow with Submerged Flexible Vegetation, <i>Proceeding of Ninth Annual IEM Water. Resources Colloquium 2007</i> , 7 Julai 2007, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Computer-supported Collaborative Road Safety Learning Performance among Malaysian Children
Project Number	06-01-04-SF0582
Project Leader and Team Members	Leader: Ahmad Hariza Hashim Members: Mohd Nasir Mohd Taib, Mohamad Ibrani Shahrinin and Shamsul Azahari Zainal Badari
Field of Research	Social Sciences
Project Summary/ Objectives	The research had successfully innovated the methodological strategies on road safety learning by utilising Kidpad 1.0 as the base educational software to support single groupware in an educational computer environment. It had also identified the methodological strategies on children's learning performance whilst engaged with road safety multimedia learning package. The level of zone proximal development on young children in relation to their road safety knowledge was also examined. The difference between rural and urban young children's pedestrian and road safety competencies were also studied. At the end of the project a Enhanced Road Safety Module for young children is available for use.
Publications/Products/ Outcomes	Journal: 1. Ahmad Hariza Hashim. 2010. Malaysian Children's Interactions on the Prevalence of Road Safety: A Case Study in Primary Schools in Kelantan Darul Naim. <i>International Journal of Social Policy & Society</i> , Vol.7 Issue 1, 2010. Others: 1. Research Report on Multimedia-based Road Safety Modules for Preschoolers Knowledge Acquisition Among Perschool Children In An Educational Computer Environment.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Advancement of Transient Heat Transfer Testing Using Thermochromic Liquid Crystal Technique
Project Number	06-01-04-SF0601
Project Leader and Team Members	Leader: Abd Rahim Abu Talib Members: Shahnor Basri and Abdul Aziz Jaafar
Field of Research	Engineering Sciences
Project Summary/ Objectives	The main objective of the project was to develop a novel transient heat transfer liquid crystal testing using multiple gas temperature steps. An algorithm for multiple gas temperature stepping technique using thermochromic liquid crystal was developed. The proposed technique had improved the accuracy of the heat transfer parameters thermal prediction.
Publications/Products/ Outcomes	Proceeding/Conference/Seminar: 1. H.R. Mohd. Salleh., A.R. Abu Talib., N. Abdullah., N.A. Abdul Jalil. and A.S. Mokhtar. 2008. Experimental Investigation of Fast Response Heater for Transient Heat Transfer Application. <i>Proceeding of International Conference on Mechanical & Manufacturing Engineering (ICME 2008)</i> , Johor Bharu.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	The Impact of Indoor Air Quality on Longevity of Building
Project Number	06-01-04-SF0605
Project Leader and Team Members	Leader: Eris Elianddy Supeni Members: Aidy Ali and Nor Mariah Adam
Field of Research	Engineering Sciences
Project Summary/ Objectives	The overall objective of this project is to develop a holistic algorithm for indoor environment to predict the service life of Malaysian building. Critical indoor environment parameters that affect longevity of Malaysia buildings e.g. air exchange rate, age of air, ventilation efficiency, relative humidity, temperature, CO, CO ₂ , etc., were identified through the studies. The sites were audited for actual laboratory work. The data gathered during the audit were transferred into the algorithm. The results show that air exchange rate is the most important parameter to determine indoor air quality (IAQ). Presence of molds show poor indoor air quality, especially on buildings built on slopes.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of a Non-destructive Ground Penetrating Radar (GPR) Device for Road Pavement Density Measurement
Project Number	06-01-04-SF0607
Project Leader and Team Members	Leader: Helmi Zulhaidi Mohd Shafri Members: Raja Syamsul Azmir and Ratnasamy Muniandy
Field of Research	Engineering Sciences
Project Summary/ Objectives	UPM Ground Penetrating Radar (GPR) Road Pavement System consists of multipurpose programs designed to measure density of road pavement of types Hot Mix Asphalt (HMA) and Asphalt Concrete Wearing (ACW14). The method is found simple, fast, non-destructive and accurate to determine the density of road pavement where it can replace the traditional methods. This system involves 3 options which are aggregate calculation with predicted density program, attenuation with predicted density program and received signal power with predicted density program. The programs had been saved inVXE format which means that it would just allow a user to run it but not let them edit it. The program can be used to monitor density of the real road pavement continuously, quickly and easy. This system eliminates guesswork so that road construction can be effectively scheduled according to the road standard requirements. Continuous and appropriate use of this system can effectively aid in obtaining optimum road pavement density. The system developed for use with the GPR measurement setup provides density measurement accuracy within 4.7% error.
Publications/Products/ Outcomes	Publication: 1. Helmi Zulhaidi Mohd Shafri, RSA Raja Abdullah, Mardeni Roslee, and Ratnasamy Muniandy. 2008. <i>Optimization of ground penetrating radar (GPR) mixture model in road pavement density data analysis, IEEE IGARSS 08</i> , 6-11 July 2008, USA. Product: 1. UPM GPR Road Pavement System
Awards/Certificates	1. UPM PRPI 2009 - Gold medal

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Design and Fabrication of Environmental Gas Sensor Using Screen Printing Technique
Project Number	06-01-04-SF0608
Project Leader and Team Members	Leader: Rahman Wagiran Members: Norhisam Misron and Mohd Nizar Hamidon
Field of Research	Engineering Sciences
Project Summary/ Objectives	The project investigated the CO ₂ sensing characteristics of selected ceramic material, namely the NASICON. The effects of electrode pattern and structure on the electrical properties of NASICON thick film were investigated. The research had also studied sensing of alcohol, CO, smoke, CH ₄ and butane in addition to CO ₂ . Thick film CO ₂ gas sensors were fabricated using PIC microcontroller signal conditioning circuit. The thick film technique was combined with laser ablation technology to fabricate an array of thick film gas sensor and is going to be patented.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. M.H. Shahrokh Abadi, M.N. Hamidon, Abdul Halim Shaari, Norhafizah Abdullah, Norhisam Misron, Abu Bakar Salleh, Rahman Wagiran and Mina Malekzadeh. 2008. Alcohol Sensing Properties of Nanosized Thick Film WO₃ Doped With Y₂O₃. <i>Semiconductor Electronics, IEEE Proceeding, ICSE 2008</i>. 2. M.H. Shahrokh Abadi., M.N. Hamidon., Abdul Halim Shaari., Norhafizah Abdullah., Norhisam Misron., Abu Bakar Salleh and Rahman Wagiran. 2008. Thick-Film Nanosized Metal Oxide SnO₂ Doped By Y₂O₃ for Gas Sensing Applications. <i>Symposium on Engineering and Technology, SET 2008</i>, ISBN 978-983-43571-3-Sarawak. <p>Journal:</p> <ol style="list-style-type: none"> 1. M.H. Shahrokh Abadi, M.N. Hamidon, Rahman Wagiran, Abdul Halim Shaari, Norhisam Misron and Norhafizah Abdullah. 2009. Effect of Ytria on Gas Sensitivity of Tungsten Trioxide. <i>Sensors & Transducers Journal</i>, Vol. 104, Issue 5: 76-86.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Slope Stabilisation using Bioengineering (Live Pole) Technique
Project Number	06-01-04-SF0620
Project Leader and Team Members	Leader: Bujang Kim Huat Members: Faisal Ali, David H. Baker, Husaini Omar, Harwant Singh, Nordin Abd Rahman and Jamaloddin Noorzaei
Field of Research	Engineering Sciences
Project Summary/ Objectives	The main aim of this research is to carry out innovative eco-engineering research to evaluate the live pole array technique for stabilising slopes in tropical environment. There is a strong evidence that the typical saturated sloughing or flow type of failure observed on typically grassed slopes of highways in Malaysia fall within the depth of 1.5 m - 3.0 m. Therefore stabilisation of the upper 1.5 m - 3.0 m of unstable slopes or repaired slopes would provide considerable increase in slope performance against most future failures, and be attractive in terms of asset value management. The live pole technique will provide a viable solution to this problem.
Publications/Products/ Outcomes	Journals: 16 <ol style="list-style-type: none"> 1. Mafian, S., Huat, B.B.K., Barker, D.H., Singh, H. and Rahman, N.A. Green Slope Engineering Using Live Pole Technique on Tropical Slopes. <i>American Journal of Environmental Sciences</i>. (accepted for publication). 2. Mafian, S., Huat, B.B.K. & Prasad, A. Stability of Tropical Soil Slope Reinforced by Live Pole: Experimental and Numerical Investigation. <i>Journal of Soil and Water Conservation</i> (IF: 1.076) (accepted). 3. Mafian, S., Huat, B.B.K., Barker, D.H., Rahman, N.A. and Singh, H. 2009. Live Poles for Slope Stabilization in the Tropical Environment. <i>Electronic Journal of Geotechnical Engineering</i>. 14G. 4. Mafian, S., Huat, B.B.K., Barker, D.H. and Singh, H. 2009. Green Slope Engineering Using Live Pole Technique on Tropical Slopes. <i>Int. Journal of Sustainable Civil Engineering</i>. 1:1 19-39. 5. Mafian, S., Huat, B.B.K. and Ghiasi, V. 2009. Evaluation of Root Theories and Root Strength Properties in Slope Stability. <i>European Journal of Scientific Research</i>. 30:4 594-607.

Books :

1. Huat B.B.K., and Toll, D. (Eds). Handbook on Tropical Residual Soils Engineering. *Taylor and Francis*, United Kingdom.
2. Huat, B.B.K., Ali, F.H., Barker, D., Singh, H. and Omar, H. 2008. *Landslides in Malaysia: Occurrences, Assessment, Analysis and Remediation/Preventive Solutions*. ISBN 978-967-5026-39-3, (pp. 468). Universiti Putra Malaysia Press.
3. Huat, B.B.K. and Ali, F. 2007. *Ground Improvement Techniques*. ISBN 983-3455-56-5, 383p. University Putra Malaysia Press.
4. Huat, B.B.K. and Tan, J. (eds). 2008. *Proceedings 5th International Conference on Landslides, Slope Stability and the Safety of Infra-Structures*. CI Premier. Singapore. ISBN 978-981-08-0410-7.
5. Mohamad, A., Abdullah, C.H., Edil, T., Mahmud, M., Kuruoka, S. Huat, B.B.K., Hassan, N.R.N., Jamaluddin, S. and Shong, L.S. 2008. *Proceedings International Conference on Slope Malaysia 2008 (Landslide Awareness; Slope Mitigation & Prevention)*. REAM & PWD. 4-6 November 2008, Kuala Lumpur.

Proceedings/Conferences/Seminars:

1. Huat, B.B.K., Barker, D.H. and Mafian, S. 2008. Live Pole Technique for Stabilizing Hill Slope in Tropical Residual Soil Against Shallow Failures. *5th International Conference on Landslides, Slope Stability & The Stability of Infra-structures*. Huat & Tan (eds). CI Premier. 24-26 July 2008, Kuala Lumpur.
2. Jamaludin, S., Huat, B.B.K. and Omar, H. 2008. Landslide Hazard Assessment of a Cut-Slope Using Regression Analysis. *10th International Symposium on Landslide and Engineered Slope*, Chen et al (eds). Taylor and Francis, London.
3. Mafian, S., Huat, B.B.K., Barker, D.H. and Abdul Rahman, N. 2008. Bioengineering (Live Pole) Technique for Stabilizing Malaysian Hill Slopes against Shallow Failures. *International Conference on Slope Malaysia 2008*. Mohamad et al (eds). Public Works Department Malaysia. Kuala Lumpur. 4-6 November 2008.



	<p>4. Singh, H. and Huat, B.B.K. 2008. Baseline Data for Erosion and Landslide Risk Assessment: Availability and Adequacies. <i>International Conference on Slope Malaysia 2008</i>. 4-6 November 2008. Kuala Lumpur.</p> <p>Products:</p> <ol style="list-style-type: none"> 1. Guide for Selecting, Designing and Installing of Live Poles for Slope Stabilization (under preparation). 2. Large shear box <p>Others:</p> <ol style="list-style-type: none"> 1. Friendly Control of Soil Instability. Era Hijau. 2008. Department of Environment Malaysia. Vol. 1.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Zigbee Based Non-invasive Medical Sensors for Wireless Body Area Network
Project Number	06-01-04-SF0624
Project Leader and Team Members	Leader: Mohd Fadlee A Rasid Members: Mohd Hanif Yaacob, Nor Kamariah Noordin, Borhanuddin Mohd Ali and Mohd Adzir Mahdi
Field of Research	Engineering Sciences
Project Summary/ Objectives	Project was to design and implement a ZigBee based prototype sensors for ubiquitous biomedical signal monitoring. The sensors were then integrated to form a Wireless Body Area Network topology. New algorithms for WSN protocols were developed and found suitable for the WBAN. The WBAN sensors were then integrated with wide area connectivity via a GPRS mobile network. This enables SMS to be sent via GPRS or 3G mobile network from the system. This innovation had participated in exhibitions to break into commercial market. However, the prototype needs further enhancement prior to commercialisation.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. M. Hossein Fotouhi Ghazvini, Maryam Vahabi, Mohd. Fadlee A.Rasid. and Raja Syamsul Azmir Raja Abdullah. 2008. Improvement of MAC Performance for Wireless Sensor Networks. <i>Proceedings of the 13th International CSI Computer Conference</i>, 9-11 March 2008, Iran. 2. Muhammad Farhan Sjaugi., Mohamed Othman. and MohdFadlee A. Rasid. 2008. A New Route Maintenance Strategy for Dynamic Source Routing Protocol. <i>Proceedings of the 22nd International Conference on Information Networking 2008 (ICOIN 2008)</i>, 23 -25 January 2008, Korea. 3. Mohd Fadlee A Rasid. 2007. Presented at 15th International Conference on Advanced Computing and Communications, 2-4 July 2007. M. H. F. Ghazvini., M. F. A. Rasid., R. S. A. R. Abdullah.and M. Vahabi, EMAC. :Efficient MAC Protocol Design for Wireless Sensor Networks, <i>International Journal of Computer Science and Network security (IJCSNS)</i> . 5. Mohd Fadlee A Rasid. 2008.<i>Proceedings of the 5th IEEE and IFIP International Conference on Wireless and Optical Communications Networks (WOCN) 200</i>. 5-7 May 2008, Indonesia.



