

**RESEARCH
PERSONALITY**

*PROFESSOR DR. NORZULAANI KHALID
DR. CHAI WEN LIN
ASSOC. PROF. DR. DANNY WONG TZE KEN*

**IN THE
CENTREFOLD**

*EUREKA 2007
IENA 2007
British Invention Show 2007
UM EXPO 2007
PECIPTA 2007*

**CENTRE OF
RESEARCH**

*University Malaya Centre of
Ionic Liquids (UMCiL)*

THIS ISSUE **Touching Lives Through Research**

RESEARCH BULLETIN FOR THE UNIVERSITY OF MALAYA





From the collection of Nik Meriam Sulaiman.

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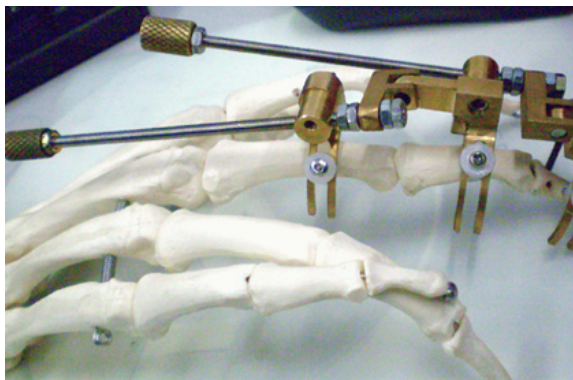
"purple" inspired by Shazrin 2007

on the cover:
collage: Researchers of UM

RESEARCH & COMMERCIALIZATION

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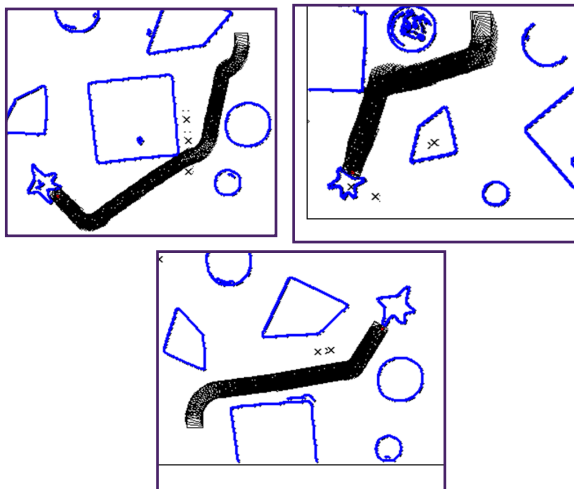
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External finger fixator



Micropulse jet system: flooding method



Sample paths generated for multiple random obstacles for robot navigation system

Much hype has been put on commercialization of research products by the government recently. The Scottish Enterprise *University Research Commercialisation Strategy* review defined commercialisation as, ‘the process of converting science and technology, new research or an invention into a marketable product or industrial process’ (Scottish Enterprise, 1996:2). A survey carried out by Laudry, Amara and Quimet (2002) amongst researchers in Canadian universities identified six stages of knowledge transfer: transmission, effort, consultation, use, business activities and commercialisation. They also found researchers to be much more active in technology transfer activities occurring outside the context of commercialisation of protected intellectual property than in knowledge transfer activities occurring within the context of commercialisation of protected intellectual property.

Although generation of knowledge through basic and fundamental research has always been regarded as one of the core business of a university, the translation of knowledge into economic activity has been increasingly recognised by many as an additional university function, along with research and teaching (Etzkowitz and Leyesdorff 1997:1). How exactly does this affect the researchers and research in the UM? Many of our research are supported by public funding through agencies such as MOSTI and MOHE. One measure of a productive impact of publicly funded research is through its output being translated into useable products, processes and services. Bringing research results and outputs to the market in an effective manner yields tangible benefits from that research and ensures that the research contributes to the economy as well as enhancing the quality of life of the broader community. Thus, it is imperative for researchers and research institutions to build strong, ongoing connections with industry and investors who can help turn ideas, inventions and innovations into economically useful products and bring them to the market.

In this issue, we have invited Dr. Tom Londo who was on a working visit to Malaysia recently to contribute his thoughts on research and commercialisation so as to provide insights for our researchers who are keen to commercialise their products and ideas. Dr. Londo is the president of TRL Enterprises, LLC, USA which is a consulting firm focused on working with its clients to help them turn technology into business. The activities of the firm span from technology identification, acquisition, and assessment through to helping develop and maintain Technology, Product, Marketing, and Business roadmaps for rapid corporate growth leading to long-term viability.

Noorsaadah Abd. Rahman (Editor)

[Commercializing Research Requires Recognition] and Active, Honest Collaboration

By Thomas Londo, Ph.D.

President, TRL Enterprises, LLC, Boston, USA (tlondo@trlenterprise.com)



Researchers generally fall into two camps – those who abhor any form of commercialization or commercial connection with their research and those who tolerate or welcome commercialization. Those in the latter camp fall into three categories.

The first highly overvalues the commercial value of their research and believes that it is immediately ready for manufacture, the market is eagerly pulling for products derived from it, and society will begin to crumble without it. This is because they mostly interact with other creative, innovative people like themselves who are willing to adopt new ideas. Unfortunately, in almost all cases, there is generally at least one to two years of “productization” required prior to being manufacturable, the market at large is unaware that such a product or technology even exists, and society will most likely move along nicely without the product. Researchers in this category must be carefully and objectively helped by a trusted third party to understand the value of their research and dealt with openly and honestly through the commercialization process to prevent them from feeling like they are being taken advantage of.

The second is the other extreme in that it highly undervalues the commercial value of their research and believes that 1) their pursuits are so academic that the market would not be willing to pay for products derived from it, 2) that their research is too esoteric and that they are so far away from a final solution as defined by their research goals that it would be futile to approach the business sector until it is complete, or 3) the science or technology is so complex that it would be too costly or unwieldy to develop products based on it. Often times the reality is that there are products that can be based on the current state or understanding of the research. Determining commercial applicability or viability often requires an objective party to gain a general understanding of the research and examine the possible market areas where it has value. It is difficult for the researcher to accomplish this as they are too close to the details and are locked into only the research or academic view of its applicability. Most successful commercial products have a natural evolution from initial introduction of a very simple form of the product through continued enhancement into more appropriate and sophisticated forms as the market becomes familiar with the technology and acceptance increases. It generally

requires several “heads” independent and partially isolated from the basic research looking at a technology to realize and appreciate the different forms it can take to address society’s needs. Good examples of this evolution are automobiles and computers.

The third has an honest and realistic understanding of the commercial value of their research and their part in the commercialization value chain and process. They welcome open collaboration with business, marketing, and development experts to define and develop the best commercial product possible based on their research. They also understand and accept that each of these areas adds value to the commercialization process and deserves its share of the product’s return.

Successfully converting research, whether academic or industrial, into commercial realization requires candid recognition of the:

- State of the research
- Complexity of the technology
- Value, pertinence, and scope of ensuing product(s)
- Market need for the product(s)
- Effort and cost for market penetration of the product

It is virtually impossible for researchers alone, no matter what category they fall into, to honestly determine and appreciate all these dimensions. In the simplest case, research commercialization requires much more than a researcher’s interest in creating a commercially viable product. It always requires a delicate balance of thoughtful listening and *active, honest collaboration* among the researcher, product developers, marketers, business personnel, and financiers. Each has a necessary role and the roles change throughout the commercialization process. Initiating and moving through this process is most well defined in industrial settings where research directions are inherently pertinent to desired markets and products and commercialization teams already exist, track the research from early on, and are ready to pull products from the research phase to the development phase at the appropriate time. Even then, the attrition rate is high.

In most successful cases, the “commercialization evaluation team” consists of the researcher, a product development person, a technical marketing person, and an entrepreneurial business person. The first step is for the technical

marketing member to stay in close, active connection with the research member. The researcher and technical marketing person work together throughout the research cycle to fully understand and protect the technology and begin defining the market areas in which it would be applicable as well as the types of products possible. The technical marketing person then works with the development and business personnel to develop a business case and value proposition around the possible products. Product definition(s) are honed based on business needs, societal needs, market studies, and technical capabilities – a process in which the researcher’s input is critical. Finally, a formal business proposal is developed and presented to management or investors for approval triggering the Product Development process. The end product may not entirely resemble the initial concept perceived by the product development person.

The most difficult situation for initiating the commercialization process, however, is starting from academic research. Here, access to business, marketing, and development experts is limited, trust among these functions is low, and the process is loose and ill-defined. It is usually left to the academic researcher to seek out opportunities and partners – a tenuous undertaking similar to trying to successfully push a string through a small tube with barbs in it. Even if the researcher effectively puts a team together, it is often psychologically difficult for them to appropriately share leadership with the other team members since they have done all the “heavy lifting” to get to that point. A healthier situation would be for the academic institution to create a vigorous, dynamic commercialization arm and/or industrial consortium led by the institution that takes the responsibility for actively staying abreast of the institution’s research on a routine basis and seeks out researchers who have projects ready to enter the commercialization process. This allows the researcher to continue to offer creativity and manage the research cycle for which they are most expertly equipped but provides them ready access to the input step of the commercialization process. Frequent interaction with the institution’s commercialization arm helps manage the researcher’s understanding of the actual commercial value of the research as well as build the trust necessary for a smooth transition into the commercialization cycle.

BRUSSELS Innova

[The EUREKA Experience]

Brussels Innova Energy Exhibition 2007,
22nd - 25th November 2007



The decision approved by the VC to participate the EUREKA 2007 in Brussels has been approved by the VC of UM and was very much welcomed by UM's researchers. The delegates were headed by Assoc. Prof. Dr. Mohd. Sahar Yahya, Head of UPPP, UM with seven other researchers. Nine excellent products were chosen to be presented in different categories such as Health and Sciences, Energy, Electronic and Electricity in the exhibition. The enthusiasms were evident incredibly high and everyone chosen by the IPPP's committee was in full of spirits and eagerness to present their best products in this superior international exhibition.

