



BULLETIN

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**Ekspo
Penyelidikan
& Inovasi UM
2004**

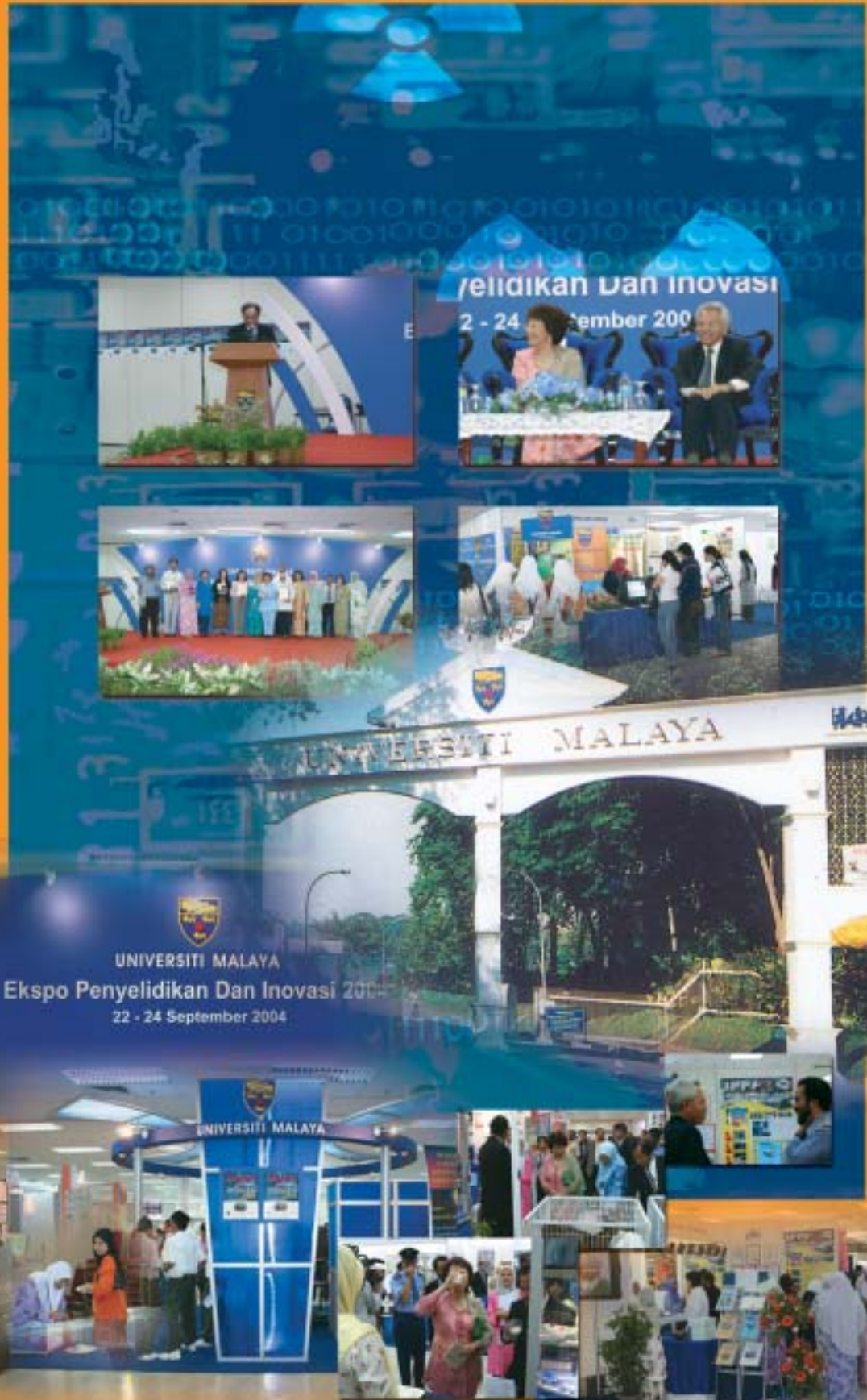
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EDITORIAL

This issue of The Bulletin is entirely devoted to matters concerning exhibitions and its relationship to the R&D activities conducted on campus. Of late, there has been much interest on the 'medals' or awards won by local institutions of higher learning at various exhibitions, both on the local scene or at the international level. Winning awards and gaining the media spotlight is one way of 'advertising' the outputs of some of the research conducted by the academic community, at least in the eyes of the public. As such, UM has taken more aggressive steps towards participating in the relevant exhibitions. One must be really prepared in order to win and the past experiences have given valuable insights on the strategy required to compete. Since IPPP has been given the mandate to be the university's event manager for most of the exhibitions, we are ready to give our best support to the researchers who take part.

In this bulletin we bring to you the various exhibitions that we have taken part in the past and continue to take part in the future. There is also a special tribute to past winners, perhaps this can induce more people to come forward to participate in future exhibitions.

As the rules of the competitions go, most of these exhibitions are heavily biased towards products, hence cater mainly for applied research. Hopefully competitions can also be held for fundamental research for there is an abundance of these nonetheless important research activities.

Hope to see you at the next exhibition!

From the editor.



Letters to the Editor

Please convey your comments, suggestions for improvements regarding issues on R&D to the editor. Articles may be edited for clarity and space before publication.

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EXHIBITIONS – NATIONAL AND INTERNATIONAL

Every year the University of Malaya receives many invitations to participate in various exhibitions and expositions, both held locally and abroad. However due to both financial constraint as well as the significance of each event, the University can send participants to selected events only. IPPP normally manages about nine to ten exhibitions annually on behalf of the University. Two or three are at the international level and these are considered to be important 'not-to-miss' exhibitions.

On the local scene, UM participates in nearly all exhibitions organized by the Ministry of Science, Technology and Innovation (MOSTI). These exhibitions are normally managed by professional event management firms. Some are held on an annual basis while others are held once every two years. It is observed that, lately, there has been an upward surge in the number of such events and thus on the part of UM, we have to be proactive and ready so that we can reap the maximum benefit from our participation.

In this write-up we bring to you some of the finer aspects of the exhibitions and expositions that UM normally participates on a regular basis.

International Invention, Innovation, Industrial Design & Technology Exhibition (I.TEX Malaysia)



I.TEX 2004

I.TEX is officially organized by the Malaysian, Invention, and Design Society (MINDS). MINDS is the largest professional body representing individuals, universities, and companies who are committed to excellence in invention, creativity, innovation and industrial design. MINDS is active nationally and internationally and is associated with the World Intellectual Property Organization (WIPO) and the International Federation of Inventors' Associations. With support from the Ministry of Science, Technology and the Innovation, Ministry of Domestic Trade and Consumer Affairs, Ministry of Education and SIRIM, MINDS has established itself as the leading body to support inventions and designers in Malaysia. MINDS is one of the official organizers for Malaysian participants in the International Exhibition in Geneva, Switzerland. Besides this exhibition, MINDS also organizes two other international invention exhibitions, namely, in Germany and Korea.

I.TEX is actually an international exhibition being held in Geneva, Switzerland annually and organized by

World Intellectual Property Organization. Locally, I.TEX is organized annually since 1989 by MINDS. Now, I.TEX has been recognized internationally as a platform for the exchange of business and creativity concepts. I.TEX has been held for the 15th time this year. It is one of the major exhibitions participated by University of Malaya each year.

Invention and Design Competition

Participants in I.TEX are eligible to compete in the Invention and Design Competition. Some of these awards includes:

- A. *WIPO Gold Medal Award for the Overall Best Invention*
- B. *Invention and Design Awards*
- C. *WIPO Overall Best Woman Invention*
- D. *Henry Goh Environmental Innovation Award*
- E. *Kandiah & Associates KASS Award – The Overall Best Invention*
- F. *Michael Chai IT Award*
- G. *Ram Rais Bio-Technology Award*
- H. *KIPA Special Award*
- I. *Korean Invention Academy Special Award*
- J. *Minds Consolation Special Award*
- K. *Best Woman Inventor/Invention Award*
- L. *Best Booth Award*

The WIPO Gold Medal Award is the most prestigious award in the competition. The winner will have the opportunity to compete in the International Exhibition held in Geneva, Switzerland.