Awards/Certificates	1. Bronze Medal PRPI UPM 2007
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Artificial Neural Network (ANN) System for the Assessment of Bridge Conditions
Project Number	06-01-04-SF0626
Project Leader and Team Members	Leader: Mohd Saleh Jaafar Members: Salihudin Hassim, Izian Abd Karim and Jamaloddin Noorzaei
Field of Research	Engineering Sciences
Project Summary/ Objectives	The main objective of this research work was to develop a systematic and reliable tool to assess the condition of concrete bridges in Malaysia. The types of distress and suitable data which are responsible in predicting the behaviour of existing concrete bridge were determined. A database system was later established to allow for the development of ANN system. The MLFFNN (Multi-Layer Feed Forward Neural Network) for predicting the conditions of bridges was developed, tested and validated.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Design of Impeller for Improvement of Oxygen Transfer in Stirred Tank Bioreactor for Shear-sensitive Biological Systems
Project Number	06-01-04-SF0646
Project Leader and Team Members	Leader: Arbakariya Ariff Member: Rosfaeizan Mohamad
Field of Research	Biotechnology
Project Summary/ Objectives	The project had successfully designed the impellers for fermentation with high oxygen requirement and employing shear sensitive biological systems. The oxygen transfer, mixing and shear rate characteristics of the designed impellers were investigated. The performance of the impellers was tested in several fermentation processes with characteristics of shear-sensitive biological systems and high oxygen demand. The knowledge and experiences gathered during the design and testing were utilised to provide consultancy services to several local companies such as Malaysian Agri High Tech, MPOB and VRI.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Mohd Shamzi Mohamed., Rosfarizan Mohamad., Ramakrishnan Nagasundara Ramanan., Musa Albakri Abdul Manan. and Arbakariya B. Ariff. 2009. <i>American Journal of Applied Sciences</i> 6:5, 735-743. 2. Nurashikin Suhaili, Mohd Shamzi Mohamed, Rosfarizan Mohamad and Arbakariya B. Ariff. 2010. Gas-liquid mass transfer performance of dual impeller system employing Rushtons, concave-bladed disc (CD-6) turbines and their combination in stirred tank bioreactor. <i>Journal of Applied Sciences Research</i>, 6:3, 234-244. <p>Others:</p> <ol style="list-style-type: none"> 1. Mohd Shamzi Mohamed, Rosfarizan Mohamad, Musa Albakri Abdul Manan and Arbakariya B. Ariff. 2010. Enhancement of red pigment production by <i>Monascuspurpureus</i> FTC 5391 through retrofitting of helical ribbon impeller in stirred-tank fermenter. <i>Food Bioprocess Technology</i>, DOI 10.1007/s11947-009-0271-2.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Improvement of Raw Materials from Underutilised Timber Species Through Chemical and Densification Treatments for Value-added Laminated Products
Project Number	06-01-04-SF0656
Project Leader and Team Members	Leader: Zaidon Ashaari Members: Mohd Hamami Sahr and Edi Suhaimi Bakar
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	<p>The projects initially intended to determine the properties of selected under utilised timber species such as mahang (<i>Macaranga spp.</i>), senduduk (<i>Endospermum malaccensis</i>) and laran (<i>Neolamarkia cadamba</i>). However, laran was not available and later substituted with jelutung which was considered as a rarely used timber for commercial purpose. The properties of these species were studied and enhanced through chemical impregnation and densification treatments. The timbers were also tested for treatability with phenolic resin. Formulation of PF resin and formaldehyde catcher to reduce formaldehyde emission has also been established. Among the tree treatments, it was found that the most potential products from these species is Compreg laminates where it has potential to be used for parquet flooring, panelling and furniture components.</p>
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Aikfei Ang., Zaidon Ashaari., Edi Suhaimi Bakar., Mohd Hamami Sahri., Mohd Khairun Uyup. And Hamdan Husin. 2009. Enhancing the properties of mahang (<i>Macaranga spp.</i>) wood through acrylic treatment in combination with crosslinker. <i>Modern Applied Science</i> 3:11, 2-10. <p>Conferences:</p> <ol style="list-style-type: none"> 1. Loh Yueh Feng, Zaidon Ashaari, M.T. Paridah, B. Edi Suhaimi and H. Hamdan. 2009. Biological Resistance of Phenolic-Treated Palm Plywood. <i>The Fourth International symposium on Veneer Processing and Products</i> 24 - 27 Mei 2009, Finland. 2. Loh Yueh Feng, Paridah Md. Tahir, Zaidon Ashaari, Nor Yuziah Mohd Yunus. 2007. <i>Properties enhancement of palm plywood through veneer pre-treatment with phenolic resin</i>. 28 Oct. – 2 Nov. 2007, Taiwan.

	<ol style="list-style-type: none"> 3. Wong, T.S., Paridah, M.T., Zaidon, A., Edi Suhaimi, B. and Azmi, i. 2008. Effects of Presteamming and compressing pressure on the dimensional stability of densified wood. <i>National Conference on Forest Products 2008. NCFP 2008</i>. 29-31 October 2008, Kuala Lumpur. 4. Zaidon Ashaari., Edi S. Bakar. And Paridah Md. Tahir. 2010. Compreg laminates made from low density tropical hardwoods. <i>Proceedings of the International Convention of Society of Wood Science and Technology and United Nations Economic Commission for Europe – Timber Committee October 11-14, 2010, Switzerland</i>.
Additional Information	Linkages: Malaysian Adhesive Chemical Sdn Bhd. Shah alam
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Analisis Keperluan dan Pemetaan Inventori Keupayaan Menggunakan Sistem Maklumat Geografi (GIS): Satu Strategi untuk Perancangan Program Pengupayaan Komuniti Orang Asli
Project Number	06-01-04-SF0659
Project Leader and Team Members	Leader: Asnarulkhadi Abu Samah Members: Zahid Emby, Ja'afar Adnan, Rahim Md Sail, Mariani Mansor and Jamilah Othman
Field of Research	Social Sciences
Project Summary/ Objectives	The general objectives of this study is to identify the needs and capacities among the Orang Asli and to develop the geographic information system as a basic planning strategy for their community development programme. The needs of the Orang Asli based on their ethnic and development were identified. The capacities inventory (human capital, social capital, economic capital, built capital and natural capital) of the Orang Asli were developed. The accessibility to resources and its utilization in developing the Orang Asli were identified. The social mapping based on the needs and capitals (including skills) of the Orang Asli using GIS were developed.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Profesionalisme dalam Kerja Belia di Malaysia: Potensi dan Cabaran (Professionalism among Youth Work Practitioner in Malaysia: Potential and Challenges)
Project Number	06-01-04-SF0665
Project Leader and Team Members	Leader: Khairuddin Idris Members: Azizan Bahari, Ismi Arif Ismail, Turiman Suandi and Ezhar Tamam
Field of Research	Social Sciences
Project Summary/ Objectives	The main objective of this research was to profile youth work practitioners in Malaysia. Their level of competency, integrity and altruism were investigated as well as their work culture. Issues and ethic in youth work were among the areas studied. The research had determined the potentials and challenges among youth work practitioners in Malaysia.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Ezhar, T., Turiman, S., Ismi Arif, I., Steven Eric, K., Dzu hailmi, D., Khairuddin, I. and Nur Fatihah, A.B. 2008. Benchmarking Malaysian Youth Work Practitioner Ethics. <i>The International Journal of Interdisciplinary Social Sciences</i>, Vol. 3 <p>Proceedings/Conferences/Seminars :</p> <ol style="list-style-type: none"> 1. Ezhar, T., Ismi Arif, I., Nur Fatihah, A.B., Steven Eric, K., Khairuddin, I., Turiman, S. and Dzu hailmi, D. 2008. Professionalism of Youth Work: Mapping Malaysian Youth Work Practitioner Ethics. In: (Ed. Jamilah Othman, Md. Salleh Hassan, Bahaman Abu Samah, Jegak Uli, Nobaya Ahmad & Mazanah Muhamad), <i>Seminar Hasil Penyelidikan IPSAS 2008</i>, Institut Pengajian Sains Sosial, UPM. 2. Steven Eric, K., Ezhar, T. Nur Fatihah, A.B., Turiman, S., Khairuddin, I., Ismi Arif, I. and Dzu hailmi, D. 2008. Exploring Professionalism Among Youth Workers in Malaysia: Development and Initial Testing of the Youth Worker Professionalism Scale (YWPS). <i>Proceedings of the International Conference on Youth Research 2008, Developing A Glocal Generation: Directions & Challenges</i>, 16-17 Dec, Marriott Hotel Putrajaya, Malaysia,



	<p>3. Turiman, S., Steven Eric, K., NurFatimah, A.B., Khairuddin, I., IsmiArif, I., Ezhar, T. and Dzu hailmi, D. 2008. Volunteerism among Malaysian Youth Work Practitioners. <i>Proceedings of the International Conference on Youth Research 2008</i>, Developing A Glocal Generation: Directions & Challenges, 16-17 Dec, Marriott Hotel Putrajaya, Malaysia</p> <p>4. Ezhar, T., IsmiArif, I., Nur Fatimah, A.B., Steven Eric, K., Khairuddin, I., Turiman, S. and Dzu hailmi, D. 2008. Professionalism of Youth Work: Mapping Malaysian Youth Work Practitioner Ethics. <i>Proceedings of the International Conference on Youth Research 2008</i>, Developing A Glocal Generation: Directions & Challenges, 16-17 Dec, Marriott Hotel Putrajaya, Malaysia</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Evaluate the potential of Agriculture Byproducts as Alternative Filter Packing Material for the Biofiltration of Air Streams Contaminated by Volatile Organic Compounds
Project Number	06-01-04-SF0677
Project Leader and Team Members	Leader: Puziah Abdul Latif Member: Ahmad Makmom Abdul
Field of Research	Environmental Sciences
Project Summary/ Objectives	The main objective of this project is to select the optimum composition of packing material or media for a biofilter. The packing material will consist of a mixture of agricultural byproduct and inert material. To achieve this, physical and structural characteristics of the packing material or media made from different combination of agricultural by-product and inert material were studied. The performance of the packing material or media to treat BTEX vapours stream was evaluated by determining the removal efficiency under varying process parameters and operating conditions. The project had successfully come out with two preparations. The first was a preparation of activated carbon from durian shell and mangosteen peel where the physical and chemical characteristics were studied. Its performance to remove VOC by physical adsorption technique was evaluated. The other was a preparation of pellets from a mixture of durian shell and calcium hydroxide. The performance evaluation for these pellets using immobilised microbes is still on-going.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars : <ol style="list-style-type: none"> 1. Seyed Mahmoud Mehdinia. 2009. Removal of Hydrogen Sulfide by Physico-Biological Filtration using Biofilm and Rice Husk. <i>Proceeding of the Postgraduate Colloquium</i>. 13-16 April, Selangor. 2. Tham Yee Jun, Puziah Abdul Latif and Ahmad Makmom Abdullah. 2008. Determination of physical characteristic of Activated Carbon derived from durian shell, <i>CUTSE International Conference 2008</i>, 24-27 Nov, Miri Sarawak Malaysia. 3. Puziah Abdul Latif. 2009. Characterization and Evaluation on the Potential of Activated Carbon Derived from Durian Shell for the Adsorption of Toluene Vapours, <i>Proceeding of the Postgraduate Colloquium</i>, 13-16 Apr, Selangor.