On the 19th December 2007, all the researches participating in the expo gathered in KLIA at 9.00 pm with a mission; i.e. to show the world the essence of UM through its research products at Brussels Innova Energy 2007. The journey was blessed with prayers of success from our colleagues and friends in the University of Malaya.

After 13 hours flight, we safely landed in Heathrow Airport, London. We took nearly 6 hours waiting to proceed to our destination, Brussels. Finally, we arrived there on the late afternoon of 20th November 2007. We took bus that has been arranged by UC Travel and headed to our accommodation hotel which is the Ibis Hotel. The journey remains smooth at first. Unfortunately, during the check-in process, we were shocked as we found that our booked rooms had been hold. This was due to our agent; UC Travel has not sent the payment for our lodging. After negotiating, Prof. Sahar volunteered to use his credit card for the pre-payment. At last, we can check into our room and have a good rest.

On the second day morning, we have a good start as UC Travel has settled the hotel payment for us. We decided to take a walk around the city of Brussels to enjoy the serenity and its beautifulness. We returned to the hotel after a couple of hours as a consequence for the bad weather. On the evening, the entire contingent went to Hall 1 to set up their respective

posters and for once, we have a glimpse of the venue of the expo.

On the exhibition days, 22-25th November 2007, we arrived at the hall early in the morning to prepare ourselves for the judging session as the judges may come at anytime as they wish. Although everyone was a bit tense, the whole UM team was very eager and in high of spirit.

During the judging time, we facing some communication problems with the judges throughout the presentations as most of the judges are not native English speaker. However, we managed to sail through it.

Finally, after all the hard work and 8 hours of sitting in the booth for four consecutive days, the announcement of the results was made. In the midst of claps and noises, all the winners were announced. We were very grateful as we won 1 special award, 5 gold medals, 2 silver medals and 2 bronze medals. Thus, the whole contingent won medals and smiles of satisfaction could be seen on everyone's face. Congratulations UIM and the list of the winner (table).

[List of Winners: EUREKA 2007]



| | Project Title | Research Team | Award |
|---|---|---|---|
| 1 | Organic Solar Cells | <ul style="list-style-type: none"> • Dr. Khaulah @ Che Som Sulaiman • Mohd Nizam Yusli • Ali Imran Abdul Hapip • Richard Ritikos | Grand Prize "Prize of the Academy of Sciences of Ukraine" & Gold |
| 2 | Smart Mini Implant Radiograph Holder and Positioner (SMIRP) | <ul style="list-style-type: none"> • Dr. Zamri Radzi • Dr. Noor Azlin Yahya • Assoc. Prof. Dr. Noor Hayaty Abu Kasim • Azuddin Mamat • Dr. Noor Azuan Abu Osman • Zaini Abdul Wahab | Gold with Mention |
| 3 | The Assessment of Consistencies in Mental Judgement using the Cumulative Density Function Graphs for Psychology | <ul style="list-style-type: none"> • Prof. Madya Dr. Mohd Sahar Yahya • Mohd Aizat Mohd Sahar • Nor Samsiah Sani • Norhidaya Kasim | Gold |
| 4 | CNG Direct Injection Engine Conversion Kit | <ul style="list-style-type: none"> • Prof. Dr. Zahari Taha • Raja Ariffin Raja Ghazilla • Yap Hwa Jen • Ainil Jesita Jalaluddin • Norhafizan Ahmad • Koh Kok Hian • Mukhtar Yunos • Sazlina Mat Said • Nor Hamisah Mohamed Nor | Gold |
| 5 | Development of New Solid Polymer Electrolyte with Ionic Liquid (featured below) | <ul style="list-style-type: none"> • Prof. Madya Dr. Yatimah Alias • Muhammad Fadhullah Rahmat | Gold |
| 6 | Light Composite Distometer | <ul style="list-style-type: none"> • Dr. Noor Azlin Yahya • Dr. Zamri Radzi • Assoc. Prof. Dr. Noor Hayaty Abu Kasim • Dr. Noor Azuan Abu Osman • Zaini Abdul Wahab | Silver |
| 7 | Urinary Biomarker as an Indicator for Intestinal Parasitic Infection | <ul style="list-style-type: none"> • Prof. Madya Dr. Umah Rani Kuppusamy • Chandramathi S • Prof. Dr. Suresh G • Ong SC | Silver |
| 8 | Insulin-like Effect of Insumic: A Mushroom Extract Deformity | <ul style="list-style-type: none"> • Prof. Madya Dr. Umah Rani Kuppusamy • Lim Siang Ling • Ng LH • Assoc. Prof. Dr. Noorlidah Abdullah • Prof. Dr. Vikineswary S | Bronze |
| 9 | An LED-based Schlieren System for Visualisation of Injector Flow | <ul style="list-style-type: none"> • Prof. Dr. Zahari Taha • Koh Kok Hian • Raja Ariffin Raja Ghazilla • Yap Hwa Jen • Norhamisah Mohamed Nor • Sazlina Mat Said • Mukhtar Yunus • Iskandar • Ainil • Jesita Jalaluddin | Bronze |

Highlights & Events

We decided to reward ourselves by paying a visit to Amsterdam on the next day. The attractive atmosphere really caught our eyes. One day trip seemed to be not enough for us to explore this beautiful city. We still have to head back to Brussels and pack our belongings.

Our journey to Brussels has come to end. We left Brussels on 27th November 2007 with unforgettable memories.

Yatimah Ahmad (19.12.07)

DEVELOPMENT OF NEW SOLID POLYMER ELECTROLYTE BASED ON IONIC LIQUID

Solid Polymer Electrolyte (SPE) has been of great interest due to the possible application to high energy density batteries like lithium battery. For example, they facilitate the production of miniaturized structures, they are safe, and they enable batteries to operate over a wide temperature range. However, these systems still have some their own technological problems. The main problem is the low ionic conductivity of the polymer electrolytes at room temperature compared with liquid electrolyte solutions. The incorporation of ILs into polymer electrolytes distinctively improves their electrochemical stability and increases the ionic conductivity of the polymer electrolytes at room temperature.

In this work, we synthesized 1-butyl-1-methylpyrrolidinium bis{(trifluoromethyl)sulfonyl}imide ionic liquid following to literature procedure. Highly conductive solid polymer electrolytes with 49% PMMA grafted with natural rubber (NR) as the polymer host containing this ionic liquid and LiCF₃SO₃ were prepared using solvent casting method. The thermal and electrochemical properties of the SPE have been studied.

National Innovation Conference & Exhibition (NICE) 2007

The National Innovation Conference & Exhibition was held at the Putra World Trade Centre (PWTC) from 26-29 October 2007. It was organized by the Malaysian Association of Research Scientists (MARS) and Ministry of Science, Technology and Innovation (MOSTI). UIM was represented by Prof. Dr. Rauzah Hashim from Chemistry Department, Faculty of Science.

Technical Features of Innovations

Title of Invention: Glycosides of Branched Chain Alkyl Oligosaccharides for Liquid Crystals and Related Applications

Malaysian Patent Application:

PI20051074

PCT:PCT/SG/2006/0000333 (approved 2007)

International Publication:

WO2006/098699

Technical Description

Like all natural lipids, branched chain glycolipids BCGs, contain a double alkyl tail, but unlike the former, their double alkyl chain does not contain functional groups hence exhibit higher chemical stability than the formers, while still keeping biodegradability. The basic features of BCGs can be summarized as follows:

- Non-ionic surfactant
- Natural product analogy
- High chemical stability
- Biodegradability

With respect to technical applications, a particular advantage of BCGs, is their non-ionic character. Major benefits of this feature are:

- pH neutrality (compounds do not effect pH-changes; non-irritant)
- No application-sensitivity towards pH (broad application range)
- No sensitivity towards ions (e.g. calcium)

BCGs can be used for many applications. These may be grouped into 3 groups:

- Surfactants for cosmetics and pharmaceuticals
- Bio-recognition for target drug de-

- livery systems
- Self assembly and liquid crystals applications

Surfactants: Glycolipids have acquired a significant economic impact with APGs for surfactant applications. These cover

especially detergents as well as emulsifiers for cosmetics, pharmaceuticals and food. Like APGs, BCGs are also glycosides but with enhanced features (better stability and rheological properties) due to chain branching features; hence BCGs are expected to be a superior emulsifiers compare to APGs surfactants.

Bio-recognition: Glycoconjugates, like glycoproteins and glycolipids, provide communication channels for biological cells. The carbohydrate part acts like an antenna to protein based receptors. Extended research has been performed over decades has shown on possible pharmaceutical applications for various oligosaccharides and conjugates thereof. Thus the carbohydrate group on BCGs has this recognition property for applications such as the target drug delivery systems.

Self assembly

While surfactant and bio-recognition applications for glycolipids are well established, investigations on glycolipids' self assembly have just started recently. This is due to the realization that glycolipids also have thermotropic liquid crystal properties. With respect to this, applications of self assembly are currently targeting not only for life sciences applications but



Highlights & Events

from a thorough understanding of lipid self assembly through liquid crystal phenomena may lead to future applications in other fields including filtration technology and switching.