For the Invention and Design Awards, the number of gold, silver, and bronze medals given are not limited. Any participant who achieves the stipulated requirements will be awarded accordingly.

Judging criteria:

- A. Novelty and inventiveness
- B. Usefulness and application
- C. Presentation and demonstration
- D. Commercial potentialities

International Exhibition of Inventions of New Techniques And Products (I.TEX Geneva)



The 2003 exhibition

The I.TEX Geneva is acknowledged as the most important exhibition of invention worldwide today. It also covers the largest number of entrants on a country basis with participation of more than 40 countries including Malaysia. The exhibition is under the patronage of the Swiss Federal Government, the State Council of the Republic and Canton of Geneva, and the Administrative Council of the City of Geneva. In 2004, University of Malaya send five participants and all of them won medals including a gold for a project under our own Vice-Chancellor Dato' Professor Dr. Hashim Yaacob and Professor Dr. Toh Chooi Gait.

Invention And Design Competition

The competition is judged by 60 international juries who are specialists in their own areas. The prizes and awards for this competition include awards from international organizations, including our own Malaysian Invention and Design Society (MINDS). Some of the awards presented at the exhibition include:

1. *Grand Prix of The International Exhibition of Inventions of Geneva*
2. *The Oscar of Inventions 2004*
3. *Prizes of The World Intellectual Property Organization (WIPO)*
4. *International Press Prize*
5. *Prize of The International Federation of Inventors' Associations (IFIA)*
6. *Prize of The Office for The Promotion of Industries and Prize for a Computer Science Solution*
7. *Industrial Design Prize*
8. *The Young Business Managers' Association Prize*

9. *Prize of The Italian Chamber of Commerce for Switzerland*
10. *Prize of The Malaysian Invention and Design Society (MINDS)*



The overall winner from Russia in the 2003 Geneva exhibition

Science, Technology, and Innovation Exposition (Malaysia)

The Science, Technology, and Innovation Exposition is one of the largest expositions hosted by the Ministry of Science, Technology and Innovation of Malaysia. In August 2004, the expo was held for the sixth time in PWTC and had attracted about 250 exhibitors. In 2004 the expo is jointly hosted by the Malaysian Institute for Nuclear Technology Research (MINT), Malaysia Association of Research Scientist (MARS) and SIRIM Berhad.

Innovation and Invention Competition

The medal winners are not restricted to any quota. Every participant is eligible to win gold if his marks surpassed certain level. Winners will receive special awards from the Ministry of Science, Technology, and Innovation. Along with the award, they will also be invited to participate in international overseas competitions such as the International Exhibition of Inventions, New Techniques and Products in Geneva, Switzerland. The competition awards two special winners for the best exhibits:

- A. Best of the Best Award
- B. The Very Best Award

The criteria of the competition are:

- A. Originality of the invention/innovation
- B. Applicability of the invention/innovation
- C. Status of invention/innovation
- D. Commercializability
- E. Presentation

S& T Logo under the patronage of Ministry of Science, Technology and Innovation



SPECIAL TRIBUTE TO TOH PUAN PRO-CHANCELLOR

On behalf of the University we would like to record our utmost gratitude and appreciation for the generous contribution of RM20,000 by the family of our beloved Toh Puan Pro-Chancellor, Yang Amat Berbahagia Toh Puan Datuk Hajjah Dr. Aishah Ong to initiate University of Malaya's Research Fund. It was indeed a very pleasant surprise when Y. Bhg. Dato' Vice-Chancellor made this announcement during the Opening ceremony of Ekspo Penyelidikan & Inovasi Universiti Malaya 2004 recently. Her keen interest and commitment in the University's activities and undertakings are exemplary and we are indeed fortunate to have such a caring and devoted person in our midst. May Allah reward Toh Puan and her family for all their good deeds. As for the UM community we should rise to this occasion and further our mission to be the best in our research endeavours.

We would like to record the following *pantuns* for Yang Amat Berbahagia Toh Puan as recited during that event.

From the Vice-Chancellor

**Burung nuri terbang ke awan
Membawa seranting daun
Terpandang Toh Puan yang cantik rupawan
Rasanya hilang penat setahun**

From Dr. Victor Pogadev (Russian lecturer with the Faculty of Languages and Linguistics)

**Sungai mengalir deras
Angin meniup cepat
Toh Puan duduk di pentas
Toh Puan cantiknya hebat**



HOW TO WIN.....

From past exhibitions, it is observed that there are certain trends that the winners exhibit:

1. The invention/exhibit must be in one of the competition judging categories.
2. The invention/exhibit should have a model/prototype (something tangible to show).
3. The invention/exhibit should be patented or at least in the process of patenting.
4. The invention/exhibit should have the potential to be commercialized.
5. The invention/exhibit should have an impact on our daily lives and the community overall.

6. Every exhibitor must have handouts to give away such as brochures, directories, and so forth.
7. If it is possible, all the medals won in previous exhibitions should be duplicated and exhibited in the exposition.



.....AND THE PRIZES.....



A BRIEF REPORT OF THE EKSPLO PENYELIDIKAN & INOVASI UNIVERSITI MALAYA 2004

(REFER TO CENTRE SPREAD FOR
THE PICTURES)

Organized by the Institute of Research Management and Consultancy, *Ekspo Penyelidikan dan Inovasi UM 2004* was probably the biggest research exposition held in University of Malaya thus far. It was held on 22-24 September 2004 in *Bangunan Peperiksaan*, University of Malaya and it was officially opened by the Pro-Chancellor Yang Amat Berbahagia Toh Puan Datuk Hajjah Dr. Aishah Ong.

The number of participants (listed as projects) was 161 and the Expo had attracted most of the campus researchers from science and technology as well as the non-science and humanities field of research. The number of projects according to clusters were as follows:

- Health & Allied Sciences - 42
- Bioscience and Biotechnology - 20
- Engineering & Physical sciences - 52
- Computer Science and Information Technology – 16
- Social Science and Humanities - 23

Booths were divided into three main groupings representing the faculties, centres of research and IRPA top down and strategic areas grantees. There were also service booths providing simple medical check-ups and dental screening. Service centres from *Seksyen Kemasukan & Rekod* and KKUM also had a booth each.

A series of talks ranging from IPR, e-IRPA application as well as research experiences by COMBICAT, SESMA and GLYCOLIPID research centres provided the crowd with alternative interactive sessions.

INNOVATION AND INVENTION COMPETITION

As one of the objectives of this Expo was to select winners from UM as entries for future competitions, both

local and foreign, a competition was also conducted.

Participation in this competition was divided into the following categories:

- Health & Allied Sciences
- Bioscience and Biotechnology
- Engineering & Physical Sciences
- Computer Science and
- Social Science and Humanities

Judging criteria

Novelty and creativity

- Novelty
- Inventiveness

Purpose of research

- Significance to solving problems

Presentation

- Informative and interesting
- Knowledgeable in the invention exhibits

Commercializability

- Applicability in daily problem-solving
- Diligent in research

A total of 84 medals were given, out of which 30 were gold, 35 were silver and the rest were bronze. The judges had a hard time selecting the winners amidst the variety and high standard of entries.



In addition prizes were also given based on popularity votes from the visitors. These were the “**The most informative booth**”, “**the most friendly booth**” and “**the best overall booth**”. The prizes were won by the Faculty of Science, Faculty of Dentistry and Faculty of Science respectively. It was indeed very encouraging to know that the Vice-Chancellor announced that the gold winners stand a very good chance of attending the ITEX competition in late March next year in Geneva.

All participants also received certificates of participation for their efforts.

THE LIGHTER SIDE.....

Quotes

From Toh Puan Datuk Hajjah
Dr. Aishah Ong

“Kambing pun setuju....”

From the judges:

“please don’t choose me as a judge next year....susah nak hakim kawan”

From Participants

“If I don’t win gold, I’m going back to Iraq!!”