	<ol style="list-style-type: none">4. Puziah Abdul Latif. 2009. Removal of Hydrogen Sulfide Using Chemically Treated Activated Carbon of Mangosteen Peel, <i>Proceeding of the Postgraduate Colloquium</i>, 13-16 Apr, Selangor.5. Hidayah Abdul Latip. 2009. Characterization and Preparation of Biofilter for Ammonia Gas Removal by, <i>Proceeding of the Postgraduate Colloquium</i>, 13-16 Apr, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Application of Fecal Sterols in Investigating Fecal Pollution in Major Klang Valley Rivers and Estuaries
Project Number	06-01-04-SF0680
Project Leader and Team Members	Leader: Mohamad Pauzi Zakaria Member: Salmijah Surif
Field of Research	Chemical Sciences
Project Summary/ Objectives	The project had quantified and qualify fecal sterols in environmental samples collected in the Klang River. Special molecular techniques to investigate fecal pollution in major Klang Valley Rivers and Estuaries were developed.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Aminah Mag Piah, MasniMohd Ali danCheAbd. Rahim Mohamed and Mohamad Pauzi Zakaria.2008. Taburan sterol dalam sedimen Sungai Sepang Besar, Selangor. <i>Sains Malaysiana</i>, 37 (4): 307-312. <p>Proceedings/Conferences/Seminars :</p> <ol style="list-style-type: none"> 1. Mohamad Pauzi Zakaria. 2009. Microbial study of different types of sewage and effluent as a tool for Source indentification using polymerase chain-reaction denaturing Gradient gel electrophoresis (pcr-dgge). <i>Proceedings of postgraduate Colloquium</i>, 13-16 Apr, Selangor. 2. Mohamad Pauzi Zakaria. 2009. Development and application of HPLC/MS/MS method for determination of Pharmaceutical and synthetic hormones in stps effluents along langatRiver and receiving water. <i>Proceedings of postgraduate colloquium</i>, 13-16 Apr, Selangor. 3. Mohamad Pauzi Zakaria. 2009. Determination of perfluorooctanoic acid (PFOA) and perfluorooctane Sulfonate (PFOS) in water samples of langat river. <i>Proceedings of Postgraduate colloquium</i>, 13-16 Apr, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	A Study of the Performance of Home Water Filters for Improving Water Quality
Project Number	06-01-04-SF0682
Project Leader and Team Members	Leader: Mohammad Ismail Yaziz Member: Mohd Kamil Yusoff
Field of Research	Environmental Sciences
Project Summary/ Objectives	The objective of this project was to determine the variations in potable water quality of service pipe at selected residential properties. It also determined the differences in potable water quality from the kitchen tap and from the water storage tanks in the selected areas. The efficacy of Point-of-Entry (POE) and Point-of-Use (POU) potable water filters in removing bacterial and chemical contaminants from potable water was validated. Initially the research was to be done in the Petaling Jaya and Kuala Lumpur areas. However, due to some changes and upgrades made to suit the time line, the research was conducted in Kajang areas.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars : 1. Mohammad Ismail Yaziz. 2008. A Study of the Performance of Selected POU's and POEs Water ZFilters on the Maintenance of Potable Water Quality Proceeding of The National Conference on Environment and Health.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Visual Impact Assessment (via) as an Urban Design Approach towards Creating Visual Qualities in Urban Areas
Project Number	06-01-04-SF0684
Project Leader and Team Members	Leader: Azizi Muda Members: Mustafa Kamal Mohd, Kamaruddin Shamsuddin, and Azharul Sham Hamsah
Field of Research	Environmental Sciences
Project Summary/ Objectives	The project had determined the relationship between urban design and urban visual qualities. The impact of urban development on urban visual qualities was also studied. The results were used to develop principles and guidelines for visual impact assessment for sustaining urban visual qualities.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars : <ol style="list-style-type: none"> 1. Azizi Muda and Noor Azida Mutalib. 2009. Motivation and Limitation Factors for Leisure Activities among Professional Workers: Research on Lecturers of UiTM Shah Alam, <i>The 2nd National Conference SSE 2009</i> , 2-3 June. 2. Azizi Muda and Zakiah Ponrahono. 2009. Tioman As An International Tourism Island: In Perspective of Planning Development, Management and Guidelines, <i>The 2nd National Conference SSE 2009</i> , 2-3 June. 3. Azizi Muda and Darylynn Chung. 2009. Kesan Pelancongan Ke Atas Kualiti Visual dan Sosial Pulau Tioman, <i>The 2nd National Conference SSE 2009</i> , 2-3 June.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Determination of Effectiveness of Traffic Noise Barrier in Selected Residential Areas of Klang Valley
Project Number	06-01-04-SF0685
Project Leader and Team Members	Leader: Ramdzani Abdullah
Field of Research	Environmental Sciences
Project Summary/ Objectives	The project had identified the different designs of roadside barriers in the Klang Valley. The daily noise level variations without barriers were measured. The design reduction level were estimated and compared against the actual noise reduction. The study had also identified the effectiveness of different barriers in relation to the design and their placements. A journal article was published and will be distributed to the relevant organisation such as Lembaga Lebuhraya Malaysia and Jabatan Kerja Raya.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Bavani Nadaraja, YapXin Wei and Ramdzani Abdullah. 2010. Effect of Traffic Noise on Sleep: A Case Study of Serdang Raya, Selangor, Malaysia. <i>Environment Asia 3 Special Issue</i> :149-155. <p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. Yap Xin Wei, Bavani Nadarajah, Ramdzani Abdullah. 2007. Effect of Traffic Noise on Sleep: A Case Study in Serdang Raya, Selangor. <i>Proceedings of Seminar on The Planning of Urban Energy and Environmental Systems</i>, 10-11 Sept, Universiti Teknologi Malaysia, Johor Bahru.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Effective Leadership Communication in Malaysian Organisations
Project Number	06-01-04-SF0691
Project Leader and Team Members	Leader: Lailawati Mohd Salleh Member: Md. Salleh Hassan
Field of Research	Social Sciences
Project Summary/ Objectives	The project was able to obtain respondents' perception of leadership style, personality and values as they relate to communication competence. These three variables captured the effects of motivational and effective leadership communication, be it negative or positive. Two interviews with prominent figures namely, Tan Sri Dzulkifli Abd Razak and Tun Mahathir, were conducted. Their responses on communication competence added values to the research findings. A training module was developed to complement the findings that would be published in journals.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Studies on Plastic Pellets and Hazardous Chemicals in Shorebird's Feeding Sites
Project Number	06-01-04-SF0715
Project Leader and Team Members	Leader: Ahmad Ismail Members: Abd Rahim Ismail and Mohamed Zakaria Hussin
Field of Research	Environmental Sciences
Project Summary/ Objectives	The habitat quality of migratory shorebirds was investigated at a specific location in Kuala Gula Bird Sanctuary. The distribution of plastic pellets and hazardous materials was studied at a specific location in Kuala Gula Bird Sanctuary. The impact of plastic pellets and hazardous chemicals on migratory shore birds was assessed at Selangor coastline as an example.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Enhancement for Design of Interactive Web-based Instructional System with RSS (Really Simple Syndication)
Project Number	06-01-04-SF0718
Project Leader and Team Members	Leader: Sidek Abd Aziz Members: Mohd Farid Jaafar and Hamidah Meseran
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project had analysed the information overloading and filtering e-learning. An e-learning dissemination method was designed and developed. The effectiveness of information dissemination in e-learning was assessed.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	A General Equilibrium Analysis of Economic Impacts of High Energy Prices in Malaysia
Project Number	06-01-04-SF0726
Project Leader and Team Members	Leader: Zakariah Abdul Rashid Member: Mohd Yusof Shaari
Field of Research	Economics, Business and Management
Project Summary/ Objectives	The purpose of this study was to determine the economic impact of current increase in energy price on the Malaysian economy. Potential effects of higher energy price on selected macroeconomic variables such as costs of production, growth, government's revenue, employment and income distribution were determined. The economic relationship between energy price and income disparity in the economy was studied. The economic linkages between energy industries and non-energy industries in the economy were identified.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Preparation and Evaluation of Quantum States through Optical Methods
Project Number	06-01-04-SF0731
Project Leader and Team Members	Leader: Ionel Valeriu Grozescu Members: Mohd. Yusof Sulaiman, Jumiah Hassan, Hishamuddin Zainuddin and Mohd Maarof H.A. Moks
Field of Research	Engineering Sciences
Project Summary/ Objectives	This project has a high degree of novelty not only in Malaysia but in the world. This research is part of the new field entitled Quantum Information (QI). QI is an inter-disciplinary research field that, at the moment, is an expensive but promising field. It promises a revolutionary transformation of the IT industry, with immediate consequences on internet security. We have presented our research to different exhibitions in order to popularise QI technologies and its future advantages.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of an Intergrated Biodiversity Support System at Landscape Level
Project Number	06-01-04-SF0734
Project Leader and Team Members	Leader: Shattri Mansor Members: Loh Kok Fook, Helmi Zulhaidi Mohd and Zailani Khuzaimah
Field of Research	Environmental Sciences
Project Summary/ Objectives	An image based algorithm for biodiversity characterisation at landscape level monitoring using high resolution satellite technologies was developed. As a result, a multi-criteria decision support tools for bio-conservation zoning would indicate a certain area is at high risk of deforestation or at low risk deforestation. The outcome of this project is planned toward development of GIS compatible software of decision support tools for biodiversity monitoring.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Predictors of School Counselors' Commitment towards Counseling Profession: Its Implication on Students' Career Development
Project Number	06-01-04-SF0738
Project Leader and Team Members	Leader: Ab. Rahim Bakar Members: Ramlah Hamzah
Field of Research	Social Sciences
Project Summary/ Objectives	The commitment of school counselor is the main point of study for this project. Their level of commitment towards the counseling profession was investigated. The outcome of the studies allowed us to predict the level of career commitment, work values and job satisfaction along with career competency of school counselors. The predictors of Malaysian school counselors had also been identified.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Ab. Rahim Bakar, Shamsiah Mohamed and Thevadas, R. 2009. Job satisfaction among Malaysian school counselors. <i>International of Knowledge and Management</i>, V6 2. Ab Rahim Bakar, Noor Syamilah Zakaria and Shamsiah Mohamed. 2011. Malaysian Counsellors' Self-Efficacy: Implication for Career Counselling. <i>International Journal of Business and Management</i> (in press). 3. Ab Rahim Bakar, Shamsiah Mohamed and Syamilah Zakaria. 2011. Work Values of Malaysian School Counselors: It's Impact on School Counseling. <i>Journal Social Science</i> (in press)
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	The Formation of Inter-ethnic Perceptions and Their impact on Ethnic Relations in Malaysia
Project Number	06-01-04-SF0858
Project Leader and Team Members	Leader: Lee Yok Fee Members: Ngeow Yeok Meng, Jayum Anak Jawan and Sarjit Singh Darshan
Field of Research	Social Sciences
Project Summary/ Objectives	The project was carried to study the inter-ethnic perceptions amongst the Malay, Chinese, Indian and other ethnic groups in Malaysia. The outcome of the research had given the general picture of the negative and positive inter-ethnic perceptions. Historical events, experiences, socialisation, mass media, religions and interaction patters were the most obvious factors that had influence the development of those perceptions. However, in general, all respondents from the various ethnic groups agreed that their parents had encouraged them to interact with other ethnic groups.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Dropout Prevention Practices of "turned around " At-risk Secondary Schools
Project Number	06-01-04-SF0869
Project Leader and Team Members	Leader: SharifahMd Nor Members: Norlizah Che Hassan, Rusnani Abdul Kadir and Samsilah Roslan
Field of Research	Social Sciences
Project Summary/ Objectives	The project investigated strategies used by "turned around" at-risk secondary school towards excellence. These strategies were analysed for their effectiveness. At the end of the project term, the model for Dropout Prevention for Malaysian at-risk Secondary Schools was developed. Several papers were published and presented in international and national journal/ conference.
Publications/Products/ Outcomes	Journal: 1. Md Nor, Sharifah and Roselan, Samsilah. 2009. Turning around at-risk school: What effective principals do. <i>International Journal on School Disaffection</i> , 6 (5) : 21-29.
Contact Institution/Entity Address	Universiti Putra Malaysia (UPM) Universiti Putra Malaysia, 43400 UPM Serdang, Selangor.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	The Evaluation of Reading and Literacy Intervention Programme for Early Schoolers
Project Number	06-01-04-SF0874
Project Leader and Team Members	Leader: Rahil Mahyuddin Members: Samsilah Roslan, Habibah Elias and Sharifah Md Nor
Field of Research	Social Sciences
Project Summary/ Objectives	The project investigated strategies used by schools to identify reading difficulties among early schoolers. The existing reading and literacy programmes for early schoolers such as KIA-2M and PROTIM were examined based on the best practices. The main outcome of the research is an assessment inventory to assess areas of weaknesses of any intervention program for primary schools particularly for reading and literacy skills and this inventory will be commercialised through a website established by Content-Capital Sdn. Bhd.
Publications/Products/ Outcomes	Journal: 1. Rahil Mahyuddin, Sharifah Md Nor, Samsilah Roslan, Habibah Elias. 2009. Intervention Program for Early Readers: The Teething Problems. <i>The International Journal of Learning</i> , Vol. 16, Issue 6 : 169-176.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Molecular Epidemiology of Community Acquired Methicillin Resistant <i>Staphylococcus aureus</i> (CA-MRSA) and Hospital Acquired-MRSA (HA-MRSA) in Malaysia and the Impact to Health Care
Project Number	06-01-04-SF0885
Project Leader and Team Members	Leader: Zamberi Sekawi Members: V. Neela, Norlijah Othman and Mariana Nor Shamsudin
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The projects initiated an investigation to determine the prevalence of CA- and HA-MRSA in community and hospitals. The epidemiology study of predominant and sporadic methicillin-resistant <i>Staphylococcus aureus</i> (MRSA) strains in a central teaching and referral hospital in Kuala Lumpur, Malaysia was carried out. This is done on the basis of spa sequencing, multilocus sequence typing (MLST), staphylococcal cassette chromosome mec (SCCmec) typing, and virulence gene profiling. During the period of study, the MRSA prevalence was 44.1%, and 389 MRSA strains were included. In addition for the first time CA-MRSA was recognised and reported with low percentage of PVL gene from community. Moreover molecular characterisation of MSSA circulating in the hospital and community settings show that certain clones and virulence genes are source specific. However, the observed diversity is clearly higher than among hospital or community-acquired MRSA. The current study has defined a molecular dataset for nosocomial and community MSSA in Malaysia.
Publications/Products/ Outcomes	Journal: 1. Zamberi Sekawi. 2008. First CA-MRSA in Malaysia. <i>Journal of Medical Microbiology</i> 2008 PVL genes in clinical and community isolates in Malaysia. <i>International Journal of Infectious Diseases</i> . Proceeding/Conference/Seminar: 1. Zamberi Sekawi. 2008 Nasal carriage of <i>Staphylococcus aureus</i> in 7-9 age groups in healthy school children in Serdang, Selangor in Spread of SCCmec type V MRSA in a public hospital in Malaysia. <i>13th ISSSI</i> , 7-10 Sept , Cairns Australia.



