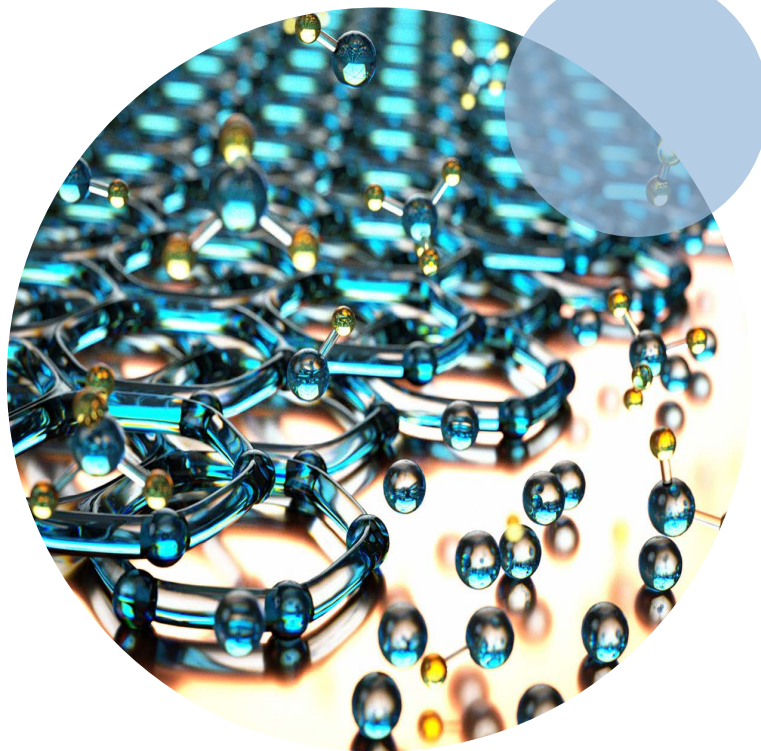
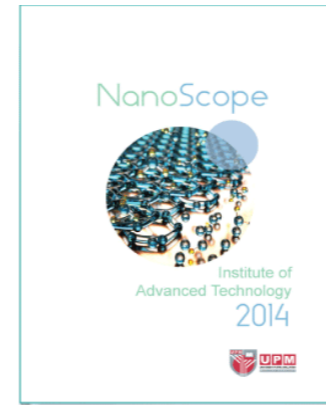


NanoScope



Institute of
Advanced Technology
2014





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EDITOR'S PREFACE

Alhamdulillah, all praises to Allah SWT, with his blessings, Institute of Advanced Technology (ITMA) has successfully published the inaugural issue of NanoScope for the year 2014.

The main objective of the production of this magazine is to highlight the research activities done by ITMA researchers.

ITMA with its broad scope bridging 6 pillars of research programs, which are Nanomaterials, Functional and Structural Materials, Materials Processing, Nanomaterials Technology, Sensor Technology and Electron Devices, continues to pursue researches under these programs to bring ITMA to international level. Recently, ITMA has also emphasized the link between the institute and industry whereby we can share the research findings with the industry and even the community.

Yet, despite impressive successes and growing interest in nanotechnology, ITMA will try to move forward in the field of nanotechnology research and continue to look for opportunities to produce products that can be commercialized in the future.