From Exam Section:

Thank you for the staircase. We have waited a long time for it”

EKSPLO PENYELIDIKAN & INOVASI UNIVERSITI MALAYA 2004



Toh Puan Datuk Hajjah Dr. Aishah Ong delivering her speech watched with full interest by Dato' Vice Chancellor and Prof. Rasat



Dato' Prof. Dr. Hashim presenting a special souvenir to Toh Puan Pro-Chancellor and Prof. Rasat



The opening ceremony attracted many reporters from local premier newspapers



The dignitaries



Y. Amat Bhg. Toh Puan visiting the booths



The crowd at the opening ceremony



One of the winners proudly receiving his award



The Main Gallery



The Vice-Chancellor visiting one of the booths



The expo attracted many school students



Some of the winners showcasing their awards





UNIVERSITI MALAYA
Ekspo Penyelidikan Dan Inovasi 2004
22 - 24 September 2004

SUCxES

CENAR

UNIVERSITI MALAYA

JPPF

UNIVERSITI MALAYA

THE HIDDEN WORKFORCE.....

The success of *Ekspo Penyelidikan & Inovasi Universiti Malaya (EPIUM) 2004* was the result of the hard work put in by the whole team at IPPP. Without their tireless effort, EPIUM would not have been successful. Below are some of the behind the scene pictures taken during the exhibition.



The backbone.... IPPP Director Prof. Dr. Rasat and UPP Head Dr. Sahar

IPPP Deputy Director (in green) and IPPP KPP (in blue)... Two of the most important persons in organizing this exhibition



Heavy discussion..... Prof. Nik Meriam, Dr. Sahar and Mrs. Wong



Busy entertaining visitors during the first day



The boys hard at work before the big day



Teamwork



The girls busy finalizing their preparation before the big day



Time for a break



The secretariat booth



The "A" team



The smiles after the hard work

GALLERY OF PAST WINNERS

As a tribute to past winners, we list the names of participants in our records, that have won awards in past exhibitions, starting from 2001. To those who have won, Congratulations for all the hard work put in. We are sure it's been worth it. Hopefully it will spur other researchers to enter exhibitions in the future.



Prof. Ramli, one of our gold medalists in S&T Expo.



Gold Medal winners at ITEX 2004. (Prof. Gan and his team)

GALLERY OF WINNERS

Projects	Participant(s)	Event	Medal Won
2001			
<i>Reproductive Technologies in Goats at UM</i>	Prof. Dr. Ramli Abdullah	Pameran IPTA	Anugerah Merit Genetik – IPTA (Merit Pertama)
<i>Making Rapid Prototypes of Implants by Integration of MRI and Stereolithography</i>	Prof. Ir. Dr. N. Selvanathan	Pameran IPTA	Anugerah TechSource Systems – IPTA
<i>Restoration of Rumah Tok Su and Seri Bonai Alor Star</i>	Assoc. Prof. Dr. Ahmad Ramly	Pameran IPTA	Anugerah PSM (Persatuan Sejarah Malaysia) 2001
2002			
<i>In Vitro Culture Detection Kit for Blastocytis</i>	Assoc. Prof. Dr. G. Suresh Kumar, Prof. Dato' Dr. Khairul Anuar Abdullah, Rajah Salim H.	I.TEX	Gold
<i>Prototype of Femoral Implants for Asian Patients</i>	Prof. Ir. Dr. N. Selvanathan, Assoc. Prof. Dr. David Choon, Assoc. Prof. Dr. John George, Thyaganathan Seperamaniam, Packya Narayanan Dassan	I.TEX	Silver
<i>M-SIGN</i>	Assoc. Prof. Dr. Ow Siew Hock, Shamsul Anuar	I.TEX	Silver
<i>JanetSim</i>	Prof. Ir. Dr. Mashkuri Hj. Yaacob, Ling Teck Chaw, Lim Shiau Hong, Phang Keat Heong	I.TEX	Silver
<i>Active Shape Model for Locating Structures and Dimension for MR Images of the Human Heart</i>	Assoc. Prof. Dr. John George, Prof. Ir. Dr. N. Selvanathan, Thyaganathan Seperamaniam, Aaron Alphonso, Packya Narayanan Dassan	I.TEX	Silver
2003			
<i>Computer-aided Reconstruction of the Zygomatic Complex and the Mandible</i>	Prof. Ir. Dr. N. Selvanathan, Assoc. Prof. Dr. Zainal Ariff Abd. Rahman, Dr. Firdaus Hanapiah, Dr. Siti Mazlipah, Tyganathan, Kevin Johnson, Victor Dass	I.TEX	Gold
<i>MYTEL – An Interactive Voice Response System</i>	Assoc. Prof. Dr. Ow Siew Hock, Assoc. Prof. Dr. Roziati Zainuddin, Robin Rim, David Loo Wai Keong	I.TEX	Gold
<i>Fabrication of Silica for Radiation Dosimetry Applications Using Sol-Gel Techniques</i>	Suhaila Abu Bakar, Prof. Dr. Yusoff Mohd. Amin, Assoc. Prof. Dr. Misni Misran	I.TEX	Bronze

<i>Multimedia Learning System in Virtual Environment for Pre-School Education</i>	Nurul Fazmidar Mohd Noor, Loh May Ping	I.TEX	Bronze
<i>Mobile Phone Usage Growth Rate Indicator (MPID)</i>	Assoc. Prof. Dr. Ow Siew Hock, Koh Yun Sing	S&T Expo	Gold
<i>ICSI Procedure for the Production of Goat Kids</i>	Prof. Dr. Ramli Abdullah, Prof. Dr. Wan Khadijah Embong	S&T Expo	Gold
<i>Production of Synthetic Seeds from Saint Paulia Inonantha H. Wendl (African Violet)</i>	Prof. Dr. Rosna Mat Taha, Norhayati Daud	S&T Expo	Silver
<i>Lignin-Modifying Enzymes (LME) for De Colourisation of Industrial Wastewaters</i>	Prof. Dr. S. Vikineswary, Assoc. Prof. Dr. Noorlidah Abdullah	S&T Expo	Silver
<i>Synthesis, Characterization, Electrochemistry and Microbial Studies of Co (II), Mn (II), and Zn (II) Complexes Derived from Ketones and Benzhydride</i>	Assoc. Prof. Dr. Hapipah Mohd Ali	S&T Expo	Silver
<i>High Performance Visualization Computing for Remote Three Dimensional Image Visualization</i>	Prof. Ir. Dr. N. Selvanathan, Thyaganathan Seperamaniam, Kevin Johnson, Hasnol Hadi Samsudin, Azmir Saifuddin Mutalib, Chin Phaik Kuan, Idarahayu Ayub, Kamaludin Jaafar	S&T Expo	Silver
<i>Batteries from Chitosan Biopolymers</i>	Prof. Dr. Abdul Kariem Arof, Mohd Ikmar Nizam, Mohd Faiz Hassan, Mohammad Ismail	S&T Expo	Silver
<i>Three-Phase Grid Connected Inverter with Maximum Power Point Tracker Control and Power Factor Correction</i>	Prof. Dr. Nasrudin Abd. Rahim, Dr. Saad Mekhilef	S&T Expo	Silver
<i>Development of a Multi-Locking Aluminum Pulley Using Aluminum Extrusion Process</i>	Prof. Dr. Zahari Taha	S&T Expo	Bronze
<i>Synthesis of Phosphor Nano-Materials Using Sol-Gel Micro-Emulsion Techniques</i>	Norfaizah Ab. Azib, Assoc. Prof. Dr. Misni Misran, Prof. Dr. Alias Daud, Aziz Hassan	S&T Expo	Bronze
<i>Use of Waste Heat from Air Conditioners for Drying Clothing under the Malaysian Climate</i>	Assoc. Prof. Dr. S. P. Rao, Zunaibi Abdullah	S&T Expo	Bronze
<i>From Peat Accumulation to Coal Formulation to Oil Generation</i>	Wan Hasiyah Abdullah, Lee Chai Peng, Ismail Yusoff	S&T Expo	Bronze
<i>3D Engine for Education and Entertainment</i>	Amirrudin Hj. Kamsin	S&T Expo	Bronze
<i>Learning in 3D Multimedia Virtual Environment for Pre-School Education</i>	Nurul Fazmidar Mohd Noor, Loh May Ping	S&T Expo	Bronze
<i>Communications Among Online Heterogeneous Repositories for Rapid Knowledge Discovery</i>	Assoc. Prof. Dr. Amir Feisal Merican, Sarinder Kaur, Zahriah Mohd Pilos, Takeshi Sagara	S&T Expo	Bronze
<i>Hopfield Model for Shortest Path Computation and Routing in ATM Network</i>	Prof. Ir. Dr. N. Selvanathan, Lee Chee Weng	S&T Expo	Bronze
<i>Bio-Control of Fusarium Wilt Disease of Banana</i>	Prof. Dr. S. Vikineswary	S&T Expo	Bronze
<i>Sol-Gel Technique for the Fabrication of TLD Probe</i>	Prof. Dr. Yusoff Mohd Amin, Assoc. Prof. Dr. Misni Misran, Suhaila Abu Bakar	S&T Expo	Bronze
2004			
<i>Making Flexible Polyurethane Foams From Palm Oil-Based Polyols</i>	Professor Dr. Gan Seng Neon	I.TEX	Gold
<i>External Fixator (SARA) of the Fingers</i>	Professor Dato' Dr. Tunku Sara Tunku Ahmad Yahya, Professor Dato' Dr. Goh Sing Yau	I.TEX	Silver
<i>Banana Cell Suspension Produced Through Novel Formulation</i>	Assoc. Prof. Dr. Norzulaani Khalid, Assoc. Prof. Dr. Rofina Yasmin Othman, Wong Wei Chee, Mahanum Jalil	I.TEX	Silver
<i>Component-based Data Mining</i>	Dr. Teh Ying Wah, Low Yin Fong, Kow Siew Lan, Ng Wuan Yeim	I.TEX	Bronze
<i>A Visualization of 3D Heart of Human for Educational Purposes</i>	Amirrudin Hj. Kamsin, Norulhuda Abdullah	I.TEX	Bronze
<i>Two Systems for Production of Novel Anti Cucumber Mosaic Virus Recombinant ScFv Antibodies</i>	Assoc. Prof. Dr. Rofina Yasmin Othman, Chua Kek Heng, Jennifer Harikrishna, Ng. Cheah Wei, Assoc. Prof. Dr. Norzulaani Khalid	I.TEX	Bronze
<i>Linear Generator of a New Free Piston Gas Generator</i>	Professor Dr. Khalid Mohamad Nor	I.TEX	Bronze