Possible uses of BCGs:

- Emulsifiers, especially for cosmetics and pharmaceuticals
- Base material for liposome applications (e.g. drug delivery system)
- Base material for gene vectors
- High-tech-nano-filtration (new technology)
- Liquid crystal application

Team

PRINCIPAL Inventor

Prof. Dr. Rauzah Hashim

Glycolipids S&T, Chemistry Department, Universiti Malaya, 50603 Kuala Lumpur

Co-inventors

Rusnah Syahila Duali Hussen, Nasrul

Zamani Mohd. Rodzi, Dr. Thorsten

Heidelberg, Dr. Hind Hassan Abdalla

Hashim, Nurul Fadhilah Kamalul Aripin,

Seyed Mohammad Mirzadeh Hosseini



[UM Senior Scientists awarded MTSF 2007 Science & Technology Award]



The Malaysia Toray Science Foundation (MTSF) recently awarded two senior scientists from the University of Malaya the 2007 Science and Technology Award which carries with it a cash prize of RM 30,000 and a Certificate of Award. They are Professor Dr. Harith bin Ahmad from the Department of Physics and Professor Dr. Thong Kwai Lin from the Institute of Biological Sciences. Only two such awards are conferred each year and UM is indeed proud that this year both awards have been won by UM researchers.

Nominees for this award must be Malaysians residing in Malaysia and has excelled in an area of study relating to natural sciences, excluding mathematics and clinical medicine, who:

- has made a major scientific discovery or discoveries which contributed to the enhancement of scientific knowledge,
- has made an original, revolutionary and important invention, or
- has successfully solved a major technological problem with an economically viable solution.

Professor Harith has long been actively involved in the field of photonics, with over two decades of valuable experience in fiber optics. He has conducted in-depth research into lasers and initiated the study of solid-state lasers in Malaysia, as well as research into laser techniques and optical phenomenon. Subsequently, with initial funding from IRPA and later on from Telekom Malaysia's R&D Division, his research focused more onto the development of L- and C-band optical

amplifiers and other components essential for optical telecommunications. More recently, his research interests have included the development of S-band amplifiers and fiber lasers as well as optical fiber based sensors. Research is also being conducted into planar lightwave circuits utilizing the only fabrication facility in the region that was set up under his supervision.

Professor Thong has pioneered the technique of PFGE in typing bacterial pathogens in Malaysia. She has shortened the original 5-day to 1-day method of DNA preparation. She published the landmark paper in the *Journal of Clinical Microbiology* (JCM 1994; 32:1135) to show that *Salmonella enteria* serovar Typhi is genetically diverse as opposed to the dogma that *S. Typhi* is a homogeneous and highly clonal pathogen. She has demonstrated that there is a movement of strains among the Southeast Asian countries, that strains from fatal cases of typhoid fever were genetically distinct from those associated with mild form of the disease and the possible link in transmission between sewage-contaminated water supplies and human disease. Such information has great impact in the choice of strain for candidate vaccine design and public health. Her expertise was called upon to investigate nosocomial cases involving *Salmonella enteritidis*, *Klebsiella pneumoniae* in the University of Malaya Medical Centre and *Pseudomonas aeruginosa* in HUSM in Kota Bharu. By applying this technique, the sources of infection were successfully identified, thus reducing the burden of disease.

In addition to the above awards, seven out of thirteen recipients of the 2007 Science & Technology Research Grant are from the University of Malaya.

They are the following:

1. Dr. Chan Kok Gan
Institute of Biological Sciences,
Faculty of Science
Research Project: "Molecular Studies on Quorum Quenching System in Soil Bacteria"
2. Mr. Daicus Anak Belabut
Institute of Biological Sciences,
Faculty of Science
Research Project: "The Ecology and Biology of Genus *Microphyla* Tshcudi, 1838 in the Peninsular Malaysia"
3. Mr. Lee Lin Kiat
Department of Pathology, Faculty of Medicine
Research Project: "Epstein-Barr Virus Latent Membrane Proteins in Hodgkin's Lymphoma Immunology and Survival"
4. Ms. Lim King Ting
Institute of Biological Sciences,
Faculty of Science
Research Project: "Determination of the Beta-Lactam Resistance Mechanisms in *E. coli* and *Klebsiella* sp"
5. Dr. Tai Cheh Chin
Department of Orthopaedic Surgery, Faculty of Medicine
Research Project: "Detecting and Monitoring Haematogenous Pathogens in Peri-Prosthetic Infection of Hip and Knee Joints"
6. Mr. Tay Kheng Soo
Department of Chemistry, Faculty of Science
Research Project: "Degradation of Biorecalcitrant Pharmaceuticals and Personal Care Products (PPCPs) by Ozone Oxidation"
7. Ms. Teh Ser Huy
Institute of Biological Sciences,
Faculty of Science
Research Project: "The Production of Recombinant Erythropoietin in *Pichia Pastoris* by Fermentation"

Our heartiest congratulations to all recipients of the MTSF awards / grants! Their achievements have brought much credit to the University and help to uphold our image as a Research University.



a first-hand account by
Asrul Mahjuddin Ressang and SP Rao
Faculty of Built Environment

[How it all started]

December 2004 almost ended like any other year with the holiday season and the start of a new school calendar just days away. However, all that changed when the news was aired in the late afternoon of the 26th confirming an earthquake had occurred around the west and northwest of Malaysia, Sumatra, Thailand and part of the west coast of Sri Lanka. The true devastations were not seen and telecasted until a few days later. The destruction of properties, infrastructures and lost of human lives were unprecedented. Never in the history of broadcasting was the aftermath of earthquake and the force of tsunami it brought upon coastal development and town was captured and witnessed live.

Where were we days after the Tsunami? All that we could recall was that we were busy with the new semester and students' registration. However, the images and graphic accounts of the Tsunami and its destructions stuck to us like it was welded and could never be removed. A group of us began toying with the ideas of instant houses and shelters that could be turned into permanent homes. We brainstormed ideas, possibilities and concepts from the most basic to the most complicated. We moved from office room to coffee shop, thinking of the best possibilities we could help, do, create, design or invent.

Throughout the excitement of brain mangling and crunching, we learned and understood the manner human had to go through in the phases of recovery and rebuilding which is almost like our body recovering from injuries. Phases include those of shock and pain, acts to minimize the injuries, healing processes and so forth. We went back to the basic question, what architects and design-



ers like us could do to help and came up with the idea of rebuilding houses from available material in the area struck by earthquake. The start of this idea was showcased at the UM Expo 2005 with an exhibit entitled “Post Disaster Architecture”. The following year, at the UM Expo 2006, we submitted three research works entitled “Post Disaster Architecture-part II”, “SIB-Sustainable Integrated Building System” and “TESS-Total Environmental Sustainable System” which were all geared up to answer the needs of sustainability and preserve the survival and comfort of living for human being.

It is somewhere between consuming our lunch that we thought, “what if we can incorporate readily available solid waste in-between readily available building components i.e. bricks”. Time was not wasted and weekends were

used to collect information, materials and ways to analyze information. We gathered materials and ways to make our ideas work. The idea had to be simple, cheap and almost like the ‘cottage industry’ version. When UM Research Expo 2007 were announced, we grabbed the opportunity to present our research works and ideas. We were grateful to have received valuable recognition but the idea could be further improved. We are indeed very grateful for the support given by IPPP, UPP and UPDiT, namely Prof Nik Meriam, Assoc Prof Sahar, Prof Johari and all of their support staff. It has been a wonderful research journey for us at the Department of Architecture, Faculty of the Built Environment. We shall return for the UM Expo 2008 with more ideas and invention, Inshaallah!

[List of Winners: Bristish Invention Show 2007]

| | Project Title | Research Team | Award |
|---|--|--|--------------------|
| 1 | Sandwich Brick - Sustainable Construction (featured in the next page) | <ul style="list-style-type: none"> • Asrul Mahjuddin Ressang • Aminuddin • Assoc. Prof. Sreenivasaiah • Purushothama Rao | Diamond & Gold |
| 2 | Development of High Toughness Synthetic Bioceramic for Bone Implant Technology | <ul style="list-style-type: none"> • Dr. Mohd Hamdi Abd Shukor • Dr. S. Ramesh • Tan Chou Yong • Iis Sopyan | Double Gold & Gold |
| 3 | Minimal Cutting Fluid Application in Pulsed Jet Form | <ul style="list-style-type: none"> • Dr. Mohd Hamdi Abd Shukor • Basri Din Kamar • Farazila Yusof • Fadzil Jamaludin • Bushroa Abd Razak • Siti Nurmayya Musa | Gold |
| 4 | Global Strain Extensometer (GLOSTREXT) Pile Test Instrumentation Technology for Driven and Jacked-in Prestressed Spun Concrete Piles | <ul style="list-style-type: none"> • Prof. Dr. Faisal Hj. Ali • Ir. Lee Sieng Kai | Gold |
| 5 | SANAsms - Secure Short Messaging System | <ul style="list-style-type: none"> • Ainuddin Wahid Abdul Wahab • Nor Badrul Anuar Juma'at • Muhammad Azlan Ibrahim | Gold |
| 6 | SSEDS: Steganography System for Examinations Data Security | <ul style="list-style-type: none"> • Ainuddin Wahid Abdul Wahab • Karlina Zakaria • Mohd Firdaus Hanafiah | Gold |
| 7 | Development of A New External Finger Fixator to Correct Flexion Deformity | <ul style="list-style-type: none"> • Dr. Noor Azuan Abu Osman • Herman Shah Abd Rahman • Prof. Dato' Dr. Tunku Sara Tunku Ahmad Yahya • Dr. Ir. Wan Abu Bakar Wan Abas • Shuhaida Yahud | Gold |
| 8 | Design of an Automated Rapid Maxillary Expansion (RME) Device for Dento-facial Application | <ul style="list-style-type: none"> • Dr. Noor Azuan Abu Osman • Airul Sharizli Abdullah • Dr. Zamri Radzi • Fariza Ariffah Zabir • Assoc. Prof. Dr. Noor Hayaty Abu Kasim • Dr. Noor Azlin Yahya | Silver |

Sandwich Brick Diamond Award (Natural Earth Environment)

Building construction has evolved drastically with some advance building construction system. These include the integrated building system, what is certain is that the building construction used a lot of energy, material and resulting some immediate wastage. Building being erected directly or indirectly will utilize a lot of energy to ensure the comfort of occupants. The external wall of the building will take some heat gain from the sun. Therefore, the research project focuses on the construction aspect of the external wall and the thermal conductivity. The research project also covered the use of recycle material as part of the external wall construction component.