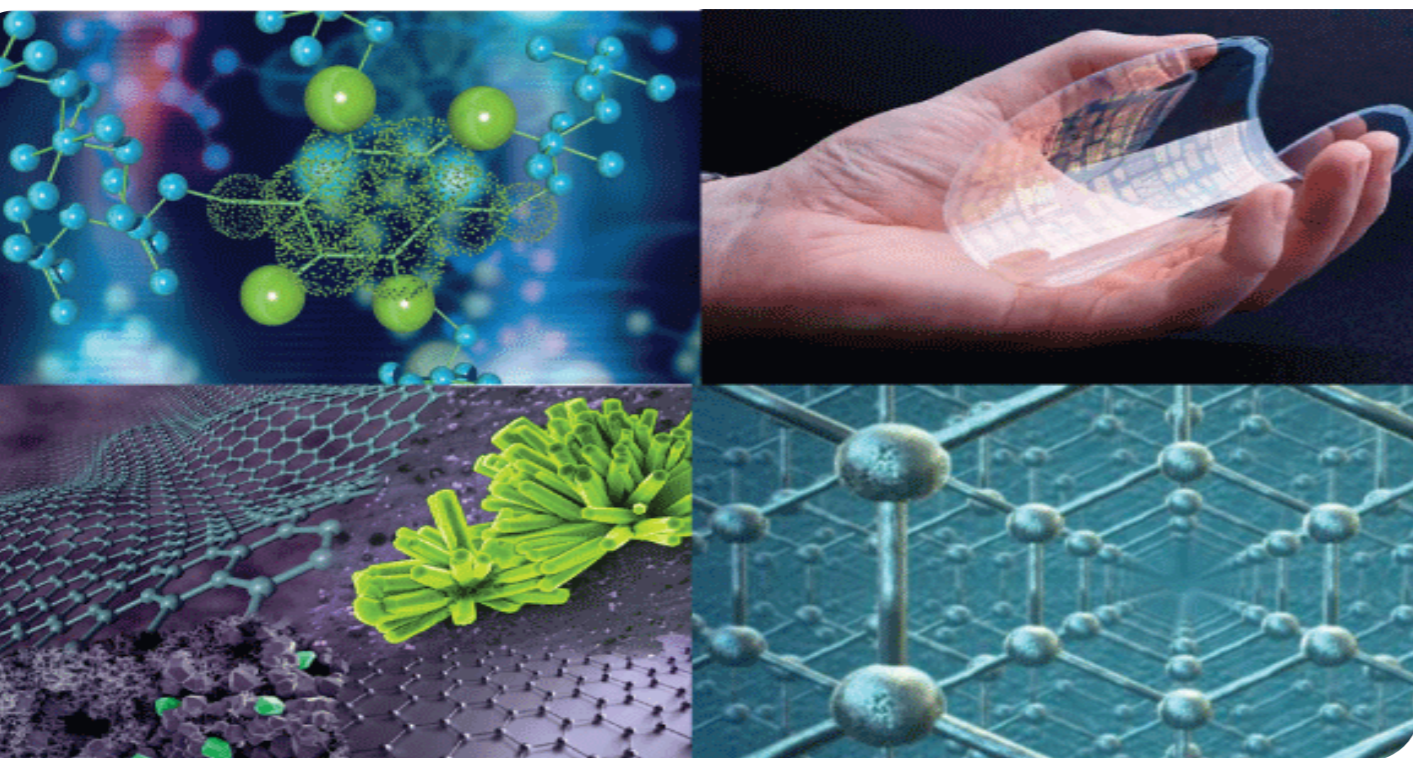
Finally, my special thanks to Assoc. Prof. Dr. Suraya Abdul Rashid for her advice and members of the Publication and Website Committee for their contribution in preparing NanoScope 2014 .

Warm Regards,

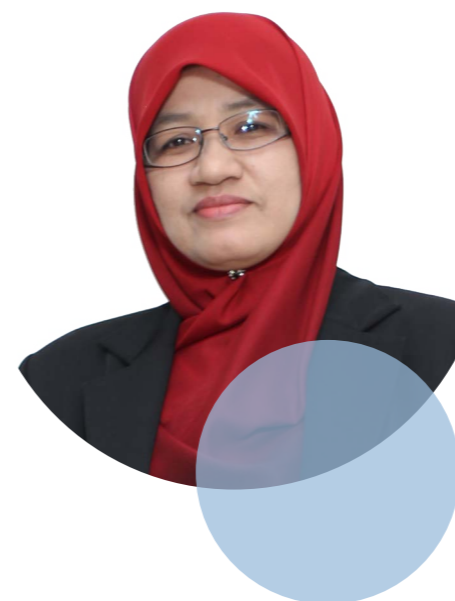
Marzieana Ab Rahman
Editor



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“ITMA will apply several efforts to enhance the strategic relationship development initiatives of industry, public research grants and international, public and international research cooperation, increasing the quality and quantity of publications, community networks and increase revenue generation”

DIRECTOR'S FOREWORD

Alhamdulillah, all praises to Allah, the Almighty, ITMA has successfully published the Annual Report 2014. My thanks to the Publication and Publicity Committee for their contributions in

preparing this report. Generally, this annual report is the medium to showcase the achievements of the researchers, staff, students and research laboratories at ITMA for the year 2014.

In early 2014, UPM Vice-Chancellor has launched the UPM Strategic Plan 2014-2020 as a critical target to achieve the aspirations of Putra Global (PG200). PG200 refers to UPM's important mission to achieve a position in the group of 200 best world University ratings of QS World University Ranking. For this purpose, ITMA will apply several efforts to enhance the strategic relationship development initiatives of industry, public research grants and international, public and international research

cooperation, increasing the quality and quantity of publications, community networks and increase revenue generation on a competitive basis.