<i>Immediate Replacement of Missing Teeth in Posterior Mandible with Implant-Supported Fixed Prosthesis</i>	Professor Dr. Toh Chooi Gait, Dato' Professor Dr. Hashim Yaacob	I.TEX Geneva	Gold
<i>Goat Synthetic Breed "Jermasia" and its Frozen Sperm Production</i>	Professor Dr. Ramli Abdullah	I.TEX Geneva	Silver
<i>High Performance Visualisation Computing for Remote Three-Dimensional Image Visualisation</i>	Professor Dr. Ir. N. Selvanathan	I.TEX Geneva	Silver
<i>Virtual Oral and Maxillofacial Reconstruction</i>	Professor Dr. Ir. N. Selvanathan	I.TEX Geneva	Bronze
<i>MYTEL - A Speech-Enabled Interactive Voice Response (IVR) Server</i>	Assoc. Prof. Dr. Ow Siew Hock	I.TEX Geneva	Bronze
<i>Serotype Differentiation & Quantification of Dengue Virus</i>	Professor Dr. S. Shamala Devi	S&T Expo	Gold
<i>Polyhydroxyalkanoates (PHA) as a potential material for the constructions of plates and screw for rigid maxillofacial fracture fixation: Biocompatibility studies</i>	Professor Dr. Siar Chong Huat	S&T Expo	Gold
<i>A Lectin-Based urinary hCG detection kit for confirmation of pregnancy</i>	Professor Dr. Onn Hashim	S&T Expo	Silver
<i>Computer-Aided Craniofacial reconstruction of maxillofacial deformities</i>	Assoc. Prof. Dr. Zainal Ariff Ab. Rahman	S&T Expo	Silver
<i>Single Phase Active Power Filter Design</i>	Professor Dr. Nasrudin Abd. Rahim	S&T Expo	Silver
<i>Smart White Cane for the Blind</i>	Professor Dr. Mahmoud Moghavvemi	S&T Expo	Silver
<i>Glycolipids Synthesis and Informatics</i>	Professor Dr. Rauzah Hashim	S&T Expo	Silver
<i>Improved Artificial Insemination (AI) Technology for Germasia Goat</i>	Professor Dr. Ramli Abdullah	S&T Expo	Silver
<i>Live Indigenous Purple Nonsulphur Bacterial Biomass as an Aquaculture Feed Enhancer</i>	Professor Dr. S. Vikineswary	S&T Expo	Silver
<i>Application on the Structure and Measurement of Key Cardiac Parameters from MR Images of the Left Ventricle</i>	Professor Dr. N. Selvanathan	S&T Expo	Silver
<i>Interactive 3D Learning Tool in Biology – 3D Heart of Human</i>	Amirrudin Hj. Kamsin	S&T Expo	Silver
<i>Rapid PCR-based Assay for the Genotyping of MicroBacterium Tuberculosis</i>	Professor Dr. Ngeow Yun Fong	S&T Expo	Bronze
<i>Bitter Gourd (Momordica Charantia): A Potential Hypoglycaemic Agent</i>	Assoc. Prof. Dr. Mustafa Ali Mohd	S&T Expo	Bronze
<i>A New Intervertebral Distractor</i>	Dr. Chong C.S	S&T Expo	Bronze
<i>Development of Hand Grip Strength Assessment Device</i>	Dr. T. Kamarul Zaman	S&T Expo	Bronze
<i>Thermostable Suppository Bases</i>	Mohamed Ibrahim Noordin	S&T Expo	Bronze
<i>Oral Healthcare Products</i>	Professor Dr. Zubaidah Hj. Abdul Rahim	S&T Expo	Bronze
<i>Three-Phase Grid Connected Inverter with Maximum Power Point</i>	Professor Dr. Nasrudin Abd. Rahim	S&T Expo	Bronze
<i>WARNAGRIP</i>	Assoc. Prof. Dr. Syed Nur Azman Syed Mustafa	S&T Expo	Bronze
<i>Wireless Heart Rate Monitoring System</i>	Professor Dr. Mahmoud Moghavvemi	S&T Expo	Bronze
<i>Glycolipids Functions Applications in Cosmeceutical and Pharmaceutical Industries</i>	Assoc. Prof. Dr. Misni Misran	S&T Expo	Bronze
<i>Thermoluminescence and Dosimetry Analysis of Boron Doped Silica Monolith</i>	Professor Dr. Yusoff Mohd Amin	S&T Expo	Bronze
<i>Innovative Options for Waste Minimization Towards Cleaner Environment</i>	Professor Dr. P. Agamuthu	S&T Expo	Bronze
<i>In Vitro Plantlets for Souvenirs and Exports</i>	Professor Dr. Rosna Mat Taha	S&T Expo	Bronze
<i>Production of Synthetic Seeds of Horticultural Plants</i>	Professor Dr. Rosna Mat Taha	S&T Expo	Bronze
<i>Cutting and Grabbing Simulation of Laparoscopic Cholecystectomy in Desktop Environment</i>	Prof. Ir. Dr. N. Selvanathan	S&T Expo	Bronze
<i>Simulations of Femur Implant Fitting</i>	Mangalam Sankupellay	S&T Expo	Bronze
<i>Time Division Multiplexed Data System over the Internet Protocol</i>	Assoc. Prof. Dr. Kaharudin Dimiyati	S&T Expo	Bronze
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<i>Classroom Assessment System for Teaching and Learning - CASTLE</i>	Assoc. Prof. Dr. Noraini Idris	S&T Expo	Bronze