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Chemical Fingerprint Study of Capsule Formulation: A Step towards Halal Authentication for Capsule Dosage Form
Project Number	06-01-05-SF0017
Project Leader and Team Members	Leader: Mohd Nizam Mordi Members: Norziah Mohd Hani, Sabariah Ismail and Mohamad Nasir Mohamad
Field of Research	Chemical Sciences
Project Summary/ Objectives	The main objectives of the project was to develop analytical methods of IR-spectroscopy, UV-spectroscopy and mass spectrometry for the identification of chemical fingerprint of various pharmaceutical capsules, originated from animals, plants and synthetic material. The methods using IR-spectroscopy and mass spectrometry have successfully identified the chemical fingerprint of gelatine and capsules made from gelatin. However, UV-spectroscopy was not able to achieve this objective. The origin of the capsules can be determined when analysed using GC-MS and classified using certain amino acids chemical fingerprint and partial least square-discriminant analysis (PLS-DA). FT-IR method developed is a very handy to differentiate gelatine from various origin and could be used in the testing services. GC-MS on the other hand is useful to differentiate capsules using gelatine from various origin and could be used in the testing services.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	The Development of Bio-optical Sensor Multispectral Algorithms and System for Measuring Cell Freshness
Project Number	06-01-05-SF0034
Project Leader and Team Members	Leader: Mohd Zubir Mat Jafri Members: Wong Chow Jeng, Mohamad Suhaimi Jaafar, Khiruddin Abdullah, Nasirun Mohd Saleh and Faisal Abdullah
Field of Research	Physical Sciences
Project Summary/ Objectives	The main objective of this project is to develop a new bio-optical sensor which can measure the freshness of biological cells. The sensor was developed along with multispectral algorithms which can correlate the backscattering of the multiple spectrum of light with the cell freshness. The implementation of the algorithms was tested with an experimental setup designed for this purpose. The prototype of this new sensor is an innovation that is ready for technology transfer.
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. A. F. Omar and M. Z. MatJafri. 2008. The Analysis on NIR Spectral Reflectance Linearization and Gradient Shift in Monitoring Apples and Pears Decay, <i>Asian Journal of Food and Agro-Industry</i>, 1(04) : 223-231. <p>Proceedings/Conferences/Seminars :</p> <ol style="list-style-type: none"> 1. N. Othman, A. F. Omar, C. K. Sim, M. Z. Mat Jafri and H. S. Lim. Water Turbidity Measurements in Endau Rompin National Park Area Using Water Quality Fiber Sensor, <i>The International Society for Southeast Asian Agriculture Sciences</i>. 2. A. F. Omar and M. Z. MatJafri. Consistency Test on a Newly Develop Water Quality Fiber Sensor, <i>Proceedings of The Sixth Regional IMT-GT UNINET Conference</i>, pp. 388-392. 3. A. N. Alias, M. Z. Mat Jafri, H. S. Lim, K. Abdullah, N. Mohd. Saleh and F. Mohamad, 2008, Aerosol Optical Depth and Distribution Observation During Haze Period Using Satellite Remote Sensing, <i>Persidangan Peringkat Kebangsaan Persekitaran & Kesihatan 2008</i>, , 29 - 30 Okc, Kota Bahru, Kelantan.

	4. A. F. Omar and M. Z. MatJafri. 2009. Simulation and Experimental Identification of Bifurcated Optical Fiber Configurations Efficiency", <i>The proceeding of IMFP2009 (Third International Meeting on Frontiers of Physics 2009)</i> , 12-16 Jan, Awana Genting Highland, Malaysia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development and Evaluation of Bilayer Photocatalysis-adsorption Hybrid System for Use in Solar Detoxification of Environmental Pollutants
Project Number	06-01-05-SF0038
Project Leader and Team Members	Leader: Mohd.Asri Nawi Members: A. B. M. Helal Uddin and Bahrudin Saad
Field of Research	Environmental Sciences
Project Summary/ Objectives	The project initially tried to understand the role and influence of adsorption on the efficiency of photocatalytic processes. However, this was not achieved as per original hypothetical term. Instead of producing nitrogen enriched peat soil doped TiO ₂ , the peat soil was used successfully as carbon dopant to produce carbon doped TiO ₂ . Other photocatalysis-adsorption hybrid systems for the visible light and solar photocatalytic detoxification of model pollutants were also evaluated. The most effective was found to be TiO ₂ /chitosan bilayer and TiO ₂ /activated carbon bilayer. Detailed works on phenol, RR4 azo dye, methylene blue and 2-4-D were also studied. The mechanism involved transformation of chitosan into its oxidised form, and self sensitisation of pollutants adsorbed on chitosan underlayer. On top of the objectives achieved, the project had also successfully modified and immobilised P25 TiO ₂ . A continuous flow solar reactor prototype was also successfully developed and tested.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Phytochemical Investigation and Biological Activity Evaluation of Two Malaysian Plant for Their Medicinally and Modification of Phytochemicals from These Plants
Project Number	06-01-05-SF0051
Project Leader and Team Members	Leader: Hasnah Osman Members: Chan Kit Lam and Afidah Abdul Rahim
Field of Research	Chemical Sciences
Project Summary/ Objectives	This project has conducted a thorough phytochemical investigation and biological assessment of the constituents of <i>Smilax myosotiflora</i> and <i>S. macrophylla</i> . The bioactive compounds from <i>Smilax myosotiflora</i> and <i>S. macrophylla</i> were determined. The results were used to produce a standard operating procedure which would be an asset in phytochemical research. Initially the project was scheduled for 3 year, however, the period was reduced to two years. As a result, some of the objectives were not achieved. However, the project had produced one PhD candidate who is planning to continue the research work in natural products.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Intelligent Monitoring System for Palm Oil Refining Processes
Project Number	06-01-05-SF0093
Project Leader and Team Members	Leader: Norhashimah Morad Members: Fazilah Ariffin, Norli Ismail and Lim Chee Peng
Field of Research	Engineering Sciences
Project Summary/ Objectives	Generally, the project had successfully developed a model based on Artificial Neural Networks to predict the quality of the refined bleached deodorised palm oil (RBDPO) based on the processing parameters and quality of the crude palm oil in feed. The model was also able to diagnose potential faults in processes and to choose the best processing parameters. The software was developed based on off-line data since the oil refining company, which acts as a collaborator in this project, did not allow any on-line tapping of data. For this software to be of any commercial value, it has to be based on on-line input, so that decisions can be made based on real-time processes. This is especially important for a palm-oil refinery, since the processes are continuous. Further work has to be done to using this software to include on-line data.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars : 1. Norhashimah Morad. 2007. Application of the Fuzzy ARTMAP Neural Network to Prediction of the Quality of Refined Bleached Deodorized Palm Oil. <i>International Seminar on Neural Networks</i> , Beijing. 2. Norhashimah Morad. 2008. Prediction on the Quality of the Refined Bleached Deodorized Palm Oil (RBDPO) using Artificial Intelligence Technique, <i>National Seminar on Palm Oil Milling, Refining Technology, Quality and Environment</i> , Dec.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Study on Effectiveness of Capillary Barrier as Landfill Cover under Tropical Climate
Project Number	06-01-05-SF0108
Project Leader and Team Members	Leader: Hamidi Abdul Aziz@Abdul Rahman Members: Mohamad Razip Selamat, Rozi Abdullah and Ismail Abustan
Field of Research	Engineering Sciences
Project Summary/ Objectives	The project had studied the mechanism of capillary barrier effect for landfill cover design. The parameters controlling the effectiveness of the barrier were determined. The capillary barrier was used as landfill cover to contain buried waste where its effectiveness under tropical climate was studied. The suitability of the barrier for use in local soils were also evaluated.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Sustainable Transport Index Based on the Performance of Urban Public Transport System
Project Number	06-01-05-SF0109
Project Leader and Team Members	Leader: Leong Lee Vien Member: Ahmad Shukri Yahaya
Field of Research	Engineering Sciences
Project Summary/ Objectives	The general aim of this research was to create a practical mechanism to evaluate the condition of local transport systems in terms of its sustainability. The study had focused on urban public transport, as they played a critical role to ensure sustainability of the transport system. The parameters influencing sustainability of urban public transport system were identified. The selected parameters were used to develop a fuzzy logic model which is capable of evaluating the sustainability of urban public transport system in selected areas of Malaysia.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars :</p> <ol style="list-style-type: none"> 1. Leong Lee Vien and Ahmad Farhan Mohd. Sadullah. 2010. Sustainable Transportation Indicators: Case Study of Users from Kuala Lumpur and Penang. <i>24th ARRB Conference</i>, 12 – 15 Oct, Melbourne, Victoria. 2. Jen Sim Ho, Ahmad Shukri Yahaya, Ahmad Farhan Mohd Sadullah, Lee Vien Leong. 2009. Segmentation of Factors Influencing Car and Motorcycle Users in KlangValley. <i>8th International Conference of the Eastern Asia Society for Transportation Studies</i>, 16 – 19 Nov 2009, Indonesia. 3. Lee Vien Leong, Jen Sim Ho and Ahmad FarhanMohdSadullah. 2009. Preference of Travellers for Sustainable Transportation Planning Objectives in Klang Valley, Malaysia. <i>Proceedings 13th REAAA Conference</i>, 23 – 26 Sept, Incheon, Korea. 4. Jen Sim Ho, Lee Vien Leong Ahmad Farhan Mohd Sadullah. 2009. Assessing Travellers' Perceptions for Achieving Sustainable Transportation: A Case Study in KlangValley. <i>Proceedings 13th REAAA Conference</i>, 23 – 26 Sept, Incheon, Korea.

	5. J.S. HO, Ahmad F. Sadullah and Leong Lee Vien. 2008. Understanding Travel Behaviour: An Important Approach To Switch Private Car Users To Public Transport. <i>EASTS International Symposium on Sustainable Transportation incorporating Malaysian Universities Transport Research Forum Conference 2008 (MUTRFC08)</i> , 12-13 Aug, Johor, Malaysia.
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Cancellor (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Optimised Image Analysis and Neural Network Techniques for Cancer Detection
Project Number	06-01-05-SF0132
Project Leader and Team Members	Leader: Harsa Amylia Mat Sakim Members: Umi Kalthum Ngah, Mohd Rizal Arshad and Nor Hayati Othman
Field of Research	Engineering Sciences
Project Summary/ Objectives	Image processing techniques were successfully applied on the cell images collected. The quality of the images improved at varying levels depending on the original quality of the images. Several diagnostic markers was proposed. However, the qualities of the markers were not at satisfactory level. In this project, neural network was applied to diagnose cancer. The quality of the proposed diagnostic markers for cancer diagnosis was not satisfactory. Results obtained from the proposed feature extraction techniques could not be verified and interpreted by medical expert. Thus, the qualities of the features were questioned.
Publications/Products/ Outcomes	<p>Books :</p> <ol style="list-style-type: none"> 1. Harsa Amylia Mat Sakim, Nuryanti Mohd. Salleh, Mohd. Rizal Arshad and Nor Hayati Othman. <i>Evaluation of Morphological Features for Breast Cells Classification Using Neural Networks</i>. Book Series: Tools and Applications with Artificial Intelligence, Studies in Computational Intelligence, Springer Ver. 2. Harsa Amylia Mat Sakim, Nuryanti Mohd. Salleh and Nor Hayati Othman. <i>Neural Network Inputs Selection for Breast Cancer Cells Classification</i>, Book Series: New Advances in Intelligent Decision Technologies, Results of the FIRST KES International Symposium IDT 2009, Springer Verlags, vol. 199, pp. 1 <p>Journal:</p> <ol style="list-style-type: none"> 1. Nuryanti Mohd. Salleh, Harsa Amylia Mat Sakim and Nor Hayati Othman. 2008. Neural Networks to Evaluate Morphological Features for Breast Cells Classification. <i>IJCSNS International Journal of Computer Science and Network Security</i>, Vol. 8, No. 9.