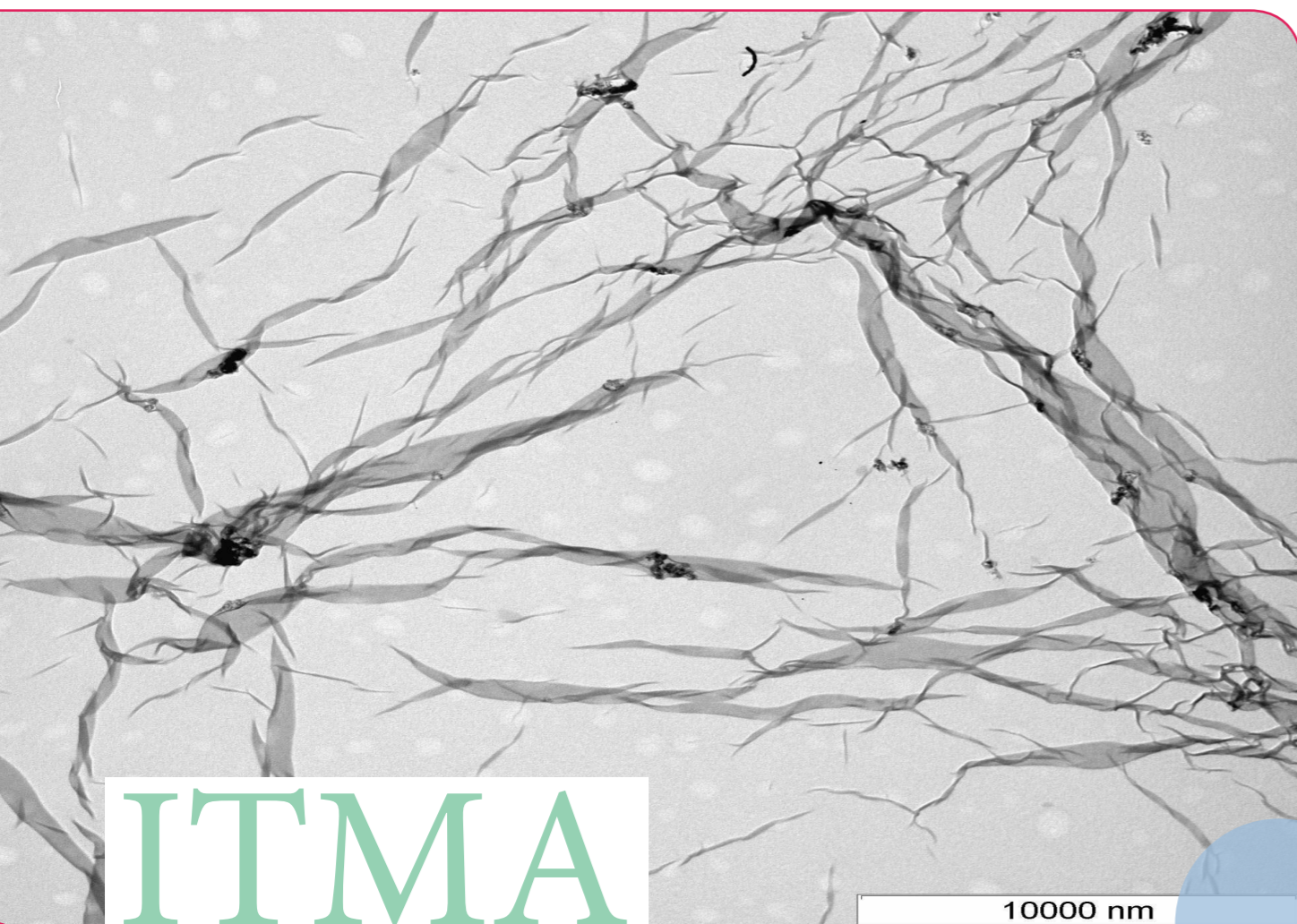
To meet the goals of UPM in advancing the role of industry and public service networks, ITMA has played its part well. This is proven by the achievements of the Research Fellows who have made research collaborations with foreign universities. Prof. Dr. Mohd Zobir Hussein has collaborated with Prof. Thomas Webster from Northeastern University, Boston in the field of Nanomedicine.

In addition, Assoc. Prof. Dr. Mansor Hashim is in the process of signing a memorandum of understanding (MoU) with Dr. Parasuraman Padmanabhan from Nanyang Technological University, Singapore with its worth of S \$ 50,000. It is expected that this (MoU) will help ITMA to be able to carry a significant role in boosting research and innovation achievement.

Finally, I would like to extend my gratitude to all staff at ITMA who have also contributed directly or indirectly towards the development and achievement of research at ITMA. Hopefully in the future, ITMA would gain more recognition especially in the field of Nanotechnology research.

Warm Regards,

Prof. Dr. Robiah Yunus
Director



ITMA

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Institute of Advanced Technology

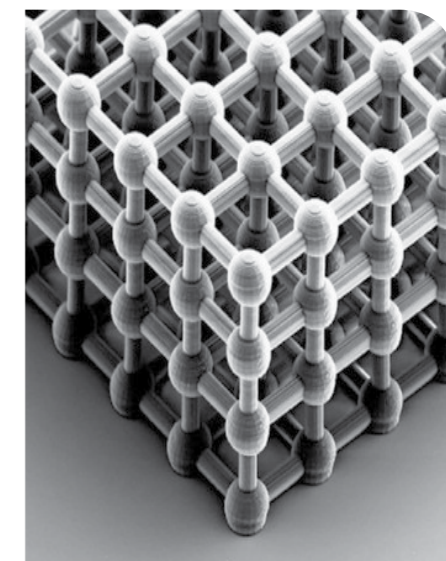
Institute of Advanced Technology (ITMA), Universiti Putra Malaysia was established in 1999 as an institute for advanced research in various fields. In line with the restructuring of university research in 2012, ITMA has restructured its areas of specialization to the Advanced Materials and Nanotechnology, which focuses on areas such as the synthesis and characterization of materials, processing and materials technology, and application of the sensing device and functional devices. ITMA's ecosystem structure is supported by three laboratories, namely Materials Synthesis and Characterization Laboratory, Materials Processing and Technology Laboratory, and Functional Devices Laboratory. In addition, ITMA has also played a part in income-generating activities through laboratory services that are in the process of recognition of Accreditation EN ISO / IEC 17025.