<i>Development of a Specific Polymerase Chain Reaction Assay for Salmonella Typhi</i>	Professor Dr. Thong Kwai Lin	Ekspo UM	Gold
<i>Designer Plants for Agriculture</i>	Assoc. Prof. Dr. Norzulaani Khalid & Assoc. Prof. Dr. Rofina Yasmin Othman	Ekspo UM	Gold
<i>A Lectin-based Urinary hCG Detection Kit for Confirmation of Pregnancy</i>	Professor Dr. Onn Hashim	Ekspo UM	Gold
<i>A New Intervertebral Distractor</i>	Dr. Chong C.S	Ekspo UM	Gold
<i>Energy Saving Cloth Dryer</i>	Zunaibi Abdullah	Ekspo UM	Gold
<i>Single-Phase hybrid power Active Filter Design</i>	Professor Dr. Nasrudin Abd. Rahim	Ekspo UM	Gold
<i>Three-Phase Grid Connected Inverter With Maximum Power Point Tracker Control and Power Factor Correction</i>	Dr. Saad Mekhilef	Ekspo UM	Gold
<i>Pulsed Plasma X-Ray Source</i>	Professor Dr. Wong Chiow San	Ekspo UM	Gold
<i>Kajian Sejarah Senibina Pemuliharaan dan Pendokumentasian Terhadap Rumah-rumah Warisan Terpilih di Melaka</i>	Nor Haniza Ishak	Ekspo UM	Gold
<i>Cutting and Grabbing Simulation of Lararoscopic Cholecystectomy in Desktop Environment</i>	Professor Dr. Ir. N. Selvanathan	Ekspo UM	Silver
<i>Classroom Assessment System for Teaching and Learning - CASTLE</i>	Assoc. Prof. Dr. Noraini Idris	Ekspo UM	Silver
<i>Pluzyme for Decolorisation of Synthetic Dyes</i>	Prof. Dr. S.Vikineswary	Ekspo UM	Silver
<i>Identification of Immunogenic Epitopes and Mimotopes of Salmonella Typhi by Phag display Technology-a Potential Development of Peptide-based Diagnostic Tests and Peptide Vaccine for Typhoid Fever</i>	Prof. Dr. Thong Kwai Lin	Ekspo UM	Silver
<i>Development of a Transformation System for Gracilaria changii (Gracilariales, Rhodophyta), a Malaysian Red Alga</i>	Prof. Dr. Phang Siew Moi	Ekspo UM	Silver
<i>Electronic Travel Aid for Visually Impaired</i>	Professor Dr. Mahmoud Moghavvemi	Ekspo UM	Silver
<i>Z Board + L Board</i>	Dr. Roslan Hashim	Ekspo UM	Silver
<i>WARNAGRIP-Coloured skid resistant surface screed</i>	Dr. Syed Nur Azman Syed Mustafa	Ekspo UM	Silver
<i>Wave Energy</i>	Professor Dr. Zahari Taha	Ekspo UM	Silver
<i>Melasta Tablets: For Ulcers, Wounds and Hypertension</i>	Datin Associate Professor Dr. Sri Nurestri Abd Malek	Ekspo UM	Silver
<i>Poliuretan dari Minyak Kelapa Sawit</i>	Professor Dr. Gan Seng Neon	Ekspo UM	Silver
<i>Linear Generator System</i>	Professor Dr. Khalid Mohamed Nor	Ekspo UM	Silver
<i>Glycolipids Surfactants: Texture and Structure</i>	Professor Dr. Rauzah Hashim	Ekspo UM	Silver
<i>Glycolipids: From Structure to Technology</i>	Professor Dr. Rauzah Hashim	Ekspo UM	Silver
<i>Innovative Options for Waste Minimization towards Cleaner Environment</i>	Professor Dr. P. Agamuthu	Ekspo UM	Silver
<i>Plasma Ozonizer Module</i>	Professor Dr. Wong Chiow San	Ekspo UM	Silver
<i>Glycolipids Characterization and Applications in Cosmeceutical and Pharmaceutical Industries</i>	Associate Professor Dr. Misni Misran	Ekspo UM	Silver
<i>Concentration of Natural Rubber Latex Using Ultrafiltration</i>	Professor Dr. Nik Meriam Sulaiman	Ekspo UM	Silver
<i>Optimising of the Potential of Older Persons as Critical Resources for Development</i>	Ng Sor Tho	Ekspo UM	Silver
<i>Revisiting Local Government Finance and Equalisation Grant in Peninsular Malaysia</i>	Phang Siew Nooi	Ekspo UM	Silver
<i>The Role and Functions of Local Government in Nation Building</i>	Phang Siew Nooi	Ekspo UM	Silver
<i>Financial Planning Survey in Kuala Lumpur and Petaling Jaya</i>	Assoc. Prof. Dr. Tey Nai Peng	Ekspo UM	Silver
<i>Petronas Malaysian Grand Prix 2000-Economic Impact Study</i>	Assoc. Prof. Dr. Yap Su Fei	Ekspo UM	Silver
<i>MACLE Project: The Malaysian Corpus of Learner English</i>	Assoc. Prof. Dr. Zuraidah Mohd Don	Ekspo UM	Silver
<i>Clinical Investigations to Evaluate the Efficacy of OMX Probiotic Toothpaste on Healing of Gingival and Periodontal Tissue</i>	Dato' Professor Dr. Hashim Yaacob	Ekspo UM	Silver
<i>Missing Tooth and Orthodontic Treatment: Innovation of Simple Prosthesis to be Worn Together with the Orthodontic Appliances</i>	Dr. Zamri Radzi	Ekspo UM	Silver

<i>Produk Penjagaan Kesehatan Mulut</i>	Prof. Dr. Zubaidah Hj. Abd. Rahim	Ekspo UM	Silver
<i>MITRA KIT, The First Mitragynine Test Strip in the World</i>	Assoc. Prof. Mustafa Ali Mohd	Ekspo UM	Silver
<i>Antibiotic Resistance in Malaysian</i>	Prof. Dr. Parasakthi Navaratnam	Ekspo UM	Silver
<i>Serotype Differentiation & Quantification of Dengue Virus</i>	Professor Dr. S. Shamala Devi	Ekspo UM	Silver
<i>Dynamic Ankle Brace for Patients Treated with External Fixator of Tibia</i>	Professor Dr. Saw Aik	Ekspo UM	Silver
<i>Use of a New External Fixator for the Correction of Fixed Flexion Deformity of the Fingers</i>	Dr. Siow Yew Siong	Ekspo UM	Silver
<i>Towards the Development of Multi-Epitope DNA Vaccine for Tuberculosis</i>	Prof. Dr. Thong Kwai Lin	Ekspo UM	Silver
<i>Research in Cancer Progression</i>	Professor Dr. Looi Lai Meng	Ekspo UM	Silver
<i>Viral Encephalitis</i>	Prof. Dr. Wong Kum Thong	Ekspo UM	Silver
<i>Multimedia Learning Tool in Biology for Educational Purposes</i>	Amirrudin Hj Kamsin	Ekspo UM	Bronze
<i>Interactive Virtual 3D Map</i>	Amirrudin Hj Kamsin	Ekspo UM	Bronze
<i>Extolware Persistence Framework</i>	Assoc. Prof. Dr. Lee Sai Peck	Ekspo UM	Bronze
<i>Simulation Of Femur Implant Fitting</i>	Mangalam Sankupellay	Ekspo UM	Bronze
<i>Application on the Structure and Measurement of Key Cardiac Parameters from MR Images of the Left Ventricle</i>	Professor Dr. Ir. N. Selvanathan	Ekspo UM	Bronze
<i>ShuFa - A Computer-Aided Learning Package For Chinese Calligraphy</i>	Associate Professor Dr. Ow Siew Hock	Ekspo UM	Bronze
<i>A Genetic Algorithm Optimizer Tool to Generate Good Quality Timetables</i>	Assoc. Prof. Raja Noor Ainon Zabariah Raja Zainal Abidin	Ekspo UM	Bronze
<i>Interactive Tutoring System in Computer Graphics Mathematics</i>	Assoc. Prof. Dr. Roziati Zainuddin	Ekspo UM	Bronze
<i>Component Based Data Mining</i>	Dr. Teh Ying Wah	Ekspo UM	Bronze
<i>Tropical Mushroom Extracts with Medicinal Properties</i>	Assoc. Prof. Dr. Noorlidah Abdullah	Ekspo UM	Bronze
<i>Penambahbaikan Kambing Kacukan Boer dengan Genotip Jermasia di Kampung Kuala Pah, Negeri Sembilan</i>	Prof. Dr. Ramli Abdullah	Ekspo UM	Bronze
<i>Penghasilan Bahan Kimia Bermutu Secara In-Vitro</i>	Prof. Dr. Rosna Mat Taha	Ekspo UM	Bronze
<i>Linear Regression Model for Circular Variables</i>	Assoc. Prof. Dr. Abdul Gapor b. Hussin	Ekspo UM	Bronze
<i>Characterisation of PNDF Based Polymer Electrolytes for Polymer Rechargeable Batteries</i>	Assoc. Prof. Nor Sabirin binti Mohamed	Ekspo UM	Bronze
<i>Effects of Neutrino Oscillations in the Big-Bang Model</i>	Ungku Ferwani Salwa bt. Ungku Ibrahim	Ekspo UM	Bronze
<i>Transformation of Mosque Design in Malaysia</i>	Mastura Adam	Ekspo UM	Bronze
<i>Wireless Heart Rate Monitoring System</i>	Professor Dr. Mahmoud Moghavvemi	Ekspo UM	Bronze
<i>The Novell Approaches to Enhance the Stability and Psychochemical Properties of Vegetable Oil-Diesel Fuel Emulsions</i>	Professor Dr. Masjuki Hj Hassan	Ekspo UM	Bronze
<i>Production of Zero-ash Activated Carbon from Palm Shell</i>	Dr. Mohamed Kheireddine Aroua	Ekspo UM	Bronze
<i>Intelligent Beetle Omni-Bot Walking Robot</i>	Professor Dr. P. Raveendran	Ekspo UM	Bronze
<i>Messaging System Using Three-Phase Power Line</i>	Dr. Saad Mekhilef	Ekspo UM	Bronze
<i>Fuel System Direct Injection Natural Gas Technology</i>	Professor Dr. Zahari Taha	Ekspo UM	Bronze
<i>Underwater Crawler</i>	Professor Dr. Zahari Taha	Ekspo UM	Bronze
<i>Natural Paints Derives from Plants</i>	Professor Dr. Abdul Kariem Arof	Ekspo UM	Bronze
<i>Thermoluminescence and Dosimetry Analysis of Boron Doped Silica Monolith</i>	Associate Professor Dr. Misni Misran	Ekspo UM	Bronze
<i>Time Division Multiplexed Data Stream over the Internet Protocol</i>	Assoc. Prof. Dr. Kaharudin Dimiyati	Ekspo UM	Bronze
<i>Characterization of Malaysian Gold and Amang</i>	Professor Dr. Teh Guan Hoe	Ekspo UM	Bronze
<i>Supercapacitor Based on Activated Carbon with Poly (Vinyl Alcohol) and Cellulose Based Electrolytes</i>	Associate Professor Dr. Zainol Abidin bin Ibrahim	Ekspo UM	Bronze
<i>Chemical Information Centre - How to Manage Information</i>	Professor Dr. Raubah Hashim	Ekspo UM	Bronze