Research Team: Asrul Mahjuddin Ressang Aminuddin & Assoc. Prof. Sreenivasaiah Purushothama Rao



The Brick



Testing the Brick



Paper-based material

Kumpulan Guthrie Berhad Signs Memorandum of Understanding with University of Malaya

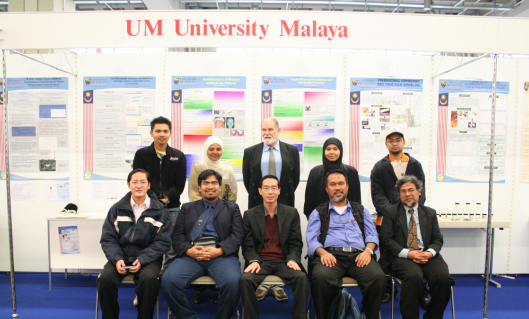


On 4th September 2007, Kumpulan Guthrie Berhad (Guthrie) and Guthrie Biotech Laboratory Sdn. Bhd. signed four Memorandum of Understanding (MOUs) for proposed sponsored research with the University of Malaya. Under the provisions of the MOUs, Guthrie will sponsor research costs of RM 300,000.00 for each research programmes (refer table) which will be conducted over a two year period. Indeed this event marks another effort on UM's part towards forging and strengthening strategic partnerships with industries in Malaysia. UM is grateful to Kumpulan Guthrie Berhad for their good faith in the capabilities of UM researchers.

| Research Programme | Researcher |
|---|--|
| Research on novel molecular targets for the control of <i>Ganoderma boninense</i> through exploitation of omics data on oil palm- <i>G. boninense</i> interactions | Profesor Dr. Rofina Yasmin Othman |
| Research on developing selected <i>Actinomycetes</i> as plant growth enhancers and bio-control agents of <i>Ganoderma boninense</i> (Pat.) in oil palm | Profesor Dr. Vikineswari Sabaratnam |
| Research on developing high throughput production through cell suspension cultures and physico-biochemical validation of technology controlled clonal planting materials for oil palm | Profesor Dr. Norzulaani Khalid & Profesor Dr. Noorsaadah Abd. Rahman |
| Research on developing targets for shortening the juvenile period in oil palm – influencing early flowering through microRNA | Prof. Madya Dr. Jennifer Harikrishna |



EUREKA 2007



IENA 2007



BRITISH INVENTION SHOW 2007 (BIS)

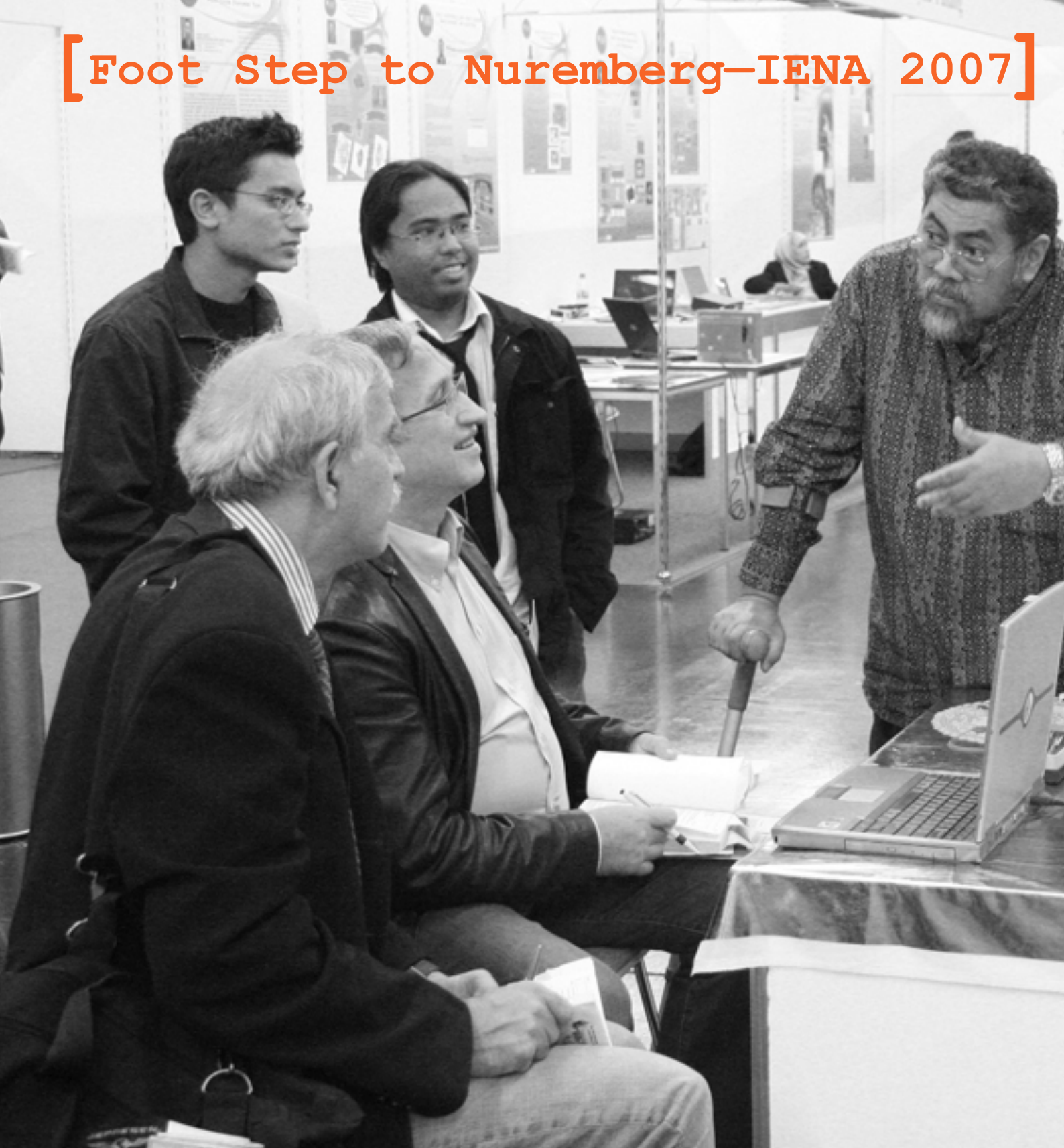


UM EXPO 2007



PECIPTA 2007

[Foot Step to Nuremberg—IENA 2007]



by Dr Chua Kek Heng
Department of Molecular Medicine, Faculty of Medicine, UM

Six UM researchers were selected by IPPP to participate in IENA 2007, Nuremberg, Germany in November 2007. This was one of the main international innovation and invention Expo that UM focused on for year 2007. IENA is a well known world class exhibition involving approximately 800 inventions from more than 30 countries.

We spent almost 1 month preparing our poster, pamphlets, prototypes and other needs for the exhibition and it was with mixed feelings of excitement and pressure to perform well at the international level that we left for Nuremberg.

On October 29th 2007 at 8 pm, Prof Nik Meriam and others sent us off at KLIA with full blessing and support. After 16 hours of traveling, we arrived at

the Frankfurt Airport and took a domestic flight to Nuremberg Airport. The weather in Nuremberg was extremely cold and it was drizzling when we finally arrived there. Luckily, a guide from the Novotel (the hotel that we stayed in) was there to greet and take us to the hotel. Thanks to IPPP for such a convenient arrangement.

On October 31st at 10 am, after breakfast, we all went to the exhibition hall



to set up and decorate our booth. IENA exhibition hall is just 15 minutes walking distance from our hotel. After setting up, we still have a whole afternoon to walk around in the city centre of Nuremberg.

The first day of the event was November 1st. There were several concurrent exhibitions held in the various IENA exhibition halls on the day. Our invention and innovation exhibition was placed in

hall 12. This hall was crowded with visitors and exhibitors, old and young, from various countries since early morning and the Malaysia contingent were grouped together at one corner.

The third day of the exhibition, November 3rd was the most nerve-wrecking moment for all of us because it was the judging day. Early in the morning, three judges in a team came to our booth

and we really tried our best to present our invention to them. Overall, we presented our work in English without any translator since at least one of the professional judges in each team understood English very well. The judges always discussed among themselves for a few minutes, following each of our presentation in German, a language that none of us understood at all. Finally, the highlight of the day came

[List of Winners: IENA, Germany 2007]

-- the prize-giving ceremony in the evening. The sequence of the announcement is similar to other prize giving events where winners of the bronze medals were first called to the stage first. In the midst of claps and lights of camera flash, all winners were announced subsequently.

Overall, the whole UM contingent won 5 gold, 5 silvers, 1 bronze and 1 special award. Congratulations UM! We created another great record in an International expo and this time in a beautiful and peaceful city of Nuremberg, Germany.

(pictures in the centerfold)

DEVELOPMENT OF PCR BASED BETA-HAEMOLYSIN GENE DETECTION SYSTEM FOR AEROMONAS USING IN SILICO APPROACH

This is a PCR detection system for screening of virulent strains of Aeromonas that carry β -haemolysin gene. This product was developed based on primer designed targeting b-haemolysin gene of Aeromonas using In Silico approach. The Aeromonas DNA samples were prepared through simple boiling method followed by PCR condition optimization. Finally, a PCR-based system that can detect Aeromonas carrying b-haemolysin gene was developed.