VISION

To become a research institute of international repute in the field of nanotechnology and advanced materials.

MISSION

To contribute significantly towards wealth creation, nation building and universal human development through high impact research in nanotechnology and advanced materials.



MISSION & STRATEGIES

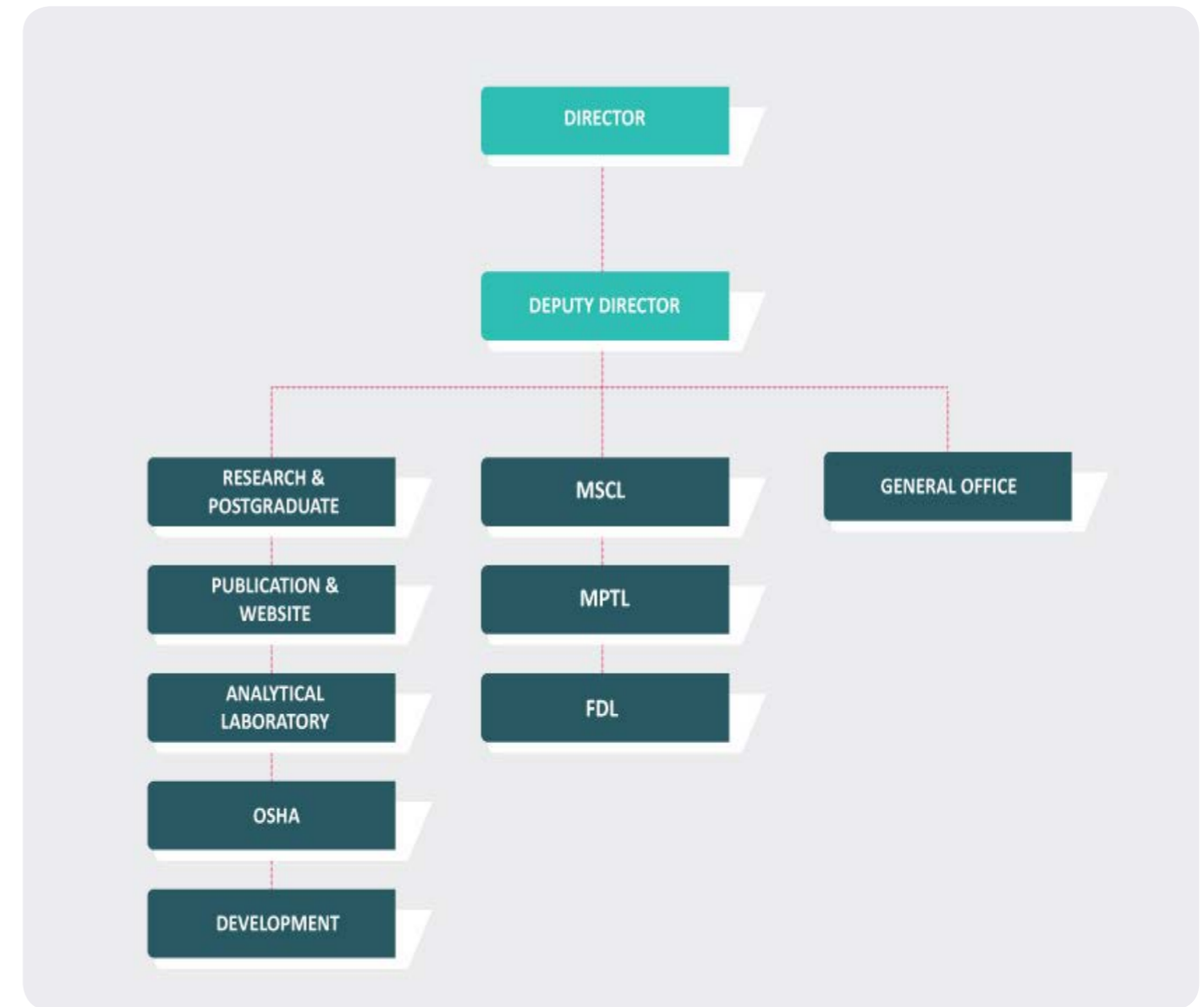
1. Conduct interdisciplinary research and development in advanced materials and nanotechnology:
 - Establish world-class laboratories and acquire state-of-the-art facilities.
 - Pool highly trained research personnel.
 - Create national and international linkages
2. Offer international postgraduate programs in niche areas:
 - Determine and develop niche areas
 - Facilitate entry of outstanding students through attractive scholarships
 - Establish good research culture
3. Disseminate knowledge and innovative technologies:
 - Publish in reputed journals
 - Maintain a global network
 - Involve in consultancy services

MAIN OBJECTIVES

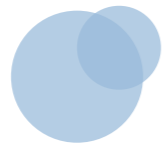
1. To undertake, coordinate and lead interdisciplinary research and development in cutting-edge areas of advanced technology.
2. To offer postgraduate training programmes at the M.Sc. and Ph.D levels to local and international students.
3. To develop a center for dissemination of knowledge and innovative technology and network with universities, laboratories and industry globally.