<i>The 2004 Malaysian General Elections</i>	Assoc. Prof. Dr. Edmund Terence Gomez	Ekspo UM	Bronze
<i>Integrated Rural Development in West Malaysia: The One Village One Product Model</i>	Assoc. Prof. Dr. Radiah Abdul Kader	Ekspo UM	Bronze
<i>The Mah Meri Language of Kampung Bukit Bangkung</i>	Professor Dr. Choi Kim Yok	Ekspo UM	Bronze
<i>hTERT Expression and Telomerase Activity in Oral Carcinogenesis</i>	Dr. Satish Kumar Shyam Kumar	Ekspo UM	Bronze
<i>To Present Scientific Evidence Of Favorable Soft Tissue Response To A New Implant System (Ankylos) For Implant-Tooth Supported Prosthesis In The Posterior Mandible</i>	Professor Dr. Siar Chong Huat	Ekspo UM	Bronze
<i>Innovative Implant Abutment Design For Tooth Replacement With Implant - Tooth Supported Fixed Prosthesis</i>	Professor Dr. Toh Chooi Gait	Ekspo UM	Bronze
<i>Virtual Craniofacial Reconstruction</i>	Associate Professor Dr. Zainal Ariff Abdul Rahman	Ekspo UM	Bronze
<i>In-Vitro and In-Vivo Studies: Pathophysiology of Diabetic Vasculopathy and Development of Novel Treatment Approaches</i>	Assoc. Prof. Dr. Mohd Rais Mustafa	Ekspo UM	Bronze
<i>Clinical Studies: Development of Novel Treatment Methods and Determination of Optimat Treatment Approaches of Diabetic Vasculopathy</i>	Professor Dr. Wan Azman Wan Ahmad	Ekspo UM	Bronze
<i>Virtual Anthropometric Measurements</i>	Dr. Zamri Radzi	Ekspo UM	Bronze

SELECTED ABSTRACTS OF WINNERS OF GOLD MEDALS IN EXPOSITIONS/EXHIBITIONS IN 2004

INTERNATIONAL INVENTION, INNOVATION, INDUSTRIAL DESIGN & TECHNOLOGY EXHIBITION 2004 (I.TEX)

Professor Dr. Gan Seng Neon
Ling Kong Teng
Azalina bt. Puang
Lee Sook Chin
Thamil Selvi Velayutham
Faculty of Science

Making Flexible Polyurethane Foams From Palm Oil-Based Polyols

Abstract:

The polyurethane (PU) industry is a large and diverse business with current global market of more than ten million tons per year. Industrial polyurethanes are produced based on the reactions between of polyisocyanates and polyols. The current commercial polyols are dominated by polyethers and polyesters made from petrochemicals, which are diminishing natural resources. This invention describes a locally developed polyester polyols from palm oil derivatives, for the production of PU foams and adhesives. The polyols were synthesized with up to 30-45% oil content, and molecular weight in the range of 450-2500, and functionality in the range of 1.8-2.5. The physical properties of the PU foams are dependent on the molecular weights; both rigid and flexible foams could be produced. These PU foams have potential application in numerous areas such as bedding, seating, cushion, crash pad, carpet, insulation and even packaging foams for delicate items. In addition, fast cure PU adhesives have been formulated, which could be used to bond different surfaces together. Such adhesives could reduce the manufacturing time, and have many potential industrial applications.

SCIENCE, TECHNOLOGY AND INNOVATION EXPOSITION 2004 (S&T Expo)

Professor Dr. S. Shamala Devi
Yong Yean Kong
Chong Heng They
Faculty of Medicine

Serotype Differentiation & Quantification of Dengue Virus:
Rapid Detection and Quantitation of Dengue Virus by Real Time PCR and Strain Identification of Dengue Virus (serotype 1 to 4) by Standard Multiplex RT-PCR

Abstract:

Dengue fever and dengue hemorrhagic fever currently rank highly among the newly emerging infectious diseases and is considered to be the most important arboviral disease worldwide. The definitive diagnosis is culture, but practical considerations limit its use. Also the period of viral detection is brief. Within a day or two after the fever subsides, rising levels of antibody interfere with viral culture. The alternative therefore is the detection of viral RNA. In our laboratory, a reverse transcriptase polymerase chain reaction (RT-PCR) assay was developed. A set of degenerate primers were designed. The forward primer was targeted to the conserved region of viral capsid protein (C protein) while the 4 reverse primers were targeted to the specific region of pre-membrane (M protein) of the dengue virus 1, 2, 3, and 4 respectively. This multiplex RT-PCR assay was evaluated with 257 samples collected during the year 2003. these groups included prototype dengue virus, serum from which dengue virus was isolated, tissue culture supernatant of dengue virus, seronegative acute sample (culture negative) but seroconverted convalescent sample, convalescent sera IgM positive (clinically dengue) and sera positive for other microbial diseases. Sensitivity, specificity and efficiency of this assay were found to be 95.14%, 100% and 96.1% respectively. The assay was also shown to detect viral RNA in 26% of IgM positive sera. Using this Multiplex a probe was designed to detect any dengue PCR product in a Real Time format. A positive control was then incorporated so that virus amplified can be quantitated. The results of this assay is promising and enables not only qualitative detection but quantitative detection as well. The multiplex requires 4 hours to completion while the Real Time assay takes less than 2 hours. However the major drawback to these tests is costs. A comparative costing was also carried out to compare the different tests used in dengue diagnosis and these will be presented.