**Research Team :Dr. Chua Kek Heng
Gold Medal (Medical Technology)**



Top: Gram-negative rods *Aeromonas* species
Right: Fish infected with *Aeromonas*



| | Project Title | Research Team | Award |
|----|---|--|--|
| 1 | Semiconductor / Polymer Electrolyte Junction Solar Cell | <ul style="list-style-type: none"> • Prof. Dr. Abdul Kariem Hj. Mohd Arof • Mohd Hamdi Ali @ Buraidah • Dr. Siti Rohana Majid • Mohd Zieauddin Kufian • Teo Li Ping • Mohd Fakhru'l Zamani Abdul Kadir • Syed Abdul Hadi Syed Abdul Malik | Special Award (Prize Ministry of Education and Science of The Russian Federation) & Silver |
| 2 | Using Statistical PDF Graphs to Assess the Consistencies of a Person Heuristics Focusing on the Central Confidence Interval Technique | <ul style="list-style-type: none"> • Assoc. Prof. Dr. Mohd Sahar Yahya • I. Mohamed, I • Ismail • M. A. Mohd Sahar | Gold |
| 3 | Robust Semi-solid Pharmaceutical Bases From Local Palm Oil Resources | <ul style="list-style-type: none"> • Dr. Mohamed Ibrahim Noordin • Assoc. Prof. Dr. Chung Lip Yong • Daniel Chung Weng Seng | Gold |
| 4 | Thermostable Suppository Bases from Palm Kernel Oil | <ul style="list-style-type: none"> • Dr. Mohamed Ibrahim Noordin • Assoc. Prof. Dr. Chung Lip Yong | Gold |
| 5 | Development Of PCR Based Beta-haemolysin Gene Detection System For Aeromonas Using In Silico Approach | <ul style="list-style-type: none"> • Dr. Chua Kek Heng | Gold |
| 6 | Giobs - A Variant / Mutation Screening System For Crohn's Disease | <ul style="list-style-type: none"> • Dr. Chua Kek Heng • Dr. Ng Ching Ching, • Dr. Ida Hilmi • Prof. Dato' Goh Khean Lee | Gold |
| 7 | Natural Colorants from Intact and In Vitro Plants for Coating Technology | <ul style="list-style-type: none"> • Prof. Dr. Abdul Kariem Hj. Mohd Arof • Prof. Dr. Rosna Mat Taha • Amirrudin Mokhtar • Nor Azlina Hasbullah • Asmah Awal | Silver |
| 8 | Digital Watermarking Methods for Multimedia Forensics | <ul style="list-style-type: none"> • Dr. Woo Chaw Seng • Dr. Jiang Du • Prof. Dr. Binh Pham | Silver |
| 9 | Customization of Medical Implants for Patients | <ul style="list-style-type: none"> • Dr. Woo Chaw Seng | Silver |
| 10 | K-Differences Algorithm Implementation to Detect Polymorphic Worm in Network Environment | <ul style="list-style-type: none"> • Emran Mohd Tamil • Mohd Yamani Idna Idris • Noorzaily Mohamed Noor • Zaidi Razak • Lee Mee Mee • Hong Chien Wei | Silver |
| 11 | An Intelligent Parking Information System | <ul style="list-style-type: none"> • Emran Mohd Tamil • Mohd Yamani Idna Idris • Noorzaily Mohamed Noor • Zaidi Razak • Lee Mee Mee • Hong Chien Wei | Bronze |

Project Monitoring for Science Fund

Monitoring of the research projects for the first cycle of the science fund (funds received in December 2006) for two research clusters were carried out recently. The projects monitored were from the sea-to-space clusters and from the biotechnology cluster. A total of 36 projects from UM were monitored; 6 projects from the sea-to-space clusters and 30 from the biotechnology cluster. Monitoring was carried out at the respective laboratories in the UM for the sea-to-space cluster while those in the biotech clusters presented their research progress in a more formal, presentation to panel of evaluators at the Palace of the Golden Horses. At these monitoring, researchers were asked to give a short presentation of their project, progress, financial report and output for the past 1 year. The panel of evaluators will then evaluate the performance of research projects based on the followings; scope and objectives, milestone achievement, utilization of human resources and research equipment, and project expenditure and recommendations for 2nd year funding and project activities. They will also identify strengths and weaknesses of the research outputs and methodology in order to assist in the identification of potential research outputs to be upgraded or commercialized.

[Dr. Norzulaani Khalid]

The University of Malaya (UM) has been involved in the Malaysian Antarctic Research Pro

Prof. Dr. Norzulaani Khalid graduated from the University of Malaya with a BSc(Hon) in botany in 1984. She then pursued graduate studies in the University of Nottingham UK through a scholarship under the Academic Training Scheme for Bumiputras in 1985 and obtained her PhD in plant biotechnology in 1989. Prof. Norzulaani was appointed as lecturer in the Universiti Malaya in 1991 and promoted to an associate professor in 1998 and to a full professor in 2007.

Since her appointment she has received numerous grants and awards from both national and international boards. For her first sabbatical leave, Prof Norzulaani was awarded the Islamic Development Bank Merit Award Scholarship where she was the Visiting Fellow at the Boyce Thompson Institute, Cornell University, USA. Here, she was trained in plant transformation. In 2003 she received a Fellowship from the International Atomic Energy Agency to spend a year of sabbatical from the university to work at the John Innes Institute, Norwich, UK

set-up by the Universiti Malaya. Its role involves transferring research technology and output through industrial partnerships and research contracts, production of planting materials and training. For PBIU, the technology in question is plant cell culture to produce clonal plants in bulk. Many researchers shy away at the thought of providing this technology to the industry due to the precise and highly technical nature of the procedure, so they prefer other less complex and more direct methods like ready-to-grow shoots from the micropropagation of plant meristems. Prof Norzulaani, however, has taken up this challenge and carried out research in the area to enable this technology to be more applicable to the industries. According to Prof. Norzulaani, the greatest advantage of cell culture technique is in its number where up to 10 fold increase of planting material could be produced within the same time period. Moreover, cell culture technique has a high rate of efficiency, low contamination rate, as well as lesser use of hazardous materials. There is a downside to this coin, however, as highly skilled individuals is needed to deal with the cultures. "This is not really something one can learn just because one has a de-



international links and has received grants from the International Atomic Energy Agency and the British Council.

In addition to her responsibilities as a lecturer and research, Prof. Norzulaani is also actively involved in many outreach programmes involving farmers, teachers and school children. In collaboration with Pusat Sains Negara, Prof Norzulaani and her team had organised workshops and training sessions to school teachers and the public at large. Besides, PBIU has participated in many local and international exhibitions in an effort to popularise plant cell culture techniques.

Research Personality

focusing on Plant Molecular Biology .

Trained in the field of protoplast technology and tissue culture, her research interest has since evolved to include manipulation of transgenic plants for trait improvement, cell cultures for secondary metabolites, as well as plant metabolomics.

An active researcher, Dr Norzulaani has commercialised her research products and patented the technologies developed in her research.

Currently Dr Norzulaani heads the Plant Biotechnology Incubator Unit (PBIU), a unit which is heavily engaged in Plant Biotechnology research. PBIU is a commercial lab under the Centre for Research in Biotechnology for Agriculture (CEBAR)



gree, but it requires a strong dedication to the work. Also, the cultures experience a higher degree of somaclonal variation (rearrangement of chromosomes in plants that have been produced by plant tissue culture)", explained Prof. Norzulaani.

Citing an example, industry contacts who collaborate with PBIU sign up as industry partners and provide funding for the particular project, as well as sponsor for a research student to work on the project.

Besides receiving grants from the Ministry of Science and Innovation and the University of Malaya to carry out her own work, the various research work in PBIU are also sponsored by Equator Biotech. Sdn Bhd. and Yayasan Felda. The unit also has many

"I believe that tissue culture has a lot to offer, and what I hope to achieve is to demystify the technique to the public, and allow them to understand that such technologies are not scary," said Prof. Norzulaani. What she hopes to achieve is for the industry investors to be able to trust and understand the scientists better, get them to be better informed and allow them to invest in the research work carried out in the universities. "This should be their social responsibility to promote local research and bring them into the market place," added Prof. Norzulaani. The unofficial theme of Prof. Norzulaani's research lab is "to popularize, to provide and to educate", and what she is currently working on revolves around this. She believes that the popularization of technologies into everyday application is the way to go to help our agribusinesses and that the scientists are here to provide expertise and knowledge, as well as being a hub in educating the public.

[Dr. Chai Wen Lin]

When I was first contacted by IPPP to write about my experience in undertaking research, I hesitated as my experience is considered rather “little” when compared to the well-seasoned professors. Having said that, I think some readers may like to know how exactly a young researcher feel, what their experience is; the aspiration and perspiration etc. I guess I am here to share with you what I have gone through.

Let’s start with a brief background of myself. I graduated with a Bachelor of Dental Surgery from this same university in 1994. Briefly after that, I served as a dental officer at the Ministry of Health in Ipoh, Perak. After about one year in service, and with the little money that I managed to save, I left for the Queen Victoria Hospital in East Grinstead, West Sussex of England to do my clinical attachment. This clinical attachment was important as it broadened my knowledge and experience as well as helped me fulfil the requirement needed to sit for the fellowship in Dental Surgery examination.

I obtained my Fellowship in Dental Surgery from the Royal College of Surgeons of England by the fourth year of being a practising dentist. I was also a tutor at the Faculty of Dentistry of the University of Malaya by then. With this specialist qualification, I was offered the job of a lecturer in late 1998. That was when my involvement into research began.