	<p>Proceeding/Conference/Seminar:</p> <ol style="list-style-type: none"> 1. Harsa Amylia Mat Sakim, Nuryanti Mohd. Salleh and Nor Hayati Othman. 2009. Neural Network Inputs Selection for Breast Cancer Cells Classification. <i>The 1st KES International Symposium on Intelligent Decision Technologies IDT'09</i>, April, Himeji, Japan <p>Others :</p> <ol style="list-style-type: none"> 1. Nuryanti Mohd. Salleh, Harsa Amylia Mat Sakim and Nor Hayati Othman. 2008. Contrast Enhancement Methods of Color Images from Fine Needle Aspirates for Breast Cancer Cells Classification. The Electrical and Electronic Postgraduate Colloquium (EEPC'08).
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Sains Malaysia (USM) Timbalan Naib Cancellor (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang. Office: 04-599 5821 H/p: 019-478 4302 amyliam@eng.usm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Quality of Life in Children with Cancer
Project Number	06-01-05-SF0160
Project Leader and Team Members	Leader: Norsarwany Mohamad Members: Noorizan Abd Majid, Ariffin Nasir and Wan Pauzi Wan Ibrahim
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The project had generated questionnaires that were validated and used to investigate the quality of life of children with cancer. The HRQOL scores were determined and used to compare the treatments used for the children. However, the intervention assessment could not be developed due to several constraint involving the patients. This assessment tools can be offered to postgraduate student and this can be used for other group of diseases.
Publications/Products/ Outcomes	<ol style="list-style-type: none"> 1. PEDS QL Questionnaire in Malay Language accepted by MAPI ResearchH, France 2. Abstract Books of Compendium 14th National Conference on Medical and Health Sciences
Awards/Certificates	<ol style="list-style-type: none"> 1. 1st Place In Community Health (ORAL) At 14thNational Conference on Medical and Health Sciences
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Malaysian Children, Television and the Environment - a Focus on Identities, Commercialisation and Environmental Literacy
Project Number	06-01-05-SF0163
Project Leader and Team Members	Leader: Shanthi Balraj Baboo Members: Ambigapathy Pandian and Mohammed Zin Nordin
Field of Research	Social Sciences
Project Summary/ Objectives	<p>This project was developed to enhance physical communication using digital information to enable youths to communicate with each other about numerous environmental issues and crises that they read and encounter in their daily life. Through this project, the researchers aimed to provide students with both a vision and a guide for engaging in digital media arts culture. Students equipped with basic production skills and environmental understandings are very much possible to be turned into an active viewer who question and debunk the things visible to their eyes instead of a passive viewer who will never ask or question the content that they see on the television screen. This project encouraged the young generation to participate creatively and actively to heal the world. It also showed the students on the importance of interaction between various parties. At the end of the project, the students were aware of their own ability and responsibility in conserving the environment and concern about the environment in different perspectives. They were willing and ready to conserve the environment effectively with active interaction and communication within a multicultural community.</p>
Publications/Products/ Outcomes	<p>Journals :</p> <ol style="list-style-type: none"> 1. Shanthi Balraj, N. V Prasad, Ambigapathy Pandian, Mohammed Zin Nordin. 2009. Building a creative Learning Culture in the Digital Age: Young People and Environment Media Making in Malaysia. <i>Journal in Media Studies</i>. (in press) 2. Shanthi Balraj, N. V Prasad, Ambigapathy Pandian, Mohammed Zin Nordin. 2009. Colours of the Earth: Youth, Media-Making and Media Literacy in Malaysia. <i>Journal in Media Communicator</i>. (in press)



	<p>Video Product :</p> <p>SMK Bukit Jambul, Penang</p> <ul style="list-style-type: none"> • What goes around comes around • You can make a difference <p>SMK Hamit Khan, Penang</p> <ul style="list-style-type: none"> • There are more things to do with waste • Water is an important resource in our world <p>Sungai Nibong School , Penang</p> <ul style="list-style-type: none"> • Chronicles from sungainibong – Prince Fredaus • Tailman <p>SMK Union, Penang</p> <ul style="list-style-type: none"> • Start recycling before you get caught by the bins • Water is our life <p>SMK Merbau, Miri</p> <ul style="list-style-type: none"> • Small- matter big deal <p>SMK Pujut, Miri</p> <ul style="list-style-type: none"> • Littering bugs ...Are we? <p>SMK Taman Dato Harun</p> <ul style="list-style-type: none"> • Think before you throw <p>SMK Taman Medan</p> <ul style="list-style-type: none"> • Save our environment
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Sains Malaysia (USM) Timbalan Naib Cancellor (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang. Office: 04 653 2632 H/p: 012 509 2400 shanthiambigapathy@yahoo.com</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	A Study to Investigate the Effect of Hormone Replacement Therapy and Commercially Available Vitamin E on Platelet Activation Markers as Determined by Flow Cytometry in Post-menopausal Women
Project Number	06-01-05-SF0174
Project Leader and Team Members	Leader: Rosline Hassan Members: Madhavan Raman Kutty, Asia Rehman, Shah Reza Johan Noor, Rapiaah Mustafa and Rosline Hassan
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The project determined the effect of hormone replacement therapy on platelet activation markers (CD62P & PAC-1 as determined by flow cytometry) in post menopausal women. The effect of commercially available vitamin E (anti-oxidant drug) on these markers in post-menopausal women as compared to healthy control was also studied. In addition, the relationship between platelet activation markers and serum cholesterol, serum triglycerides, and serum estradiol was investigated. New technology was established to assess the activation markers of the platelet which is important as a guide for thrombosis. Flow cytometric machine is a very sensitive technology in detecting activated platelets in-vivo. Previously, aggregation machine was used to detect activated platelets.
Publications/Products/ Outcomes	Journals: <ol style="list-style-type: none"> 1. Rosline Hassan. 2009. Cardioprotective Effect of Post-Menopausal Women on Hormone Replacement Therapy Based on Platelet Activation Markers. <i>The Malaysian Journal of Pathology</i> 31(2A). 2. Rosline Hassan.2009. A Study to Investigate the Effect of Hormone Replacement Therapy (HRT) on Platelet Activation Markers as Determined by Flow Cytometry In Healthy Post-Menopausal Women. <i>Malaysian Journal of Obst & Gynaec</i> : 17s. 3. Rosline Hassan, Shah Reza Johan Noor, Rapiaah Mustafa, Shabbir Ahmad Aheikh, Noor Adzha Abd Majid and Tariq Mahmood Roshan. 2009. Evidence of Platelet Activation by Flowcytometry Following Hormone Replacement Therapy in Post Menopausal Women; <i>Clinical Cytometry Journal</i> vol 76B (6)



	Proceeding/Conference/Seminar: 1. N Adzha AM1, Rosline H1, Shah Reza JN3, Rapiaah M1, Abdul Aziz B2, Shabbir AS3, W Soriany WMZ1, Tariq M. Roshan1. 2010. Inhibition Of Platelet Activation By Vitamin E (A-tocopherol) <i>In Post Menopausal Women National Conference Medical Health Sciences</i> , May.
Awards/Certificates	1. Best Oral Award Study To Investigate The Effect Of Hormone Replacement Therapy (Hrt) On Platelet Activation Markers As Determined By Flow Cytometry In Healthy Post-Menopausal Women. 19th Congress Of The Obstetrical And Gynaecological Society Of Malaysia
Contact Institution/Entity Address Phone Number e-Mail	Universiti Sains Malaysia (USM) Timbalan Naib Cancellor (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang. Office: 09-767 6191 H/p: 019- 915 1520 roslin@kb.usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Applications of Differential Subordination and Superordination to Functions Associated with the Generalised Hypergeometric Functions and the Multiplier Transform
Project Number	06-01-05-SF0203
Project Leader and Team Members	Leader: Rosihan Mohamed Ali
Field of Research	Mathematical Sciences
Project Summary/ Objectives	The techniques of convolution and subordination were successfully implemented to obtain new results for appropriate choices of the superordinate functions. These include results involving different subclasses of multivalent analytic as well as meromorphic functions. A unified linear operator by means of the convolution operator was also formulated and the theory of differential subordination and superordination was applied to investigate properties of this new convolution linear operator.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. R.M. Ali, S.K. Lee, V. Ravichandran and S. Supramaniam. 2009. The Fekete-Szegő coefficient functional for transforms of analytic functions. <i>Bulletin of the Iranian Mathematical Society</i> Vol. 35 : 119-142. 2. R.M. Ali, K.G. Subramanian, V. Ravichandran, and O.P. Ahuja. 2008. Neighbourhoods of starlike and convex functions associated with parabola. <i>Journal of Inequalities and Applications</i> Vol 2008 : 9. 3. R.M. Ali, V. Ravichandran, and N. Seenivasagan. 2008. Differential subordination and superordination of analytic functions defined by the multiplier transformation. <i>Mathematical Inequalities & Applications</i> Vol :12 :123-139. 4. R.M. Ali, V. Ravichandran, and S.K. Lee. 2008. Subclasses of multivalent starlike and convex functions. <i>Bulletin of the Belgian Mathematical Society – Simon Stevin</i> Vol : 16 : 385-394. 5. R.M. Ali, V. Ravichandran, and N. Seenivasagan. 2008. Differential subordination and superordination of the Liu-Srivastava linear operator on meromorphic functions. <i>Bull. Malays. Math. Sci. Soc.</i> (2) 31.



	Proceedings/Conferences/Seminars : 1. R.M. Ali, N. Seenivasagan, A.O. Badghaish, and K.G. Subramanian. 2007. Univalence criteria for certain integral operators, in A.I.M. Ismail et al. (eds.), <i>3rd IMTGT Regional Conference in Mathematics, Statistics and Applications</i> , 22 – 28.Penang.
Contact Institution/Entity Address Phone Number e-Mail	Universiti Sains Malaysia (USM) Timbalan Naib Cancellor (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang. Office: 04-653 3966 rosihan@cs.usm.my

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Stream Fauna Diversity and Its Relationships to Heavy Metal Pollution in Sungai Pengkalan Chepa, Kelantan
Project Number	06-01-05-SF0227
Project Leader and Team Members	Leader: Rohasliney Hashim Members: Hasmah Abdullah, Haliza Abdul Rahman, Jahangir Kamaldin and Mohamad Hadzri Yaacob
Field of Research	Biological Sciences
Project Summary/ Objectives	The project had identified the dominant aquatic fauna groups or indicator species in order to show the quality of water from a stream. The team was also able to monitor the level of heavy metals in the water column and fish tissues.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars : <ol style="list-style-type: none"> 1. Rohasliney, H., Siti Amirah, J., and Nurul Izzati, A.S. 2008. Distribution of Fishes in Sungai Pengkalan Chepa, Kelantan: A Pilot Study. <i>The International Conference on Environment 2008</i>. 15-17 Dec, Pulau Pinang Malaysia. 2. Siti Amirah Jusoh and Rohasliney, H. 2008. Riverine Biodiversity Challenges in Kelantan River Systems: A Case Study of Sg. Pengkalan Chepa. <i>2nd Health & Medical Sciences Conference. 2nd USM-Penang International Postgraduate Convention 2008</i>. 18-20 June, Universiti Sains Malaysia, Malaysia. 3. Nurul Izzati, A. S., Hasmah, A., and Rohasliney, H. 2008. Heavy Metal Analysis in Water Column & Fish Tissues (Family: Tachysuridae) from Sungai Pengkalan Chepa. <i>2nd Health & Medical Sciences Conference. 2nd USM-Penang International Postgraduate Convention 2008</i>. 18-20 June, Universiti Sains Malaysia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	A Research to Assess Children's Number Sense as a Means of Mathematical Thinking
Project Number	06-01-05-SF0236
Project Leader and Team Members	Leader: Munirah Ghazali Members: Hashimah Mohd. Yunus and Rohana Alias
Field of Research	Social Sciences
Project Summary/ Objectives	The purpose of this project was to assess young learners' number sense through three lenses. The strategies that children use to solve mathematical problems were investigated. The ways in which current curricular materials in Malaysia promoted number sense, focused on mental computation and estimation of addition, subtraction, multiplication and division problems were examined. The ways in which teachers' instructional practices support the development of number sense with respect to mental computation and computational estimation in solving addition, subtraction, multiplication and division problem were investigated.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Modelling of Construction Firms Sustainability
Project Number	06-01-05-SF0253
Project Leader and Team Members	Leader: Omar Osman Members: Mastura Jaafar@Mustapha and Ilias Said
Field of Research	Social Sciences
Project Summary/ Objectives	The main objective of this project was to model the relationship between social, environmental and institutional (firm's) sustainability objectives with economic growth and deriving social and environmental criteria for growth to be sustainable. Various models using possible matrix such as firm's level of competitiveness and the degree of specialisation or niche areas were developed.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars : 1. Ilias Said, Omar Osman and Waleed Abdo Mohammed Rashideh. 2009. Understanding the Sustainability of Construction Firms in Malaysia, <i>The 2nd International Conference in Construction Industry</i> , 29-30 July, Padang, Indonesia.
Contact Institution/Entity Address	Universiti Sains Malaysia (USM) Timbalan Naib Cancellor, (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	A Search for the Map and the Mac Solutions with Mirror Symmetries of the YMH Field Theory
Project Number	06-01-05-SF0266
Project Leader and Team Members	Leader: Rosy Teh Chooi Gim Members: Wong Khai Ming and Lim Kok Geng
Field of Research	Physical Sciences
Project Summary/ Objectives	<p>From investigation of previous work, we believe that more general MAP and MAC solutions of the YMH theory certainly do exist. We have studied the relation between our solutions and that of Kleihaus et al. Our solutions are exact; whereas the vortex rings solutions of Kleihaus are numerical. Our solutions also reveal that for vortex rings to appear the system requires the existence of a composite monopole with properties different from that of a single entity monopole. This studies reflects the presence of the MAP and MAC solutions with mirror symmetries. Hence it is our objective to look for these mirror symmetrical MAP and MAC solutions. We have found non-spherical one monopole and monopole-antimonopole pair dyons. More newmonopoles and dyons will be constructed using similar techniques.</p>
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. Rosy Teh and K.M. Wong, <i>A Full and One-half Monopoles of the SU(2) YMH Theory</i>, presented and to appear in the Proceedings of the 10th Asia Pacific Physics Conference, August 21-24, 2007, Pohang, Korea , A Special Issue of the Journal of the Korean Physical Society - Vol. 53,No. 2, August, 14, 2008, 1224-1227. <p>Proceedings/Conferences/Seminars :</p> <ol style="list-style-type: none"> 1. Rosy Teh and K.M. Wong. 2007. The Construction of Abelian Monopoles Gauge Potentials. <i>The 2nd Asian Physics Symposium APS 2007</i>, 29-30Nov, Bandung, Indonesia. 2. Rosy Teh and K.M. Wong. 2007. Monopoles, Half-Monopole, and Vortex Rings.<i>The National Physics Conference PERFIK 2007</i>, 26-28 Dec, Kuala Terengganu, Terengganu.