SCIENCE, TECHNOLOGY AND INNOVATION EXPOSITION 2004 (S&T Expo)

Professor Dr. Siar Chong Huat
 Prof. Dr. Gan Seng Neon
 Assoc. Prof. Irene Tan Kit Peng
 Dato' Prof. Dr. Lian Chin Boon
 Prof. Dr. Ong Siew Tin
 Dr. Christina Chan
 Faculty of Dentistry

Polyhydroxyalkanoates (PHA) as a Potential Scaffolding Material for Rigid Fracture Fixation of Maxillofacial Skeleton

Abstract:

The clinical application of biodegradable devices namely pins, plates, screws, tacks and membranes in Orthopedic, and Oral and Maxillofacial Surgery has gained increasing importance primarily because of their many advantages over metallic devices. The three most commonly used materials are poly-L-lactide (PLA), polyglycolic (PGA) and polydioxanone (PDS), all initially used as suture materials. PLA is an inherent crystalline polymer available commercially as self-reinforced (SR-PLA) screws and plates for internal fixation of mandibular fractures. However its main restriction of use is its mechanical weakness, slow biodegradation process (2-6 years), and associated foreign body giant cell reactions in the tissues. PGA has osteoconductive properties, and a shorter degradation time but tends to incite a more intense inflammatory response. For some years now, another polymer, polyhydroxyalkanoates (PHA), has attained wide industrial application. It is a carbon and energy reserve material synthesized by bacteria, and viewed as a natural product with potential uses in biomedical fields either as scaffolding materials or barriers in tissue engineering.

EKSP0 PENYELIDIKAN & INOVASI UNIVERSITI MALAYA 2004

Professor Dr. Thong Kwai Lin
 Siva Gowri Pathmanathan
 Institute of Biological Sciences

Development of a Specific Polymerase Chain Reaction Assay for Salmonella Typhi

Abstract:

Typhoid fever, caused by *Salmonella typhi*, is one of the most important diseases in developing countries. Worldwide, there are over 16 million cases annually with 600,000 deaths. In Malaysia, the incidence of typhoid fever has been increasing with periodic outbreaks in various parts of the country. Clinical diagnosis is difficult because the symptoms are not unique and similar to a number of other infectious diseases. Diagnosis by commonly used culture- and serological methods are either less sensitive or unspecific. Molecular methods such as the polymerase chain reaction (PCR) is now a common and easily available tools in a diagnostic laboratory. We developed and designed a specific set of oligonucleotide primers for the rapid detection of *S.typhi* directly from fecal or blood specimens. The PCR assay was tested on 100 *Salmonella typhi*, 56 non-typhoidal *Salmonella* (26 serotypes) and 30 non-*Salmonella* strains. The PCR assay was 100% specific for *S.typhi*. The identity of the positive amplicon was confirmed by Southern blot hybridization and DNA sequencing. The sensitivity of the PCR assay was 2.4×10^5 CFU/ml. The PCR could detect as low as 14CFU/ml *S.typhi* in spiked fecal samples and 3 CFU/ml in spiked blood culture samples after 6 hours of incubation. The PCR assay developed is a promising method for rapid, specific and sensitive detection of *S.typhi*.

EKSP0 PENYELIDIKAN & INOVASI UNIVERSITI MALAYA 2004

Assoc. Professor Dr. Norzulaani Khalid
 Assoc. Professor Dr. Rofina Yasmin Othman
 Chua Kek Heng
 Mahanom Jalil
 Wong Wei Che
 Ng Chia Wei
 Institute of Biological Sciences

Designer Plants for Agriculture

Abstract:

Plant biotechnology has opened up new possibilities for the development of designer products or alternative value-added products from conventional organelle crops. Such an approach requires a multidisciplinary strategy involving tissue culture, molecular biology and plant breeding. Banana and tobacco are two such crops that we have successfully adapted in our laboratory. In tobacco we have developed plants which are expressing a recombinant ScFv antibody targeting cucumber mosaic virus with a potential for use in both diagnostics as well as a novel defense mechanism against the pathogen. Initial bioassays against these plants show highly attenuated symptoms confirming the potential of this technology for enhancing tolerance to pathogens. In addition the antibody is being developed as a sustainable, sensitive reagent for diagnosis of the disease. The final product is a rapid dip stick protocol applicable to field diagnosis. In banana, development of transformation system for Pisang Mas has allowed us to create potential early flowering varieties through genetic transformation. In this research, a monocot early flowering gene has been engineered into this banana, regenerated and are currently being assessed. The gene transfer was made possible by the development of cell cultures a prerequisite of for enabling non-chimaeric transformation of plants. The cell cultures which originate from male flowers, are made up of homogenous cells which can produce up to 20 000 plants from 1 ml of cells. Besides being amenable to foreign gene transfer, these cell cultures are a source of mass and uniform planting materials.

EKSP0 PENYELIDIKAN & INOVASI UNIVERSITI MALAYA 2004

Professor Dr. Onn Hashim
 Dr. Adawiyah Suriza Shuib
 Faculty of Medicine

A Lectin-based Urinary hCG Detection Kit for Confirmation of Pregnancy

Abstract:

We have invented an hCG detection kit for confirmation of pregnancy using two lectins (carbohydrate binding proteins) that were isolated from the seeds of champedak (also spelled chempedak). We have studied the champedak lectins for more than a decade and successfully applied them in different areas of biomedical research. The champedak galactose binding (CGB) lectin interacts with the O-glycan structures of glycoproteins. We have demonstrated that the lectin selectively interacted with human serum IgA1, hemopexin, α 1-antichymotrypsin, α 2-HS glycoprotein and a few unidentified glycoproteins [5]. Because of its binding to IgA1, the CGB lectin (as well as the galactose binding lectin from the seeds of jackfruit) has been successfully applied in studies on etiopathogenesis of IgA nephropathy. The champedak mannose binding (CMB) lectin, on the contrary, demonstrated strong apparent interaction with accessible core mannosyl residues of numerous N-glycosylated glycoproteins [10, 11]. We have initially discovered the lectin because of its selective mitogenic action on human and murine T lymphocytes. In our recent study, we have discovered that the CGB and CMB lectins also interacted with the respective O- and N-glycans of the hormone, human chorionic gonadotropin (hCG) (data unpublished). The presence of hCG in urine of female subjects is generally used as an indicator of pregnancy. At present, detection of the hormone is performed by using immunotechniques involving the use of specific antibodies for hCG binding. In the present invention, we have successfully developed an hCG detection kit using the CGB and CMB lectins

instead of antibodies. When compared to antibodies, the champedak seed lectins are more stable, readily available and easier to isolate. Our novel lectin-based pregnancy confirmatory test kit is equally sensitive as compared to the conventional immuno detection kits but more cost-effective.

EKSP0 PENYELIDIKAN & INOVASI UNIVERSITI MALAYA 2004

Dr. Chong C.S
Faculty of Medicine

A New Intervertebral Distractor

Abstract:

In operation involving vertebrectomy and fusion, the problem that most of the spine surgeon face is how to achieve proper intervertebral distraction and insertion of cage or bone graft that with proper length so that post operatively no residue kyphosis is created. Residue kyphosis is very common in cases of burst fracture underwent anterior decompression and fusion. The intervertebral distractors that are currently available is able to distract the intervertebral space but unable to maintain it (Fig.1). This is because the surgeons need to remove the distractor when he/she needs to place the cage or bone graft in the intervertebral space (Fig.2). The intervertebral space will collapse immediately, the moment the conventional distractors were removed. Distraction of intervertebral space using intrabody screws was developed lately. However, the intrabody screw is unable to withstand excessive force require to distract the intervertebral space especially in correction of kyphosis. This intervertebral distractor allows proper placement of cage or bone graft while the distractor is distracting the intervertebral space. Residue kyphosis is avoided due when proper length of cage or bone graft is inserted.