As the Fellowship training that I undertook was mainly a clinical based specialist examination, I decided to sign up for the Master in Dental Science programme offered by my alma mater. I hope to gain more experience in research by doing so. This was my first encounter of doing a proper structured research. Initially, I thought doing research would not be as difficult as passing the fellowship examination, which usually has a passing rate of about 30% only. Only when I started my project that I realised there were many other issues that a researcher needs to face. For examples, you need to build a good rapport with your supervisor(s) and

have a very good time management to juggle between research, teaching and family commitments as well as organising ways to get research funds and equipments. You also need to communicate with other researchers and the list goes on and on.

There would be days when you are frustrated and feel really down. Take my own personal experience, for example. I got myself into depression during the initial part of my project, as I have to cope with my teaching commitment, a new born first child and my study i.e. Master in Dental Science cum research. I almost wanted to give up. Fortunately with the encouragement of my family and colleagues, I stayed on! I asked for a one-year break from my study to gain time to recover from the ordeal. When I restarted the research in which I had completed a first part, I encountered more obstacles to progress on.



I finally decided to change my focus and got myself in a totally new project where I managed to complete the laboratory using my 9 month sabbatical leaves. There were days when I had to leave my children with their babysitter and stayed back to continue the laboratory work till late nights.

Thank God, my hard work and determination finally ‘paid’ off, with the completion of my MDS in 2005. Looking back, it took me almost 7 years to complete it (also bear in mind there were 2 different projects involved). The moral of the story is that researches need lots of commitment. I guess most colleagues and seasoned researchers in this University would agree with me. If one is involved in other commitments, such as teaching jobs, he needs to be good in juggling between his research and his routine duty. This is normally tough for a lecturer in dentistry as we spend lots of time in the clinic either teaching the students or treating our patients. On average, we had about 2 treatment sessions and 5 teaching sessions a week. Each



session last about 3 hours (or almost half a working day), so, whatever time left is what we normally use for preparing/updating lectures, administrative duties, and of course research.

Nevertheless, my guess is that it is difficult to see the immediate “reward” for any research. You will definitely feel very proud when your work make it to an international reputable journal, what more when your work is cited by your colleagues half way across the world, or even in different languages. Some people tie the outcome of research with promotion, but again, it is always a catch twenty-two situation. I have been a lecturer for almost 10 years now, would only keep my fingers crossed when it comes to promotion. Nevertheless, receiving the Vice Chancellor Award for having published a reasonably good number of articles for last year was definitely a surprise and to me is recognition to the hard work done. It is also a boost to my confidence in undertaking future research. Now that I am leaving for my PhD in the United Kingdom, I hope to learn of research specialty lacking in the country. And I hope when I finally complete my study, I can contribute back to the university and society.

Wishing everybody a successful journey in research, cheerio!



[Dr. Danny Wong Tze Ken]

[Balancing the Two Worlds of Vietnam and Sabah]

Associate Professor Dr. Danny Wong Tze Ken has the distinction of being the only Vietnamese history specialist in the country. A product of the ancient tutorship scheme at the History Department, Faculty of Arts and Social Sciences, University of Malaya, Dr. Wong conducted research on Vietnamese history for both his Master and Doctoral dissertations. His MA thesis entitled, "Vietnam-Malaysia Relations during the Cold War" was published by the University of Malaya Press in 1995 while part of his PhD thesis on Nguyen Southern Vietnam was published in 2007 as Vietnam-Champa Relations during the 17th and 18th century (San Jose/Paris: International Office of Champa). A complete work will be published by Indes Savantes of Paris.



Dr. Wong's research on Vietnam focuses on three areas: Vietnam's foreign relations during the 17th and 18th century; Vietnam's links with Southeast Asia and the study of the history of Champa and its relations with the Malay World. The unifying (general) theme of these three areas has been building bridges between the world of Indochina and the world of Southeast Asia, by focusing on people-to-people links which include cultural, religious, trade as well as state-to-state diplomacy. This has been an important theme considering the fact that many, including policy makers tends to on contemporary happenings and information and neglected the past which Dr. Wong believed would provide many valuable information as well as precedents from the past which would enhance any attempt to have a better understanding of the present interaction.

One such case is the long existing relations between the Malays of Peninsula Malaysia and the Chams of Vietnam and Cambodia. Many do not realise that underneath the diplomatic and economic ties with Vietnam, the Malays have maintained many centuries of

Research Personality

unbroken ties with the Chams in Indochina. Dr. Wong's research on this area has attracted the eyes of the Toyota Foundation of Tokyo, which funded Dr. Wong to carry out a project on the subject from 2003 to 2005. The project has culminated in several research papers published in the Kyoto Review of Southeast Asia and several chapters in books. Two other papers on the relations between the Malays and the Chams will be published in 2008 by Asia Research Trends (Toyo Bunko, Japan) and Journal of the Japan Society of Southeast Asian Studies.

Working closely with the Ecole Francaise d'Extreme-Orient of Paris (French Centre for Far East Studies) in Paris, Dr. Wong is currently working on a set of documents from the Royal Archives of Champa at Panduranga, The archives consist of various documents in the form of receipts, deeds, agreements as well as official correspondence covering the period of 17th and 18th centuries. By working on this set of documents, it is hoped that research on Champa would penetrate beyond the normal official documents, hence would provide a closer look at the relationship between the Chams and the Vietnamese. Dr. Wong is also leading a team of researchers from UM, including a French Research Fellow to work on a project entitled, "Malaysia's Relations with Vietnam: Drawing Inferences from Historical Precedents for the Future". The project will look at Malaysia's long standing ties with Vietnam which including four dimensions, namely, from archaeology (Dong Son Drums), Cham-Malay ties, Chinese business ties and modern day diplomatic ties.

For Dr. Wong, Developing Vietnamese history in Malaysia has not been an easy task. Over the years, the popularity of the subject has its pendulum swings from being alien to be a popular aspect in Southeast Asian history. For a start, all prospective students have to consider investing time in learning the Vietnamese language and the French language. While it is generally accepted that a working knowledge of both languages would be suffice, the very thought of having need to dabble in two of the more difficult languages in the world has definitely discouraged more from taking up the challenge. Despite this shortcoming, it is heartening to learn that currently there are three PhD candidates working on different aspects of Vietnamese history. Out of the three, two have spent more than half-a-year learning the language in Hanoi with one of them having moved on to learning French language. The other candidate is currently learning Vietnamese language at the Language and Linguistic Faculty in UM. There are also two students from Vietnam currently working on their MA dissertation, working on relations between the Malays and the Chams.

It is interesting to note that apart from being known for his research on Vietnam and Indochina, Dr. Wong is also known for his research on Sabah. According to him, his interest on Sabah began during the lull between the end of his MA and the beginning of his PhD when he was carrying out a small search on his grandfather in the Sabah State Archives in 1994. Since then, Dr. Wong has published four books on the history of Sabah with two more in the pipeline. Working initially on the history of the Chinese in Sabah, he then moved on to research on the Second World War in Sabah. Currently, he is working on the question of codification of adapt (customary law) in Sabah and the hybrid community of Sino-Kadazan. A spin-off from these research is the offering of a shared course on history of Sabah and Sarawak.

Looking back on his two main research areas of Vietnam and Sabah, Dr. Wong felt that though they are poles apart, working on both areas have actually allowed him to look at each side with perspectives learned from working on the other, hence making his research more lively and interesting as there are rooms for comparison as well as reflection. Though he admitted that it has not been easy to juggle between Vietnam and Sabah, it was worth the while, if not rewarding.

Training Workshop on the Taxonomy of Marine Algae

A Training Workshop on the Taxonomy of Marine Algae, was jointly organized by the University of Malaya Maritime Research Centre (UMMRc), the National Oceanography Directorate, Marine Parks Department and the Forest Research Institute of Malaysia, from 15 to 22 August 2007. Twenty-three participants from Malaysia, Singapore, Thailand, Philippines, Vietnam, Indonesia, Hong Kong, and South Korea participated in the workshop which comprised lectures, hands-on practicals and a field-trip to Port Dickson where the participants were taught the sampling and field identification techniques. Four expert taxonomists, Professor Dr. Hiroshi Kawai from Kobe University Research Center for Inland Seas, Japan, Professor Dr. Khanjanapaj Lewmanomont from Kasetsart University, Thailand, Dr. Myung Sook Kim from Pusan National University, South Korea; and Professor Dr. Phang Siew Moi and Dr. Lim Phaik Eem, from the Algae Research Laboratory, University of Malaya, were the workshop lecturers.

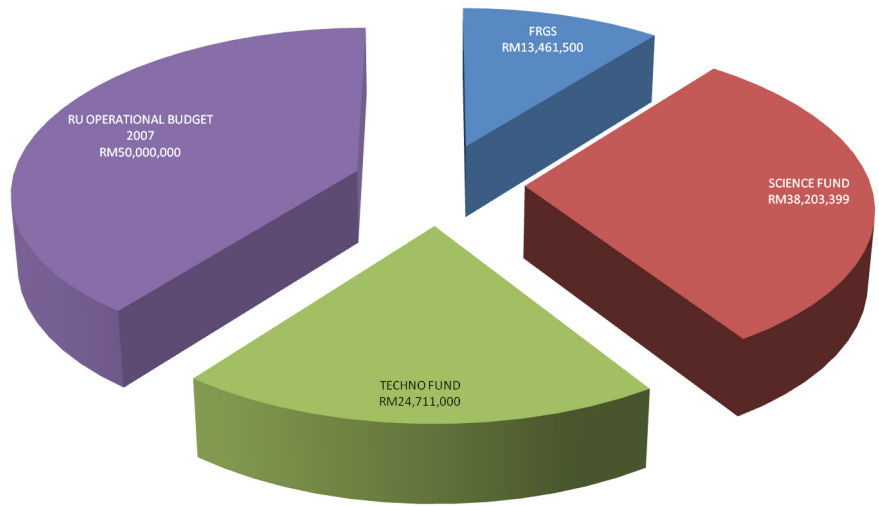
During the workshop, lectures introducing the diversity and phylogenetics of the main groups of the marine algae, namely the green, red and brown seaweeds, were presented. In the afternoon, practicals were held late into the night. At these hand-on sessions, herbarium specimens and some fresh Malaysian seaweed specimens were used for the teaching of identification procedures of these seaweeds. The participants were taught how to make sections and examined under microscope for identification of the diagnostic morphological and anatomical characteristics that were used for species identification. In one of the practicals, Prof. Hiroshi Kawai taught how to start a culture of seaweed in the laboratory. This is important to establish a live culture collection of indigenous seaweeds in controlled condition in addition to a herbarium collection.