	<p>3. Rosy Teh and K.M. Wong.2009. One Monopole-Antimonopole Pair Solutions. <i>The International Meeting of Frontiers of Physics 2009 (IMFP 2009)</i>, 12-16 Jan, Awana Genting Highlands Golf and Country Resort.</p> <p>4. Rosy Teh, K.G. Lim and P.W. Koh. 2009. Magnetic Half- Monopole Solutions. <i>The International Meeting of Frontiers of Physics 2009(IMFP 2009)</i>, 12-16 Jan, Awana Genting Highlands Golf and Country Resort.</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Sains Malaysia (USM) Timbalan Naib Cancellor, (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang. Office: 04-653 3678 H/p: 012-490 5121 rosyteh@usm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Environmental Mapping Using Digital Camera Imagery Taken from Autopilot Aircraft
Project Number	06-01-05-SF0298
Project Leader and Team Members	Leader: Lim Hwee San Members: Nasirun Mohd Saleh, Khiruddin Abdullah, Mohd Zubir Mat Jafri and Syahril Amin Hashim
Field of Research	Environmental Sciences
Project Summary/ Objectives	An image processing technique for continuous environmental monitoring of air quality, water quality and land cover/use mapping was developed. An algorithm was developed based on the atmospheric characteristic for visible wavelength band data to determine air and water quality over Penang, Malaysia. The atmospheric and water pollution tool was validated and established. A Digital Elevation Model (DEM) over Penang Island was also developed. The estimate on the traffic flow parameters from aerial photographs and concentrates on Penang Bridge boundary extraction and vehicle detection was not completed. The captured digital images from the UAV with smaller area coverage were insufficient to allow study on the traffic flow parameters. The study area was near to the Penang International Airport that limited our flight altitude to obtain bigger area coverage.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars : <ol style="list-style-type: none"> 1. H. S. Lim, M. Z. MatJafri, K. Abdullah and N. Mohd. Saleh. 2007. PM10 retrieval in urban area from space. <i>Proceeding of the SPIE Defense and Security Symposium 2007</i>, Orlando, Florida, USA. 2. H. S. Lim, M. Z. MatJafri, K. Abdullah and N. M. Saleh. 2007. Retrieval of Air Quality information using image processing technique. <i>Proceeding of the SPIE Defense and Security Symposium 2007</i>, Orlando, FloridaUSA. 3. K. L. Low, H. S. Lim, M. Z. MatJafri, K. Abdullah and C. J. Wong. 2007. Real Time PM10 concentration monitoring on Penang Bridge by using Traffic monitoring CCTV, <i>Proceeding of the SPIE Defense and Security Symposium 2007</i>, Orlando, Florida, USA. 4. C. J. Wong, H. S. Lim, M. Z. MatJafri, K. Abdullah and K. L. Low. 2007. Real Time Air Quality Monitoring by Using Internet Video Surveillance Camera, <i>Proceeding of the SPIE Defense and Security Symposium 2007</i>, Orlando, Florida, USA.

	<p>5. K. Abdullah, H. S. Lim, M. Z. MatJafri and N. Mohd. Saleh, 2007, Air quality studies at Mecca, Arafat and Mina based on our remote sensing research experiences. <i>Proceeding of the National Seminar on Hajj Best Practices Through Advances in Science & Technology</i>, Universiti Sains Malaysia (USM), Penang, Malaysia.</p> <p>6. N. Mohd. Saleh, H. S. Lim, M. Z. Mat Jafri and K. Abdullah. 2007. Air Quality Derivation utilizing Landsat TM image over Penang, Malaysia. <i>Proceeding of the 3rd International Conference on Recent Advances in Space technologies (RAST 2007)</i>, Istanbul, Turkey.</p>
Additional Information	<p>Linkages: National Space Agency (ANGKASA)</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number e-Mail</p>	<p>Universiti Sains Malaysia (USM) Timbalan Naib Cancellor, (Penyelidikan & Pembangunan), Universiti Sains Malaysia (USM), 11800 USM Minden, Pulau Pinang. Office: 04-653 5107/3663 hslim@usm.my</p>





COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Urban Poverty: A Geographical Analysis of the Relationship between Retail Food Access and Socio-economic Background, and Its Policy Implications
Project Number	06-01-05-SF0373
Project Leader and Team Members	Leader: Narimah Samat Members: Amiza Mat Amin, Morshidi Sirat and Suriati
Field of Research	Social Sciences
Project Summary/ Objectives	The project studied the geographical distribution of retail food outlets and compared their prices and food availability between outlets located within the poor and affluent neighbourhood. The “pocket” of deprived neighbourhood was identified in terms of access to retail food outlets. The socio-economic backgrounds of those living within deprived neighbourhoods and their foods shopping pattern were investigated. “What-if” scenarios were used to predict the impact of locating new food retailers within deprived neighbourhood. Results of the studies were used to give recommendations with respect to land use and transportation policy actions that can regenerate deprived areas and alleviate urban poverty.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Narimah Samat. 2009. Urban Poverty: A Geographical Analysis of the Relationship between Retail Food Access and Socio-Economic Background and Its Policy Implications. <i>The 2nd National Seminar on Society, Space and The Environment</i>, 2-3 June, Universiti Sains Malaysia. 2. Narimah Samat. 2010. Application of Geographic Information System in Identifying Deprived Areas. <i>The 7th International Malaysian Studies Conference</i>, 16-18 March, Penang, Malaysia. <p>Others :</p> <ol style="list-style-type: none"> 1. <i>Evaluating the Accessibility of Households to Food Retail Outlets: A Case Study of Penang State</i>. 2009. M.Sc. Thesis. University Science of Malaysia.

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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Examining Factors Influencing the Intention to Outsource Strategic It Activities Offshore Using a Card-sorting Methodology and the Theory of Planned Behavior
Project Number	06-02-11-SF0023
Project Leader and Team Members	Leader: Wong Siew Fan
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	<p>The project was designed to understand the factors that influence the intention to outsource IT activities offshore. It was found that the three main factors which influenced an organisation's decision were the management's attitude towards offshore outsourcing, the management's perceptions of whether offshore outsourcing is accepted and encouraged by important stakeholders of the organisation, the management's perceived ease or difficulty of outsourcing offshore. Instead of using purely card-sorting experiment, direct interviewing method was employed. A model based on the Theory of Planned Behavior was created. This model contains the three factors mentioned earlier, plus antecedents of the three factors. Examples of these antecedents were reputation of the offshore vendors, stability of the country where the offshore vendors reside, and future IT capability. It was found that the most commonly outsourced IT activity is software development and call center services and that most companies are willing to outsource offshore as long as the cost is lower than local outsourcing vendors. However, participants did express concern on issues such as communication problems, organisational culture, and stability of the region.</p>
Publications/Products/ Outcomes	<p>Publication:</p> <ol style="list-style-type: none"> 1. Wong Siew Fan. 2009. Examining IT Outsourcing Decisions and Practices of Small And Medium Enterprises In Malaysia. <i>Proceedings of the International Business Information Management Conference</i>, Cairo, Egypt
Contact Institution/Entity Address	Universiti Tunku Abdul Rahman (UTAR) Building PD, No. 9 Jalan Bersatu 13/4, 46200 Petaling Jaya, Selangor.
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TOWARDS AN INNOVATIVE NATION :

A COMPENDIUM OF MOSTI FUNDED PROJECTS UNDER THE 9TH MALAYSIA PLAN

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Strategic Collaborative Success Factors and Sustainability Indicators of Academia Industry Collaboration in Malaysia
Project Number	06-02-11-SF0032
Project Leader and Team Members	Leader: Yee Seow Voon, Angelina Members: Zakaria Abas, Phang Fatt Kong, Jeffrey and Chong Aik Lee
Field of Research	Economics, Business and Management
Project Summary/ Objectives	The project identified and integrated the existing strategic collaborative success factors and sustainability indicators available overseas which were applicable to practical collaborations in Malaysia. Specific successful cases which were relevant for in-depth study and investigation to understand the processes and structures which were in place that contributes to the success and sustainability of collaborative efforts in Malaysia was identified. The study had tested the integrated version of overseas strategic conceptual framework in the process of examination and investigation of strategic collaborative success factors and sustainability indicators and assess its feasibility. The outcome of the test was applied in practical collaborations and potential policy making strategies in Malaysian context.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars :</p> <ol style="list-style-type: none"> 1. Yee Seow Voon. 2009. Factors contributing to Sustainable UIC in Malaysia. <i>Regional Conference on the Humanities 2009</i>, 18-19 Feb, Kuala Lumpur. 2. Yee Seow Voon. 2008. Examining factors motivating SMEs. 2008. <i>ECER Regional Conference 2008</i>, 15-17 Dec, Kelantan, Malaysia. 3. Yee Seow Voon. 2007. Strategic Collaborative Success Factors of Academia Industry Collaborations in Malaysia. <i>Accounting Studies International Conference</i>, 31 Oct 2007, Kedah, Malaysia. 4. Yee Seow Voon. 2008. Strategic collaborative factors and sustainability indicators of Academic Industry Collaborations: Case studies of two universities in Malaysia. <i>World Universities Forum</i>, 31 Jan -2 Feb, Malaysia. 5. Yee Seow Voon. 2009. Comparative studies on models of University Industry Collaborations. <i>SEAAIR 2009 Conference: Future of Higher Education</i>, 12-15 Oct, Penang, Malaysia.



Additional Information	Commercialisation: Strategic Enhancement Plan for University-Industry/Community Collaboration published in 2010 Universiti Tunku Abdul Rahman
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	A Novel Natural Approach to Euclidean TSP Engine for Manufacturing Application
Project Number	06-01-14-SF0006
Project Leader and Team Members	Leader: Nor Azman Abu Members: Shahrin Sahib, Zuraida Abal Abas, Emaliana Kasmuri and Nanna Suryana Herman
Field of Research	Mathematical Sciences
Project Summary/ Objectives	<p>The primary objective of this study was to come up with fast near optimal solution using novel friendly techniques. This was an achievable target and a practical solution to the fast changing electronic industry. The current research groups are mostly producing their best algorithm with the running time near $O(n^2)$. The secondary theoretical objective was to capture the near optimal tour in polynomial time. The ultimate issue here was whether the series of filters being used was capable of reducing the exponential number of possible tours into polynomial number of solutions. The average running time was found to be at most near $O(n^3)$. The third ideal objective of the study was to come up with an algorithm which will produce a generic Hamilton tour of a simple weighted planar graph if any. Thus, it will give a feasible solution to related practical NP-Complete problem via polynomial transformation. However, this objective was only partially achieved. In this project, a proto-type machine for the TSP Engine Implementation to PCB Drilling Machine was built. This effort was a good transition to transfer the result of this project for small-medium industrial use.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none">1. Abdulah Fajar, Nur Azman Abu and Nanna Suryana Herman.2009. Initial Result of Clustering Strategy to Euclidean TSP. <i>International Conference of Soft Computing and Pattern Recognition SoCPaR2009</i>, 4–7 Dec, Melaka, Malaysia.2. Nur Azman Abu, Shahrin Sahib and NannaSuryana. 2008. A Novel Natural Approach to Euclidean TSP, <i>3rd International Conference on Mathematics and Statistics (ICoMS-3)</i>, 5-6 Aug, Institut Pertanian Bogor, Indonesia.