ORGANIZATIONAL STRUCTURE



Top Management



Director
Prof. Dr. Robiah Yunus

Deputy Director
Assoc. Prof. Dr. Mohd. Nizar Hamidon

Senior Assistant Registrar
Mr. Din Ayup

Head of Material Synthesis and Characterization Laboratory
Assoc. Prof. Dr. Khamirul Amin Matori

Head of Materials Processing and Technology Laboratory
Dr. Mohamad Amran Mohd Salleh

Head of Functional Devices Laboratory
Prof. Dr. Nor Azah Yusof

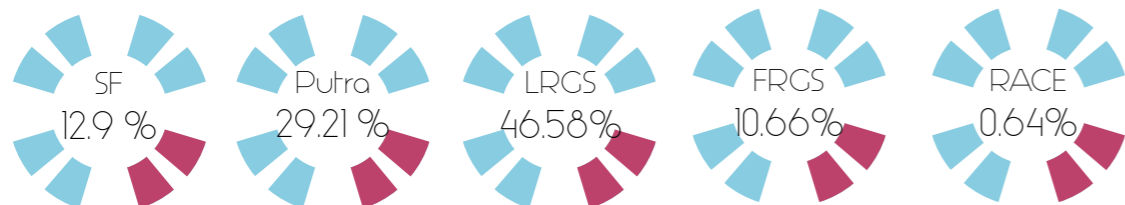


RESEARCH GRANTS

The total revenue of ITMA research funds in 2014 amounted to RM 3,123,800. Sources of funds were from Sciencefund (RM 403,100), PUTRA Grant (RM 912,500), LRGS (RM1,455,000.00), FRGS (RM333,200) and lastly RACE grants amounting to RM 20,000. These funding sources were obtained to finance 14 projects led by ITMA. This amount contributed to the total amount of active grants which is RM12,365,085 to support 40 research projects.

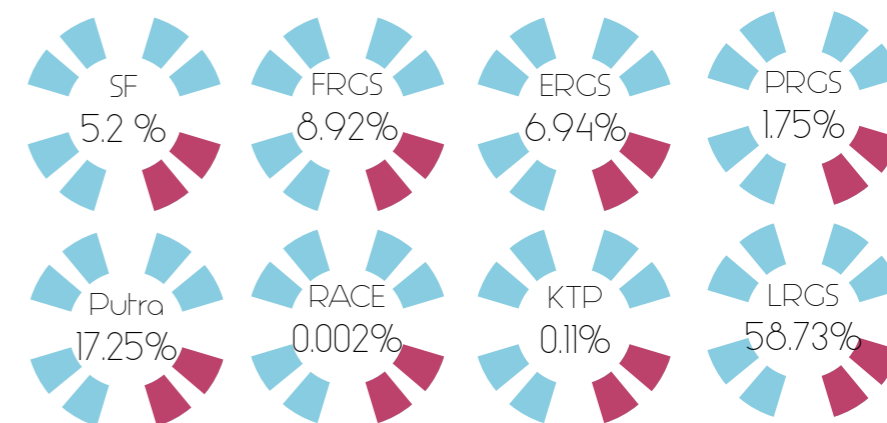
Grant	No. of Project	Amount (RM)
Sciencefund	3	403,100
Putra	6	912,500
LRGS	1	1,455,000
FRGS	3	333,000
RACE	1	20,000
Total Amount	14	3,123,600

Table 1 :
Number of Grants obtained in 2014



Grant	No. of Project	Amount (RM)
Sciencefund	4	636,900
FRGS	10	1,103,000
ERGS	7	858,000
PRGS	1	216,000
Putra	14	2,122,500
RACE	1	20,000
KTP	1	134,685
LRGS	2	7,263,000
Total Amount	40	12,365,085

Table 2 :
Number of Active Grants throughout 2014



PUBLICATIONS 2014

Publication	Total
Total number of publications including journal and conference proceedings (CIJ)	165
Conference proceedings (non-CIJ)	68
Total number of research books	1
Total number of chapter in books	1

Table 3 :
Number of Publications throughout 2014

PATENTS 2014

Table 4 :
Number of patents granted on 2014

No.	Title of Project/ Product	Country of Filing	Researcher
1	Film Paste And Its Preparation Thereof	Malaysia (granted)	Assoc. Prof. Dr. Mohd. Nizar Hamidon
2	An Improved Process to Produce High Surface Area Nanoparticle Vanadium Phosphorus Oxide Catalysts and Product Derives Thereof	Japan (granted)	Dr. Yap Yin Hun
3	Energy Storage Ceramic Dielectric Component and Method Thereof	USA (Granted)	Prof. Dr. Abdul Halim Shaari