As a result of the wonderful working relationships during the workshop, it was agreed that the workshop would continue into a series of training workshops to be conducted on a regular basis. A Con-

Major Research Funding for 2007

The diagram below summarises the amount of research funding that the researchers have managed to secure from the major funding body for the year 2007, namely MOSTI through the Science Fund and Technofund and MOHE through the FRGS grant. It is hoped that the university's researchers will be able to secure a much better amount of funding for the coming year.

**SUMMARY OF RESEARCH FUNDS RECEIVED FOR 2007
(funds disbursed up to August 2007)**



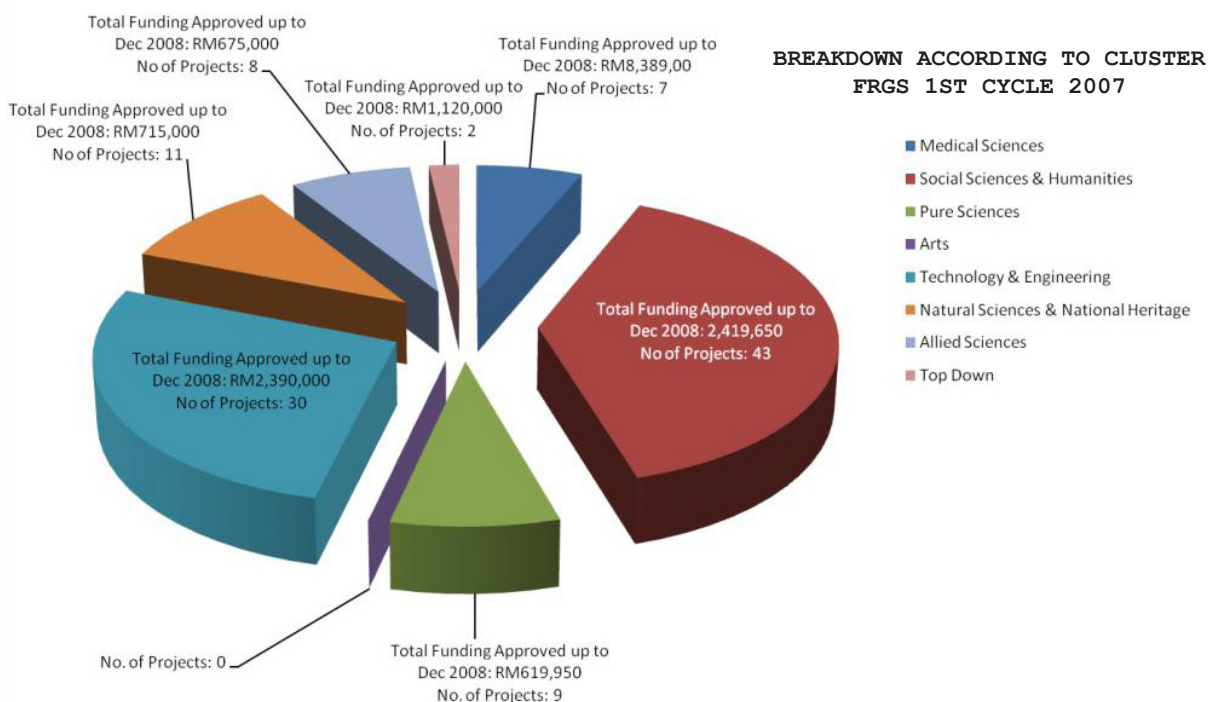
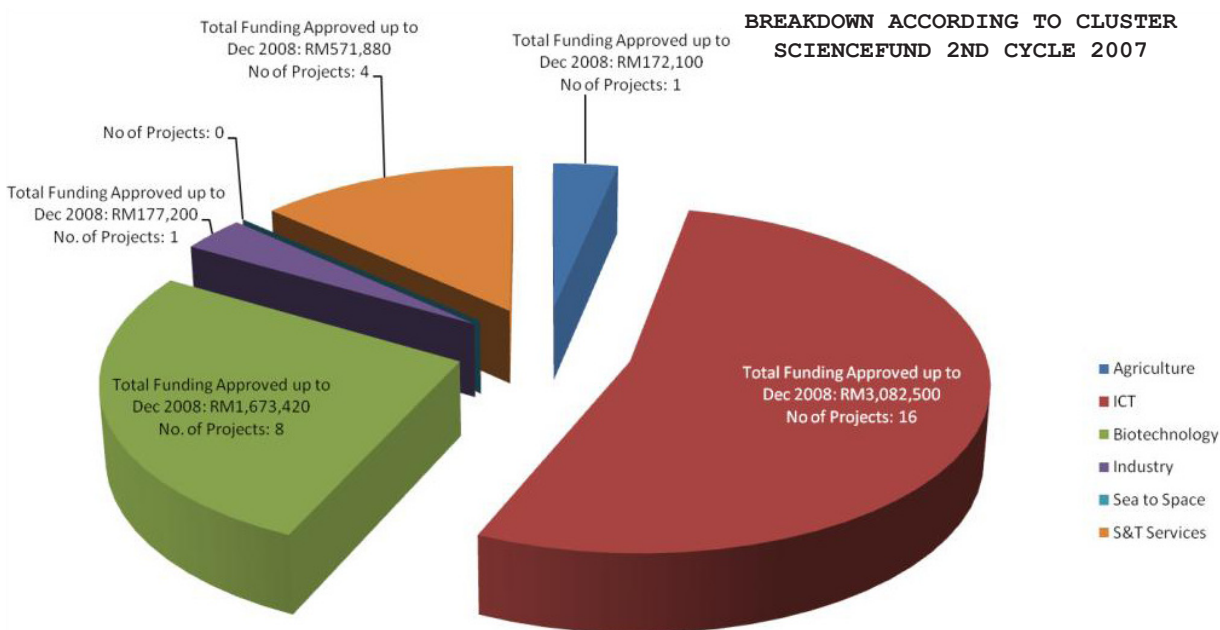
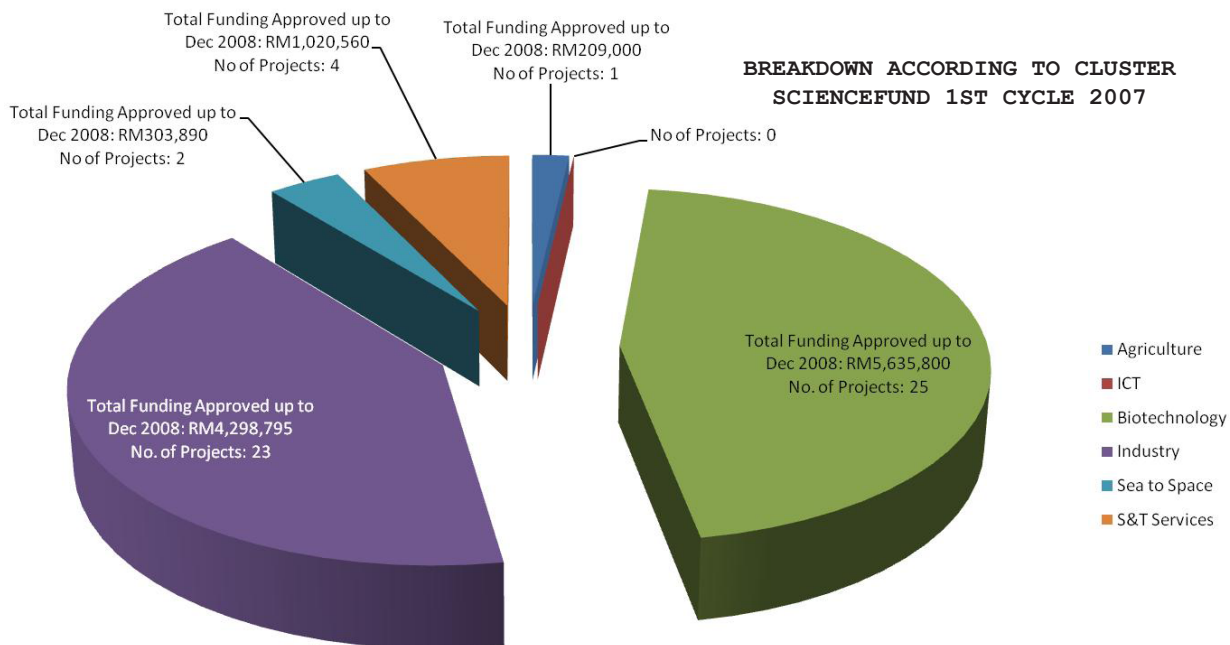
sortium of ASEAN Seaweed Taxonomists was proposed to be established under the Asian-Pacific Phycological Association, in which Prof. Phang serves as the President.



The monograph of the Diversity of South-East Asia Marine Seaweeds is in preparation.



Training Workshop On Taxonomy of Marine Algae
15 - 22 August 2007
University of Malaya, Kuala Lumpur Malaysia



Chemistry is very much part of our daily lives, from the food we consumed to the clothes that we wear.

However, the advancement in chemistry has also brought about some new environmental and other unexpected problems that resulted in the urgent requirement for “greener”

chemical processes and products.