	<p>4. Zulkifli Tahir, Nur Azman Abu, Shahrin Sahib and Nanna Suryana. 2010. CNC PCB Drilling Machine using Novel Natural Approach to Euclidean TSP. <i>3rd IEEE International Conference on Computer Science and Information Technology (IEEE ICCSIT 2010)</i>, 9-11, July, Chengdu, China.</p> <p>5. Abdulah Fajar, Nur Azman Abu, Shahrin Sahib and Nanna Suryana. 2010. Clustering Process To Solve Euclidean TSP. <i>3rd IEEE International Conference on Computer Science and Information Technology (IEEE ICCSIT 2010)</i>, 9-11, July, Chengdu, China.</p> <p>Product:</p> <p>1. Prototype- PCB drilling machine</p>
<p>Contact Institution/Entity Address</p> <p>Phone Number</p> <p>e-Mail</p>	<p>Universiti Teknikal Malaysia Melaka (UTeM) Faculty of Information and Communication Technology, Universiti Teknikal Malaysia Melaka, Hang Tuah Jaya, 76100 Durian Tunggal, Melaka. Office: 06-233 2333 H/p: 017-772 2007 nura@utem.edu.my</p>

COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	A Laboratory Study of the Shear Wave Velocity and One-dimensional Compressibility of Stabilised Columnar Systems of the KUiTTHO Clay
Project Number	06-01-13-SF0016
Project Leader and Team Members	Leader: Chan Chee Ming Members: Felix Ling Ngee Leh, Ahmad Tarmizi Abd Karim, Azra Munirah Mat Daud, Aziman Madun, Kamarul Aini Mohd Sari and Ismail Bakar
Field of Research	Engineering Sciences
Project Summary/ Objectives	The project had determined the engineering properties and characteristics of cement-stabilised UTHM soft clay. The potential applications of the technique in other problematic soil types were identified but would require further work before making final conclusions. The two cement admixtures explored in this project: cement-POC and cement-rice husks are in the process of being filed for patent.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars : <ol style="list-style-type: none"> 1. Azra Munirah Mat Daud and Chan Chee Ming. 2007. Clay water: an alternative consumable water. <i>Malaysian Research Group Internatinal Conference 2007</i>. 2. Chan Chee Ming. 2007. Effectiveness of cement stabilisation for the UTHM soft soil. Chee-Ming Chan. <i>Malaysian Research Group Internatinal Conference 2007</i>. 3. Chan Chee Ming. 2007. From wastes to walls: the Green Bricks of UTHM. Chee-Ming Chan. <i>Malaysian Research Group Internatinal Conference 2007</i>.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Portable Biofuel Pulse Combustion Drying System
Project Number	06-01-06-SF0027
Project Leader and Team Members	Leader: Mazlan Abdul Wahid Members: Kahar Osman and Azhar Abdul Aziz
Field of Research	Engineering Sciences
Project Summary/ Objectives	<p>The project determined the optimum inlet configuration that ensured stability in operational pulse combustor with the use of biogas. The effect of drying chamber length and hot air temperature on drying characteristic of aqueous solution was investigated. The effect of drying chamber length and hot air temperature to the performance of pulse drying system was studied. The experiments showed that the extension of drying chamber length increases resident time of solution traveling in the drying chamber. From the observation, there was minimum drying chamber length required for complete drying to occur. Hot air temperature plays a significant role in the drying process. The addition of diluent air has given more control over the drying temperature range. This has enhanced the capability of the dryer. For the dryer to be commercially competitive, there are still room for its improvement. Several post project study could be done in order to further improve its operation and control. Further project grant approval is required to enhance its drying capability and also to further apply the pulse combustor technology to new applications.</p>
Publications/Products/ Outcomes	<p>Journal:</p> <ol style="list-style-type: none"> 1. A.W. Mazlan, U. Mohd Haffis and A.B. Azwan. 2008. Effect of Inlet Section on Pulse Combustor Performance, <i>Jurnal Teknos-2k</i>, Vol 8 : 1411-4151. <p>Proceedings/Conferences/Seminars :</p> <ol style="list-style-type: none"> 1. M.R Abdul Qoiyum., A.W Mazlan., K. Natrah and U. Mohd Haffis. 2008. The Performance of Valveless Pulse Combsutor Using Gaseous Fuel. <i>International Graduate Conference on Engineering and Science</i>. Universiti of Technology Malaysia, Malaysia. 2. M.R Abdul Qoiyum., A.W Mazlan., O.Kahar and U. Mohd Haffis. 2008. Pulse Combustion Simulation Using Simplified Valve Opening Model. <i>Proceeding 9th Asia-Pacific International Symposium on Combustion and Energy Utilization</i>, Beijing, China.

	3. M.R Abdul Qoiyum., A.W Mazlan., O.Kahar and U. Mohd Haffis. 2008. Modeling of Pulsating Flow in a Pulse Combustor Tailpipe, <i>1st International Meeting on Advaced Thermo-Fluid</i> , Universiti of Technology Malaysia.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Sustainable Water Resources Development Related to Downscaling Approach
Project Number	06-01-06-SF0094
Project Leader and Team Members	Leader: Sobri Harun Members: Supiah Shamsudin, Ghazali Omar and Marlinda Abd. Malek
Field of Research	Engineering Sciences
Project Summary/ Objectives	The project had ascertained the water resources availability and quantified the relationship between large scale predictors and surface parameters. This study confirms that statistical downscaling provide an effective proxy for providing the relationship of large scale atmospheric variables with local precipitation series. It is noted that there is still a scale discrepancy between the forcing climate data and the hydrological simulation scale. This research found that there is an urgent need for adaptation of climate change factors for critical sector such as agriculture and water resources management in order to manage them properly.
Publications/Products/ Outcomes	<p>Proceedings/Conferences/ Seminars:</p> <ol style="list-style-type: none"> 1. Sobri Harun, Nurul Adzura Ismail, and Mohd Zaki Mat Amin. 2006. Evaluation of Impact of Climate Change on Hydrological Characteristic. Will be presented at 2nd International Conference on <i>Managing Rivers in the 21st Century: Solutions Towards Sustainable River Basins</i>. 6-8 June 2007, Sarawak. 2. Nurul Adzura Ismail, Sobri Harun, and Mohd Zaki Mat Amin. 2006. A Statistical Model to Downscale GCM outputs to Local Daily Precipitation under Different Climate Change Scenarios. <i>Southeast Asian Natural Resources and Environmental Management Conference (SANREM 2006)</i>, Sabah. 3. Sobri Harun, Nurul Adzura Ismail, Mohd Zaki Mat Amin. 2007. Evaluation of impact of climate change on hydrological characteristics. <i>2nd International Conference on Managing Rives in the 21st Century: Solutions Towards Sustainable River Basins</i>. 6-8 June, Sarawak.

	<p>4. Nurul Adzura Ismail., Sobri Harun. and Mohd Zaki Mat Amin. 2007. An assessment of changes in precipitation statistical characteristics on global climate change projections using statistical downscaling approaches. <i>2nd International Conference on Managing Rives in the 21st Century: Solutions Towards Sust.</i></p> <p>5. Sobri Harun., Nurul Adzura Ismail. and Mohd Zaki Mat Amin. 2007. <i>The Effect of the Precipitation Threshold in the Reproduction of the Precipitation Variability under Simulation of the Future Climate Change. World Water Day 2007 Seminar.</i> Terengganu.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Road Vehicle Convoy Control Systems
Project Number	06-01-06-SF0096
Project Leader and Team Members	Leader: Shahdan Sudin Members: Yahaya Md Sam and Abd Wahab Ishari Mohd
Field of Research	Engineering Sciences
Project Summary/ Objectives	The project had successfully designed and modeled a stable control scheme for vehicle convoy operation. The control scheme was fully investigated through computer simulations for following operation and also for convoy operation. The control scheme was realised on the actual circuitry and implemented on a remote control car model. However, the implementation and testing of the control scheme on the actual vehicle model under normal operation of vehicle convoy operation have not been completed. Upon successful implementation of the project on a small prototype, the next plan would be to develop and implement the idea on a bigger scale prototype.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Ibrahim., Z. Ibrahim., MS Zainal Abidin., M Mohd Mokji., SAR., Syed Abu Bakar. and S. Sudin.2008 Classification Algorithm for Five Different Defects on Bare Printed Circuit Board. <i>Symposiumon Engineering and Technology</i>, Sarawak. 2. NK. Khalid., Z. Ibrahim., TB, Kurniawan., M. Khalid., S. Sudin. 2008. A DNA Sequence Design Approach Based on Particle Swarm Optimization with Sequence Support System, <i>Symposiumon Engineering and Technology</i>,15-16 Dec, Sarawak. 3. MR. Sapiee., S. Sudin., Z. Ibrahim. 2009. Road Vehicle Following System With Adaptive Controller Gain Using Model Reference Adaptive Control Method, Accepted for presentation in the CIM2009, 2-3 June, Melaka.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of a Truck Chassis
Project Number	06-01-06-SF0109
Project Leader and Team Members	Leader: Roslan Abd. Rahman Members: Mohd Nasir Tamin and Mustafa Yusof
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	The project aimed at determining the structural strength and stiffness of chassis. The structural chassis responses were characterised, in particular the truck chassis structural response. Due to the timing of the project implementation, the prediction on the fatigue life of chassis could not be completed. This technology has the potential to be transferred to truck manufacturer.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of a New Technique for Design of Cost Effective Minimum Water Network (MWN) for Urban and Industrial Systems – a Focus on Semiconductor Manufacturing
Project Number	06-01-06-SF0110
Project Leader and Team Members	Leader: Zainuddin Abdul Manan Members: Haslenda Hashim and Sharifah Rafidah
Field of Research	Engineering Sciences
Project Summary/ Objectives	The project had developed and designed a cost-effective minimum water network (CEMWN) applicable to urban and industrial facilities. A CEMWN demonstration case study for a semiconductor manufacturing plant was developed. The economic and technical advantages of CEMWN were also projected. In addition, the project was also applied to CCM Chemicals (M) Sdn. Bhd. as second case study. A commercial software may be developed as a product of this project.
Publications/Products/ Outcomes	<p>Book:</p> <ol style="list-style-type: none"> Manan, Z. A., Wan Alwi., S. R., Samingin., M. H. And Misran, N. 2007. Assess Your Plant's True Water-Saving Potential . <i>Chemical Engineering</i>. 12: <p>Journals:</p> <ol style="list-style-type: none"> Z. A. Manan, S. R. Wan Alwi (2007). Water pinch analysis evolution towards a holistic approach for water minimization. <i>Asia-Pacific Journal of Chemical Engineering</i>. 544-553. Wan Alwi, S. R., Z.A. Manan, M. H. Samingin, N. Misran, A holistic framework for design of costeffective minimum water utilization network, <i>Journal of Environmental Management</i> 219-252. Wan Alwi, S. R. and Manan, Z. A. 2008. Generic Graphical Technique for Simultaneous Targeting and Design of Water Networks . <i>Ind. Eng. Chem. Res.</i> 47 (8): 2762-2777. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> Wan Alwi, S. R. and Manan, Z. A. 2008. <i>State of the art for water network design using graphical visualization tool. RSCE SOMCHE 2008</i>, 2-3 Dec Kuala Lumpur.

	Others: 1. Manan, Z. A., Wan Alwi, S. R., Samingin, M. H. And Misran, N. 2007. Customize Water Retrofit the SHARPS Way . <i>Chemical Engineering Progress</i> . 102 (11): 20-27.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Conceptual Design of a Shallow Draught Vessel with Minimum Resistance and Response
Project Number	06-01-06-SF0115
Project Leader and Team Members	Leader: Adi Maimun Abdul Malik Members: Mohamad Pauzi Abdul and Agoes Priyanto
Field of Research	Engineering Sciences
Project Summary/ Objectives	The project had established and developed a low resistance and stable vessel concept design. A numerical analysis method and experimental procedure were established for evaluation of the concept.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Agriculture-based Surfactant to Improve Oil Recovery
Project Number	06-01-06-SF0128
Project Leader and Team Members	Leader: Ahmad Kamal Idris Members: Radzuan Junin, Madzlan Aziz and Muhammad A. Manan
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	<p>The main objective of this project was to produce agriculture based surfactants from oil palm and coconut palm for oil recovery. The physical and chemical properties of surfactant yields were characterised. The interval and optimal salinity and temperature in which these surfactants are suitable for enhanced oil recovery (EOR) were identified. The project had produced a stable surfactant formulation using lignin from coconut husk and palm oil empty fruit bunch (EFB). The team has also produced lignosulfonate which have been used in preflush to reduce surfactant adsorption. Adsorption study for interaction of surfactant with rock was carried out. The surfactant flooding processes was evaluated. The surfactant adsorption and oil recovery were determined by using bat experiment and core flooding measurements. Further research and approach regarding microscopic observation and rock interaction need to be done. In addition, for lignin extraction, the quality of raw material used needs to be controlled. Advanced study in extraction process is needed to enhance lignin purity.</p>
Publications/Products/ Outcomes	<p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Ahmad Kamal Idris. <i>Application of Lignin from Oil Palm Empty Fruit Bunch (EFB) in Surfactant Formulation</i> presented during 2nd International Conferences and Workshops on Basic and Applied Sciences. 3. Ahmad Kamal Idris. <i>(2nd ICOWOBAS) and Regional Annual Fundamental Science Seminar (RAFSS 2009)</i> on 2-4 June 2009. 4. Ahmad Kamal Idris. <i>The Use of Lignosulfonate to Reduce the Adsorption of Surfactant onto Kaolin.</i> Presented during 4th International Conference on Recent Advances in Materials, Minerals Environment and 2nd Asian Symposium on Materials and Processing (RAMM & ASMP'09) on 1- 3 June 2009.



	<p>5. Ahmad Kamal Idris. Application of Lignin from Coconut Fiber in Surfactant Formulation. Presented during 3rd International Conference on Chemical and Bioprocess Engineering (ICCBPE-2009) on 12 - 14 August 2009.</p> <p>6. Ahmad Kamal Idris. Formulation of Agriculture-based Surfactant for Enhanced Oil Recovery. Presented at Postgraduates Screening Committee Faculty of Chemical and Natural Resources Engineering Universiti Teknologi Malaysia on 29 August 2008.</p> <p>Others:</p> <p>1. Adsorption of Surfactants onto Various Types of Minerals presented at Postgraduates. <i>Problem in Surfactant Flooding</i> presented to Petroleum Engineering Final Year Student on 12 February 2009.</p>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Active Suspension Systems for a Quarter Car Model
Project Number	06-01-06-SF0129
Project Leader and Team Members	Leader: Yahaya Md Sam Members: Shahdan Sudin, Mohamad Noh and Zaharuddin Mohamed
Field of Research	Engineering Sciences
Project Summary/ Objectives	The main objective of this project was to develop the quarter car active suspension system/test rig. A robust control scheme called Proportional Integral Sliding Mode Control (PISMC) was applied through a computer simulation. The dynamics of the active suspension system in terms of the ride comfort and road handling have been successfully obtained from the simulation studies. However, due to the limited components available, the project managed to produce only the passive suspension test rig. The passive suspension test rig is part of the active suspension system.
Publications/Products/ Outcomes	<p>Journals:</p> <ol style="list-style-type: none"> 1. Suaib, N.M. and YM Sam. 2008. Modeling and control of active suspension using PISMC and SMC. <i>Jurnal Mekanikal</i> No.26: 119-128. 2. NM SUAIB, YM Sam., N. Hamzah, Zulfatman. and R. Ghazali. 2008. Modeling and control of active suspension system using SMC and PISMC. <i>Proceedings of 2008 Student Conference on Development (SCoReD 2008)</i>, 89:1-89:40. <p>Proceedings/Conferences/Seminars:</p> <ol style="list-style-type: none"> 1. Suaib N.M., Hamzah N., Sam Y.M. 2008. Experimental set-up for a quarter hydraulically actuated active suspension system test rig. <i>Conference on Manufacturing and Electronic Technology</i>, 26-27 January 2007, Johor. 2. Sam Y.M., Suaib N.M., Osman J.H.S. 2008. Proportional integral sliding mode control for the half-car active suspension system with hydraulic system. <i>2008 WSES International Conference on Robotic and Control</i>. 6 – 8 April 2008, China.