Table 5 :
Number of patents pending on 2014

No.	Title of Project/ Product	Country of Filing	Researcher
1	An Artificial Olfactory System and An Application Thereof	United State of America & European Patent Office	Assoc. Prof. Dr. Mohd Nizar Hamidon
2	A Formulated Elthyxyl-based ester enhanced with graphene material for green drilling fluid	Malaysia	Prof. Dr. Robiah Yunus
3	An Intercalated UV Absorbing Product and A Production Method Thereof	PCT Filing	Prof. Dr. Mohd Zobir Hussein
4	Nano-encapsulated Organic Phase Change Material and A methid for production Thereof	Malaysia	Prof. Dr. Mohd Zobir Hussein
5	Graphene ribbons and a process for preparation thereof	Malaysia	Assoc. Prof. Dr. Suraya Abdul Rashid
6	Multistage Jatropha fruit decorticator	Malaysia	Prof. Dr. Robiah Yunus
7	A Motorized Cutter	South Africa, Thailand, Indonesia	Dr. Norhisam Mison
8	Method for Preparing Catalyst-Assisted Polypyrrole Nanoparticles Decorated Graphene Film for High-Performance Supercapacitor	PCT Filing	Assoc. Prof. Dr. Lim Hong Ngee
9	Method for Preparing Graphene-Based Conducting Nano-Composite Film	PCT Filing	Assoc. Prof. Dr. Lim Hong Ngee

AWARDS 2014

EDS-IEEE Malaysia Chapter 2014

AWARD WINNERS

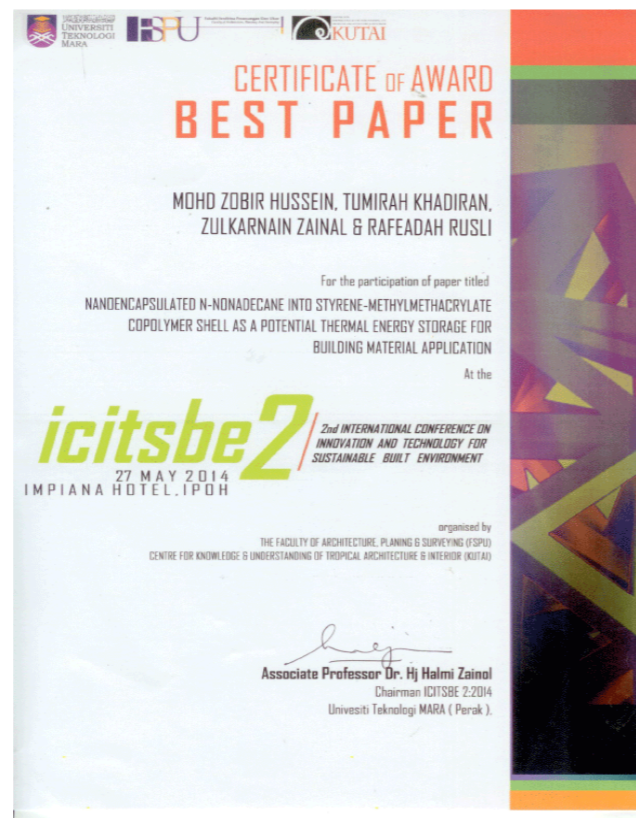
Year	Chapter
2014	Regions 1-7: ED Mid-Hudson Chapter Region 8: None Region 9: ED Universidad Estadual de Campinas Student Branch Chapter Region 10: ED Malaysia Chapter
2013	Regions 1-7: ED/SSC Baltimore Chapter Region 8: ED IRE NASU Kharkiv Student Branch Chapter Region 9: ED/MTT/EMB Brazil Chapter Region 10: ED Delhi Chapter
2012	ED Spain
2011	SSC/ED Hong Kong
2010	ED Boise
2009	ED/AES/AP/EMB/GRS/MTT/NPS East Ukraine
2008	ED Orlando
2007	ED Santa Clara
2006	REL/CPMT/ED Singapore
2005	ED/SSC Bangalore
2004	REL/CPMT/ED Singapore
2003	ED Boise

Assoc. Prof. Dr. Mohd Nizar Hamidon, Deputy Director of ITMA has been invited to accept the IEEE Electron Devices Society Regions 10 Chapter of the Year Award on behalf of the EDS Malaysia Chapter of 2014. The chairman of the EDS Malaysia Chapter received a plaque and US \$ 500 in recognition of the involvement and contributions of the organization. This award aims to recognize the quality and quantity of activities and programs undertaken by the IEEE Electron Devices organizations for each country to the organization.



Assoc. Prof. Dr. Mohd Nizar Hamidon
Chairman of EDS-IEEE Malaysia Chapter
2014

Best Paper Award & Best Research Projects

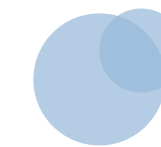


Prof. Dr. Mohd Zobir Hussein, Research Fellow of the Institute of Advanced Technology has received two separate awards, which are Best Paper Award at the 2nd International Conference on Innovation and Technology for Sustainable Built Environment (icitsbe2) and Best Research Project Fundamental Research Grant Scheme (FRGS) of 2011 announced by the Ministry of Higher Education Malaysia on December 31, 2014.