Since 1987, the Montreal Protocol has identified the need to re-evaluate chemical processes with regard to their use of organic

solvents, in particular volatile organic compounds (VOCs), due to the impact of these VOCs on the environment. Thus, chemists have started looking into more environmentally friendly alternatives to petrochemical-based solvents. Over the last few years, ionic liquids have become a hot “new” topic in chemistry as alternative solvents for organic solvents in industries. Industrial scientists at such companies as BASF and Merck, looking for safer ways to produce chemicals have begun to integrate ionic liquids into their work. While most people are familiar with ionic compounds, the most common being table salt, ionic liquid may be a little foreign to them. Ionic liquid is similar to ionic compounds but they remain in liquid form at room temperature. For salt to be a liquid, it has to be heated up to 800 degrees. However ionic liquids are liquid without having to heat them up. Traditional organic solvents are volatile and pose a respiratory hazard, but ionic liquids are practically non-volatile and do not pose a respiratory hazard. Since chemicals are a necessity in our modern lives, industries are looking towards green technology and developing new uses of ionic liquids, such as in lubricants and batteries.

Universiti Malaya, in keeping up with the frontier technology in research has recently set up a centre called UM Centre for Ionic Liquid (UMCiL) in order to spearhead research in green technology, in particular in ionic liquid technologies. This centre will consolidate research activities on sustainability and green technologies across faculties and research groups in the UM into a comprehensive and integrated initiatives for better management of resources. Currently, there is no such formal centre in the university and in the Asean region that brings together researchers working

on green technology and ionic liquids. By setting up such a centre, UM will be the pioneer and will show its commitment to the importance of sustainability and green environment. In addition, once consolidated, the various research groups in the area of green technology in UM will

be strengthened and this will create a greater impact since this centre will bring together respective researchers in various disciplines and promote sharing of expertise and resources in solving multidisciplinary research problems in green chemistry and technology. It is hoped that this will lead to higher quality and increase in research outputs such as publications, patents, commercialized products and processes.

Something about Ionic Liquid

Ionic liquids are liquids that contain essentially only ions. Thus, in a broader sense, ionic liquid can include all molten salt such as sodium chloride (table salt) at a temperature higher than 800 °C. However, today, the term “ionic liquid” commonly refers to salts whose melting point is relatively low (below 100 °C). Salts that are liquid at room temperature are a special group of ionic liquid called room-temperature ionic liquids, or RTILs. An example of an RTL is the ethylammonium nitrate.

Ionic liquids have been known for over 80 years. However, it is only in the past decade that significant studies on the synthesis of air and water stable ionic liquids, their properties and applications have been carried out. They are presently attracting the attention of researchers as they can be used as smart solvents for organic reactions as they possess negligible vapor pressure, thus allowing easy product separation by distillation. This feature is extremely appealing as compared to the high polluting effects usually associated with the use of volatile organic solvents. The recent increased interest in ionic liquids for industrial applications ranging from petrochemical industry, to the environmental and nuclear industry is due to the fact that these materials can be used as alternative reaction solvents. This interest is a direct result of the diverse physical

properties of these liquids, e.g. the density, viscosity and water miscibility, and the way in which they may be systematically varied. They also have effectively zero vapour pressure, which makes them ideal solvents for reactive chemistry which allows for direct distillation of solutes from the solvent and simple solvent recycle without the production of VOC's.

Activities of UMCiL

On 7th March 2007, Universiti Malaya signed an MOU with Queen University of Belfast and the Queen University Ionic Liquid Laboratories (QUILL) to collaborate in research on the synthesis of ionic liquids and its applications, in particular in the area of catalysis and green technologies. Following this, UMCiL has also begun some activities such as staff visits and attachment to both institutions (QUILL and UMCiL) as well as several workshops on ionic liquid in the university.

The research activities of UMCiL are currently carried out in two faculties, i.e., the Faculty of Science, in particular the Chemistry Department and the Faculty of Engineering, in the Chemical Engineering Department. The work at the Chemistry Department focuses on the design and synthesis of new ionic liquids and its great potential in electrochemical applications, since, presumably, ionic liquids are ‘designable’ or ‘fine-tunable’. Electrochemistry basically needs two materials: electroconductive materials and ion-conductive materials. Ionic liquids have opened the possibility of improving ion conductive materials since they often have wide electrochemical potential windows and good inherent electrical conductivity. In addition, the wide liquid ranges with respect to temperature enabled them to dissolve a wide variety of inorganic, organic and organometallic species.

At the Chemical Engineering Department, the SepTech Group of UMCiL aims to enhance the application of efficient and novel separation processes using ionic liquids in the local industries by acting as a link between fundamental research and industrial applications. Within the last few years, many new discoveries and concepts in the area of separation technology have emerged as more efficient, cleaner, and cost saving processes. The application of ionic liquids in conjunction with advanced separation processes such as membrane, reactive adsorption, absorption and distillation processes are the emerging future technologies for green production. It is hoped that many industries such as the food, oleochemical, oil and gas, and the petrochemical industries, the major processing industries in Malaysia, would benefit from such new technologies.



Welcome



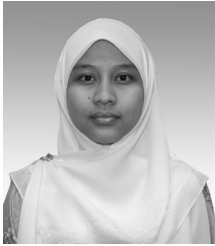
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Thank you for all your services



Dato' Prof. Dr. Mohd Jamil Maah
Director of Consultancy Unit
Congratulations on appointment as
Dean (Science Faculty)



Prof. Dr. Mohd. Sofian Azirun
Dep Director of Consultancy Unit
Congratulations on appointment as
Deputy Dean (Science Faculty)



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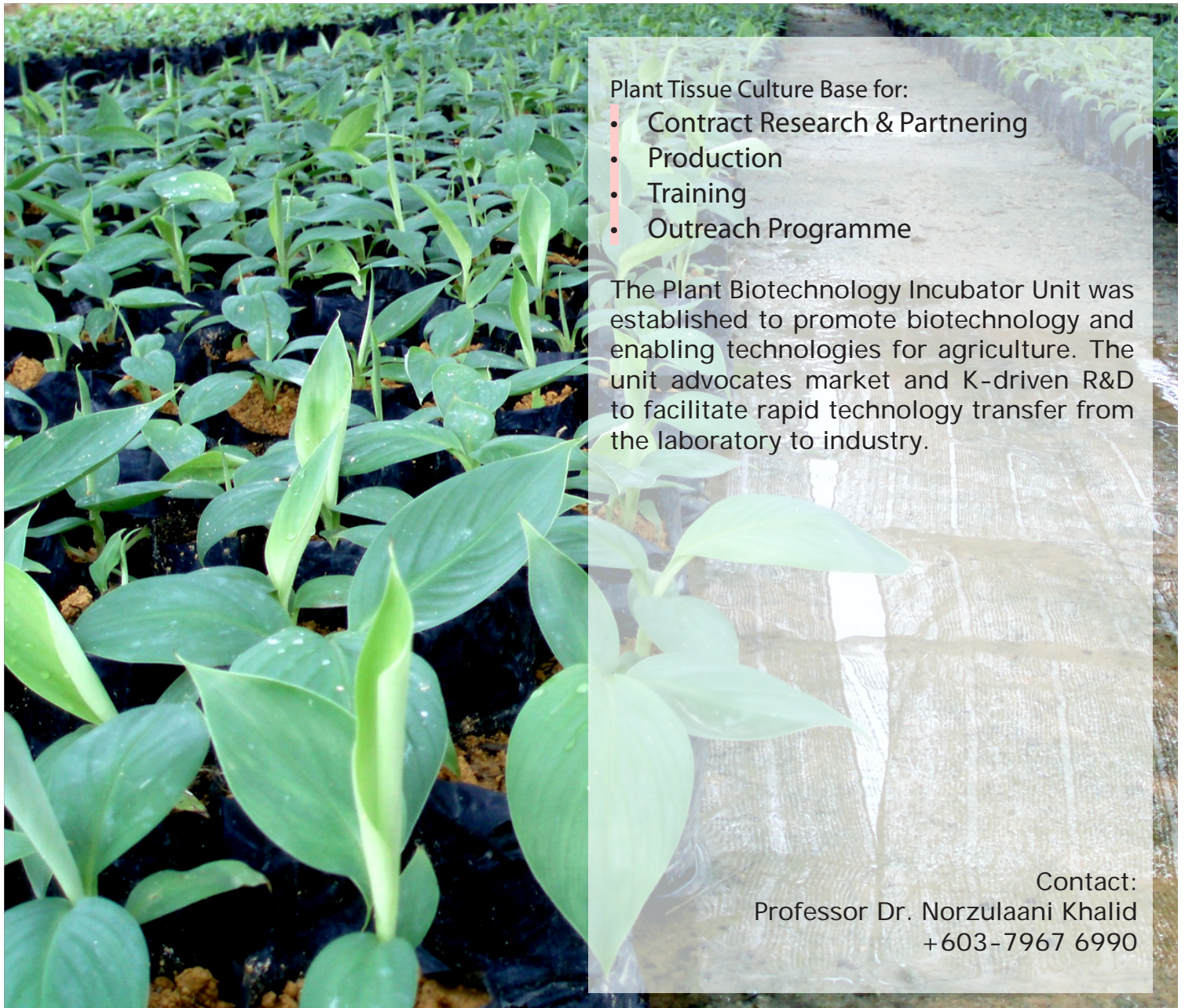


Mrs. Wan Mazni Wan Mohd Woojdy
Administrative Officer



Plant Biotechnology Incubator Unit

Universiti Malaya, Kuala Lumpur



Plant Tissue Culture Base for:

- Contract Research & Partnering
- Production
- Training
- Outreach Programme

The Plant Biotechnology Incubator Unit was established to promote biotechnology and enabling technologies for agriculture. The unit advocates market and K-driven R&D to facilitate rapid technology transfer from the laboratory to industry.

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