EKSP0 PENYELIDIKAN & INOVASI UNIVERSITI MALAYA 2004

Professor Dr. Nasrudin Abd. Rahim
Zahurul Islam
Faculty of Engineering

Single-Phase hybrid power Active Filter Design

Abstract:

The wide use of controlled power related appliances such as personal computer, switch mode power supply, adjustable speed drive, uninterruptible power supply, arc furnaces etc, injects a significant harmonic distortion in power system. These harmonic causes an increase in level of rms supply current, which results an increase of power loss, heating of equipment, voltage sags, power factor reduction, interference in communication and also deteriorates the quality of power. Passive filter have been used to suppress harmonic current conventionally. This kind of filter cannot modify their compensation characteristics following the dynamic changes of non-linear loads and the filtering characteristics of passive filters are affected by source impedance. To overcome the disadvantages of passive filter an active power filter is introduced. This work presents a new approach for harmonic control, and its practical implementation for a single-phase hybrid active power filter. It is a combination of a series active power filter and a shunt passive filter. The shunt passive filter is connected in parallel with a load and suppresses the harmonic current produced by the load, whereas the active filter connected in series to a source acts as a harmonic isolator between the source and load. For active filter control, Sinusoidal Pulse Width Modulation (SPWM) is developed and the modulation index is selected by calculating the DC bus voltage of the active filter. The PSpice⁰, Matlab/Simulink⁰ and MAX PLUS II⁰ software's are used for simulation and hardware implementation. ALTERA⁰ FLEX 10K controller and some peripheral circuits are used. The experimental results show that the proposed active power filter topology is capable of compensating the load current and voltage harmonic up-to the limit specified by IEC.

EKSP0 PENYELIDIKAN & INOVASI UNIVERSITI MALAYA 2004

Professor Dr. Nasrudin Abd. Rahim
Dr. Saad Mekhilef
Faculty of Engineering

Three-Phase Grid Connected Inverter With Maximum Power Point Tracker Control and Power Factor Correction

Abstract:

In this project, a three-phase grid connected inverter with maximum power point tracker control and power factor correction is presented. To harvest the vast solar energy specially in tropical country like Malaysia, it would be desirable if the energy conversion units are simple, reliable, low cost and high efficiency. High efficiency can be achieved by the use of all the power generated for the unit and even contribute to the grid while the energy is not used. The output power induced in the photovoltaic modules is influenced by an intensity of solar cell radiation, temperature of the solar cells and so on. Therefore, to maximize the efficiency of the renewable energy system, it is necessary to track the maximum power point of the input source. In this project six-switch topology inverter with symmetrical Pulse Width Modulation (PWM) switching technique is used to control the power switching devices to minimise the low order harmonic present on the AC side of the inverter system. A low pass filter is incorporated in the circuit to filter out unwanted harmonics and to give a sinusoidal AC current. Low total harmonic current distortion at the inverter output can be achieved. The three-phase PWM switching pattern was developed using Xilinx FPGA. The developed system is also capable of adjusting the power factor to unity. A 5kVA power transformer with a 1:2 ratio is constructed to provide galvanic isolation for better circuit performance and circuit protection. The proposed grid connected inverter complies with IEEE recommended practice to utility interface of PV system, IEEE Std 929-2000 and UL1741-1999

EKSP0 PENYELIDIKAN & INOVASI UNIVERSITI MALAYA 2004

Professor Dr. Wong Chiow San
Jasbir Singh
Faculty of Science

Pulsed Plasma X-Ray Source

Abstract:

In the conventional x-ray tube, electron beam is produced by accelerating electrons generated by an externally heated hot filament. When these electrons bombard at the anode, x-rays will be produced. In contrast, the pulsed plasma x-ray source makes use of the transient hollow cathode effect to generate the high energy electron beam. The advantages of the pulsed plasma x-ray source include low operating voltage, cold cathode, simple in construction and low cost. Several models of the pulsed plasma x-ray source with a wide range of electrical input energy have been constructed and tested. They can be used in a large variety of applications such as non-destructive inspection (radiography) of small samples including biological samples, x-ray lithography for fabrication of microelectronic circuits and as a source for modern physics experiments in schools or colleges.

UNIVERSITY OF MALAYA'S PARTICIPATION IN EXHIBITIONS IN 2004

Event	Location	Date
International Exhibition Of Invention Geneva (I.TEX Geneva)	Geneva, Switzerland	31 March – 4 April 2004
International Invention, Innovation, Industrial Design & Technology Exhibition (I.TEX)	Mid-Valley Exhibition Centre, Kuala Lumpur	20 – 22 May 2004
Agriculture Selangor Exhibition (AGRIS)	Seksyen 14, Selangor	27 – 30 May 2004
Bio-Technology Asia Conference & Exhibition (Biotech)	PWTC	16 – 18 June 2004 <i>Re-scheduled to 9-11 September 2004</i>
Creativity In Science & Mathematics Education Expo (S&M)	PWTC	18 – 20 June 2004
Expo Science & Technology (S&T)	PWTC	26 – 28 August 2004
Eco-Products International Fair (ECO)	Mid-Valley Exhibition Centre, Kuala Lumpur	2 - 4 September 2004
<i>Ekspo Penyelidikan & Inovasi Universiti Malaya</i>	<i>Dewan Peperiksaan, Universiti Malaya</i>	22 – 24 September 2004
<i>Pameran Pendidikan Sains dan Matematik</i>	Hotel Renaissance, Kota Bharu Kelantan	9-11 October 2004

For the year 2004, IPPP has managed the above exhibitions on behalf of UM. As can be seen from the table, our participation mainly lies in the areas of science and engineering since most of the competition for innovation are product-oriented and thus leans heavily towards such fields.

From IPPP's experience, the events managed by outside parties start with booking of space, selecting the participants from UM, the actual exhibition period and post mortem of the results. It does entail a lot of hard work and communication skill and of course money to make such events a success. From the experience gained this year, we hope it will result in better performance by UM in future.

WHAT'S IN STORE IN 2005

Below is a list of exhibitions in 2005 that UM staff are strongly encouraged to participate. Please note that participation in such exhibitions is limited in terms of number of entries.

No.	Exhibition	Venue	Date	Competition	Status
1.	International Exhibition Of Inventions Geneva (I.TEX Geneva)	Geneva, Switzerland	31 March – 4 April 2005	Yes	International
2.	Asia Pacific Natural Products Expo (NATPRO)	PWTC, Kuala Lumpur	14-16 April 2005	Yes	International
3.	International Invention, Innovation, Industrial Design & Technology Exhibition (I.TEX)	Mid-Valley Exhibition Centre, Kuala Lumpur	20 – 22 May 2005	Yes	International
4.	Agriculture Selangor Exhibition (AGRIS)	Seksyen 14, Selangor	27 – 30 May 2005	No	National
5.	Bio-Technology Asia Conference & Exhibition (Biotech)	PWTC, Kuala Lumpur	16 – 18 June 2005	No	National
6.	Creativity In Science & Mathematics Education Expo (S&M)	PWTC, Kuala Lumpur	18 – 20 June 2005	No	National
7.	<i>Ekspo Penyelidikan, Rekacipta dan Inovasi UM 2005 *</i>	<i>Bangunan Peperiksaan</i>	4 – 8 May 2005	Yes	University
8.	<i>Pameran Sempena Persidangan IMT-GT Joint-Business Council</i>	Pan Pacific-Glenmarie, Selangor	16 – 18 July 2005	No	Regional
9.	Expo Science & Technology (S&T)	PWTC, Kuala Lumpur	26 – 28 August 2005	Yes	International
10.	Eco-Products International Fair (ECO)	Mid-Valley Exhibition Centre, Kuala Lumpur	2 – 4 September 2005	No	International

Please note that our own **EKSPU PENYELIDIKAN, REKACIPTA DAN INOVASI UM 2005** will be held in conjunction with the official launch of University of Malaya Centenary Celebrations. So be prepared to join us at the once in a 100 year's expo!

* date to be confirmed

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About This Bulletin

The Bulletin is the official R&D magazine of University of Malaya and is published by IPPP. It covers research issues and events that take place across the university campus. It also features special topics that are of relevance and interest to researchers in various fields of studies and disciplines. It is hoped that this bulletin provides the platform for interaction between researchers and management. The opinions and views in this bulletin are not necessarily those of IPPP. Acceptance and publication of articles in this bulletin does not imply recommendation from IPPP



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