Prof. Dr. Mohd. Zobir Hussein
 Research Fellow
 Institute of Advanced Technology, UPM

LABORATORY EQUIPMENT



Laboratory Accreditation of Field Emission Scanning Electron Microscopy (FESEM) and latest research facility in ITMA : Raman spectroscopy

ITMA is in the process to obtain recognition of Accreditation MS: ISO / IEC 17025 for FESEM effective on August 11, 2015 as an effort to support the 2014-2020 UPM strategic plan, strategically to strengthen basic laboratory facilities as well as laboratory services for the purposes of carrying out the research and generating income for the institution.

This is one of the equipment of chemical analysis techniques that provide detailed information on the chemical structure, phase and polymorphy, crystallization and molecular interactions. Among the types of analysis that can be performed is a single spectrum, mapping and scanning lines.

In addition, ITMA has managed to secure another facility with the full support from the University. Raman Spectroscopy (Brand: WITEC, Model: Alpha 300R) worth RM825,000.00 is one of the latest high-tech equipment available at UPM.

These facilities are not only utilised by students and researchers at the ITMA but also by researchers from other organizations. This equipment is regulated by a number of officers who have undergone intensive training from the suppliers.

Raman spectroscopy can help researchers to complete analysis and characterization of research especially in the Advanced Materials and Nanotechnology.



INTERNATIONALIZATION OF RESEARCH

Workshop on Advanced Materials and Nanotechnology WAMN2014

25 - 26 August 2014



Workshop on Advanced Materials and Nanotechnology WAMN 2014 which was held on 25 and 26 August 2014 has successfully brought together a number of speakers from local and international, and jointly organized by the IEEE Electron Devices Malaysia Chapter (IEEE EDS). This workshop is a continuation of a series of workshops previously held from 2003.

The workshop theme was Nanomedicine and its main aim was to encourage the strengthening of research groups in the field. With the invited experts and researchers from abroad, this workshop has helped to support the internationalization of university research through research partnerships which was established during and after the workshop.

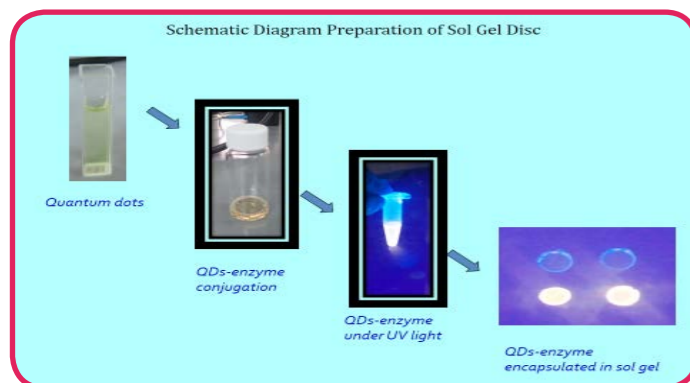
Among the speakers present were:

1. Prof. Datuk Dr. Halimaton Hamdan,
President of Malaysia Nanotechnology Association (MNA), Malaysia
2. Prof. Dr. Masaaki Tamagawa
Kyushu Institute of Technology (KYUTECH)
Japan
3. Prof. Dr. Edward Yi Chang
National Chiao-Tung University, Taiwan
4. Dr. Ahmed Kamal
Indian Institute of Chemical Technology
India
5. Prof. Dr. Abdul Jalil Nordin
Director of the Nuclear Diagnostic
Imaging Center, UPM
6. Prof. Dr. Mehmet Ertugrul
Ataturk University, Turki
7. Prof. Dr. Mohd Zobir bin Hussein,
ITMA Research Fellow, UPM
8. Dr. Parasuraman Padmanabhan
Nanyang Technological University
Singapore



Research Programs

Nanomaterials
Materials Processing
Sensor Technology
Electron Devices
Materials Technology
Functional and Structural Materials

RESEARCH
HIGHLIGHTNanobiosensors :
Sense and Sensibility

Deoxyribonucleic acid (DNA) can be considered the most important of all biomolecules for diagnostic purposes. Scientists have already undertaken a great deal of genetic analysis of the unique complementary structure between its base pairs of DNA (adenine/thymine) and (cytosine/guanine). The extraordinary ability of a single stranded DNA (ssDNA) molecule to hybridize to its complementary strand in a sample has provided a basis for arrangement of DNA-based detection systems. Currently, there is a strong demand from areas including medical, scientific and environmental to progress such systems to a level at which they can be used for simple, cheap, rapid and reliable detection of specific genes.

DNA sensors operate in a similar way to any other kind of biosensor. The basic design comprises the same three parts. The first step is the hybridization of a target DNA to its complementary sequence immobilized on the surface of biorecognition site. The second step is the transduction of the resulting signal and the third and final step is the detection of this signal into an output which is measurable and interpretable. The immobilization step for the DNA probe is critical for to achieve a high level of sensitivity and selectivity depends on minimizing nonspecific adsorption and stabilizing the immobilized molecules. Because a critical distinctive property of nanoparticles (NPs) is their large surface area this provides a desirable high density of biomolecule immobilization for DNA sensing. NPs have all diameters less than 100 nm making them roughly the same size as biomolecules like proteins, antibodies, and membrane receptors.