	3. Zulfatman, YM Sam., N. Hamzah., NM Shuaib. and R. Ghazali 2008. Identification of quarter car suspension test rig. <i>Proceedings of 2008 Student Conference on Development (SCORed 2008)</i> , 26-27 Nov. Malaysia.
Awards/Certificates	1. Bronze Medal INATEX 2009: Development of a Road Surface Profiles Generator for Quarter Car Suspension Test Rig.
IP Status	1. A system for Quarter Active Suspension PI 201000303
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Intelligent UKJK (Ujian Kecergasan Jasmani Kebangsaan) Fitness Test Laboratory and Training System for Malaysian Schools
Project Number	06-01-06-SF0144
Project Leader and Team Members	Leader: Abdul Hafidz Omar Members: Mohd Anizu Mohd Nor, Muhamad Hafiz Ismail and Arief Ruhullah B.A. Harri
Field of Research	Medical and Health Sciences
Project Summary/ Objectives	The main aim of the project is to develop an intelligent fitness test and athletic training system based on UKJK using neural network. The system could assist the athlete to measure their fitness and performance automatically. Seven stations were developed and tested on athletes at the Bandar Penawar Sports School.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Abdul Hafidz Omar. 2008. <i>Automated fitness test system with database and improvment Analysis, Danga Bay International Convention, Johor.</i>
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of Design Criteria for Gross Pollutant Traps of Surface Runoff from Small Scale Catchment
Project Number	06-01-06-SF0220
Project Leader and Team Members	Leader: Norhan Abd Rahman Member: Noraliani Alias
Field of Research	Engineering Sciences
Project Summary/ Objectives	The main objective of the project was to determine the design parameters of gross pollutant traps for surface runoff system. The performance of the traps was investigated when used in open channel flow. The cleaning procedure of the traps was then evaluated using a pilot scale model.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Norhan Abd. Rahman, Noraliani Alias, Noor Suraya Romali and Norazman Othman. 2009. Evaluation of Gross Pollutant Traps (GPTs) for Open Channel System, <i>International Conference on Water Resources, ICWR 2009</i>. 26-27 May 2009, Kedah. 2. Norhan Abd. Rahman, Shukur Abu Hassan, Noraliani Alias, Siti Rabeah Othman, Noor Suraya Romali and Muhammad Fuad Shukor. Application of GFRP rubbish trap in open channel system. <i>Proceedings of the Sixth seminar on Water & Wastewater management and technologies, JSPS-VCC Core University Program-Environmental Science</i>, 17-18 July 2008, Sabah, 3. Norhan Abd. Rahman, Noraliani Alias, Siti Rabeah Othman and Noor Suraya Romali. <i>Biofilter application for surface runoff system, International Conference on Civil engineering</i>, 12-14 May 2008, Pahang.
Awards/Certificates	Silver Medal, Drainage Trash Trap System, Malaysia Technology Expo 2006, Kuala Lumpur, Malaysia
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	The Effect of Edible Bird's Nest Extract on Chondrocytes Isolated from Osteoarthritic Articular Cartilage
Project Number	06-01-06-SF0257
Project Leader and Team Members	Leader: Lee Ting Hun Members: Fadzilah Adibah, Ida Idayu Muhamad and Ramlan Abdul Aziz
Field of Research	Biotechnology
Project Summary/ Objectives	The project had developed and standardised the procedure for extraction of edible bird's nest. The research has also studied the effect of edible bird's nest towards chondrocytes from osteoarthritic articular cartilage.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: 1. Lee Ting Hun. 2009. Edible Bird's Nest Extract Promoted Cartilage Matrix Expression and Suppressed the Catabolic Genes Expression in Osteoarthritic Chondrocytes. <i>Poster Presetation in 2nd International Conference on Biotechnology for the Wellness Industry (ICBW)</i> , 23-26 July 2009, Kuala Lumpur.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Development of a Simulation Model of Traffic Operations at Signalised Junctions for the Improvements of Traffic Signal Design Procedure and Elimination of Dilemma Zone Problems
Project Number	06-01-06-SF0299
Project Leader and Team Members	Leader: Othman Che Puan Members: Che Ros Ismail and Mohd Rosli Hainin
Field of Research	Engineering Sciences
Project Summary/ Objectives	The project include studies to determine the existence dilemma zone (DZ) conflicts at signalised junctions. The weakness in the design elements of traffic signal settings was identified based on the facts that DZ conflicts existed at all intersections studied. The study also quantified the frequency of drivers facing dilemma zone conflicts. This frequency ranges from 15.82% - 80.66% of the drivers facing the amber period. The formula and default values used in the current Malaysian design manual of traffic signal require revision. The studies also concluded that the actuated system type of traffic signal is most likely to yield minimum DZ conflicts at isolated signalised intersection.
Publications/Products/ Outcomes	<p>Proceedings/Coferences/Seminars:</p> <ol style="list-style-type: none"> 1. Othman Che Puan, Mohd Khairi Azfa Abd Aziz and Gillian a/k Andrew Lissem. 2008. A Preliminary Assessment of Factors Influencing Driver's Decision at an Onset of Amber Period at Signalised Intersections. <i>The Malaysian Universities Transport Research Forum Conference (MUTRFC)</i> 12 Aug 2008, Johor. 2. Arash Moradkhani Roshandeh, Othman Che Puan and Majid Joshani. Fuzzy Logic System for Variable Message Signs in Kuala Lumpur. <i>Proceeding of the European Computing Conference 2009</i>. June 2009, Tbilisi, Georgia, Portugal. 3. Othman Che Puan, Mahmood, Mahmoodi Nesheli and Arash Moradkhani Roshandeh. The Effects of Intelligent Transportation Systems on Urban Community. <i>The Malaysian Universities Transport Research Forum Conference (MUTRFC)</i> 2008. Johor.

	<ol style="list-style-type: none"> 4. Mahmood Mahmoodi Nesheli, Othman Che Puan and Arash Moradkhani Roshandeh. Evaluation of Effect of Traffic Signal Coordination on Congestion. <i>Proceedings of the 2nd International Conference on Urban Planning and Transportation</i>. July 2009, Greece. 5. Arash Moradkhani Roshandeh., Othman Che Puan. and Majid Joshani. Artificial Neural Network Model of Traffic Operations at a Signalized Junction in Johor Bahru. <i>Proceedings of the 13th WSEAS Inter. Conference on CURCUITS, WSEAS CSCC Multiconference</i>, 22-24 July 2009. Greece. 6. Othman Che Puan. Existence of Dilemma Zones at Signalised Junctions: A Preliminary Evaluation. <i>Paper presented at Mesyuarat Bil. 1/2007 AJK Kecil Kejuruteraan Majlis Keselamatan Jalan Raya Malaysia (MKJR)</i>. 27 August 2007, Sarawak.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	High Performance Temperature Prediction for Electronic System Using a Distributed Parallel Computer Systems
Project Number	06-01-06-SF0373
Project Leader and Team Members	Leader: Norma Alias Member: Shaharuddin Salleh
Field of Research	Information, Computer and Communication Technology (ICT)
Project Summary/ Objectives	The project had derived the mathematical model for solving temperature prediction in electronic system. Parallel computational software for solving the large scale parabolic problems of heat transfer was developed. The software enables prediction of the temperature behaviour in semiconductor and multi-layer full chip. It was implemented in a web based system that allowed access to real time solutions. The copyright disclosure was issued by UTM.
Publications/Products/ Outcomes	Publications: 1. Norma Alias. Thermal simulation algorithm for temperature distribution of multilayered full chip structure using green function. 2. Norma Alias. Sequential algorithms of parabolic equation in solving thermal control system on printed circuit board high performance computing of thermal control simulation for multilayer full-chip design.
Awards/Certificates	1. 5 Medals for international and local invention and innovation competitions Research Award, Faculty of Science UTM
IP Status	1. UTM Copyright 2008: High performance Temperature Prediction for Multidimensional Manufacturing Products
Additional Information	Linkages: Antara Steel Mills Sdn. Bhd., SMI Wire Sdn. Bhd., PNE Sdn. Bhd.
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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Craniofacial Mapper System
Project Number	06-01-06-SF0392
Project Leader and Team Members	Leader: Zulkepli Majid Members: Rosnita Muhammad, Halim Setan and Zainul Ahmad Rajion
Field of Research	Applied Sciences and Technologies
Project Summary/ Objectives	The project has built a prototype Craniofacial Mapper System that consists of Craniofacial Imaging System and Craniofacial Mapping Software for the purpose of craniofacial reconstructive surgery.
Publications/Products/ Outcomes	Proceedings/Conferences/Seminars: <ol style="list-style-type: none"> 1. Alias, Nor Azira.,Setan, Halim., and Majid, Zulkepli. 2008. Calibration of a Digital Camera for Close-Range Photogrammetry Application. In: 7th International Symposium & Exhibition on Geoinformation (ISG 2008), 13-15 October, Kuala Lumpur. Others: <ol style="list-style-type: none"> 1. Z.Majid., H. Setan., A. Chong. 2008. Integration of Stereophotogrammetry and Triangulation-Based Laser Scanning System for Precise Mapping of Craniofacial Morphology. The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences ISPRS Congress Beijing 2008 Volume XXXVII Part B5 Commission V ISSN 1682-1750. 2008, China.
Awards/Certificates	<ol style="list-style-type: none"> 1. Mobile Craniofacial Imaging System, INATEX 2009 (UTM), Gold 2. Craniofacial Mapper System, MTE 2010 (National), Silver
IP Status	<ol style="list-style-type: none"> 1. Mobile Craniofacial Imaging System, Patent (PI2010 000071) 2. Craniofacial Mapper System, Patent (PI2010 005583) 3. A Multi-Sensor Craniofacial Imaging System, Patent (PI 2011 000665)
Additional Information	Linkages: Collaboration with University of Southern Queensland, Australia



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COMPENDIUM OF MOSTI FUNDED PROJECTS – SCIENCEFUND (S&T Core)

Project Title	Intelligent Embedded Controller for NGVRefuelling
Project Number	06-02-02-SF0012
Project Leader and Team Members	Leader: Nordin Saad Members: Mohamed Ibrahim and Mahidzal Dahari
Field of Research	Engineering Sciences
Project Summary/ Objectives	<p>The work involves development of a controller for a multi-stages-natural gas vehicle (NGV) refuelling system, and optimisation of the switching-time transitions of the developed controller. An alternative solution to reduce time and energy losses during refuelling is by optimum filling schedule using a series of sources with increasing pressures. However the challenge lies in finding the suitable method that could automatically and optimally switch the refuelling source from lower to higher pressure bank sequentially as the vehicle storage pressure increases. Results from experiments have shown that refuelling algorithm developed from this work is capable of providing switching strategy for NGV refuelling with multi-pressure storage sources. This method would lead to the optimum time to switch between the refuelling station's NGV storage banks, reducing the filling time and increasing the filling capacity of the NGV. By implementing the developed refuelling algorithm in an actual NGV refuelling station, it is expected to provide savings in term of refuelling time of NGV vehicle owners and could resolve congestion issue at NGV refuelling stations.</p>
Publications/Products/ Outcomes	<p>Publications:</p> <ol style="list-style-type: none"> 1. M.Dahari., N.Saad., M.I.A. Mutalib. and N.A. Hisam. 2006. Design and implementation of a minimum switching time transitions ngv refueling. <i>NGV2006 Conference</i>, Nov 2006, Cairo. 2. M. Dahari., N. Saad and M.I.A. Mutalib. <i>Implementation of System Identification to the Modeling of Meterless NGV Refueling Dispenser. ANGVA 2007</i>, BITEC Bangkok Thailand, 27-29 November 2007, Bangkok. 3. M.Dahari., N.Saad and M.I.A. Mutalib. Development of meterless ngv refueling system. <i>Paper presented 4th Biannual Postgraduate Research Symposium</i>, Universiti Teknologi PETRONAS, Feb 2007, Perak.



	Others: <ol style="list-style-type: none"> 1. M.Dahari. 2009. System Identification and Parametric Estimation of Inferential Coriolis. Doctor of Philosophy (PhD) Thesis. 2. M.Dahari. 2006. Switching time optimization via time optimal control for natural gas vehicle refueling. Master of Science (MSc) Thesis.
IP Status	List of Patent filed: NGV Re-fueling System PI 20071874 Inventor(s): Mohd Ibrahim Abd Mutalib; Nordin Saad; Mahidzal Dahari
Additional Information	Commercialisation: NGV manufactures and related parties i.e., PETRONAS, SHELL, ESSO, Oil & Gas Company
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