In particular, iron oxide NPs are demonstrating great potential in biosensing. Nano sized magnetite Fe₃O₄ exhibits excellent magnetic properties, -

its superparamagnetic behavior becoming apparent when at a maximum of 20–30 nm in diameter. In response to a magnetic field, MNPs can be very easily magnetized and demagnetized. Additionally they have other unique and useful properties including a high surface to volume ratio, high biocompatibility and it is relatively simple to synthesize them and to functionalize their surfaces.

Quantum dots are versatile nanocrystals which, when excited, produce optically stable fluorophores of various wavelengths (from ultra violet to infrared). In biosensors, synthesized quantum dots are better than conventional fluorescent dyes because of their stability, stronger fluorescent intensity, and their range of colours. Each of these features can be adjusted by controlling the size of the dots.



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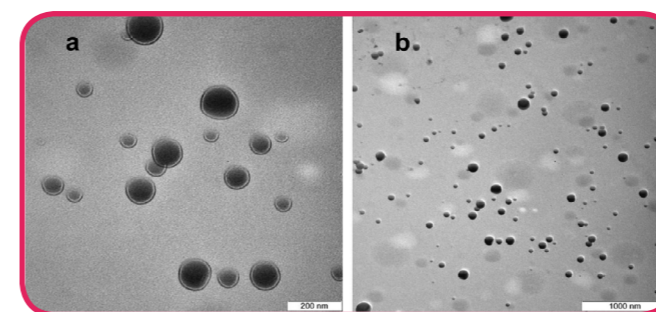
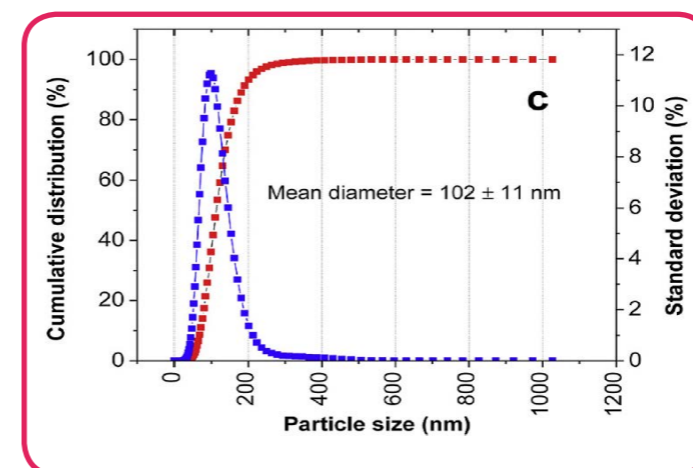
RESEARCH
HIGHLIGHTNano-encapsulated
organic phase change
materials for energy-efficient,
thermal comfort building
application Medical Remote
Sensing

Fig. 1: TEM images of n-octadecane in St/MMA nanocapsules showing core-shell structure (a) and their size distribution (b).

This research has successfully developed new methods for the production of nano-encapsulated phase change material (NEPCM), which is useful for thermal-comfort building application. Phase change material (PCM) of paraffin-type was encapsulated into core-shell nanocapsules or nanopores for the formation of NEPCM. Nanocapsules, containing n-octadecane with St/MMA copolymer as the shell (Fig. 1) were successfully prepared by simple, one-step miniemulsion in-situ polymerization with a narrow particle size distribution (Fig. 2). The nanoparticles are stable, chemically inert and strong due to their perfect morphology; smooth, compact surface and spherical in shape with average diameter of 102 nm.



Sample	Analysis method	Mean diameter, X (nm)
A1	DLS	152 ± 12
A2	DLS	236 ± 13
A3	DLS	146 ± 51
A4	DLS	102 ± 11
A5	DLS	127 ± 30
A4	TEM	102 ± 13
A4	FESEM	102 ± 14

Fig. 2: Particle size distribution of core-shell nanocapsules obtained using DLS technique (c) and using different St/MMA mass ratio at the shell/core mass ratio of 3.

In addition to core-shell nanocapsules, activated carbon was also used as frameworks for PCM. Activated carbon prepared from peat soil (PSAC) by physical activation method exhibited good graphitic value and rich with micro- and meso-pores, has a BET specific surface area and pore diameter of 893 m²g⁻¹ and 22 Å, respectively. The PSAC obtained was then used as an inorganic framework for the preparation of a novel shape-stabilized n-octadecane/PSAC nanocomposite (SSOAC), where the n-octadecane was used as a phase change material, while PSAC was used as the framework and supporting material. The resulting material shows that n-octadecane was well absorbed and dispersed in the pore networks of the PSAC. The porous PSAC materials can effectively stabilize the melted n-octadecane through the capillary and surface tension forces of the pores, and thus preventing the leakage of melted n-octadecane during phase change processes. The n-octadecane loading was found to be of 41.4% and PSAC played a protective role towards n-octadecane. The PCM composite had a good thermal reliability and chemical stability. The encapsulated PCM at nanoscale sized has advantages, especially could solve leakage and slow heat transfer rate problems that are usually faced by their counterparts and has a good potential to be used for thermal energy storage, especially for green, energy-saving building applications.

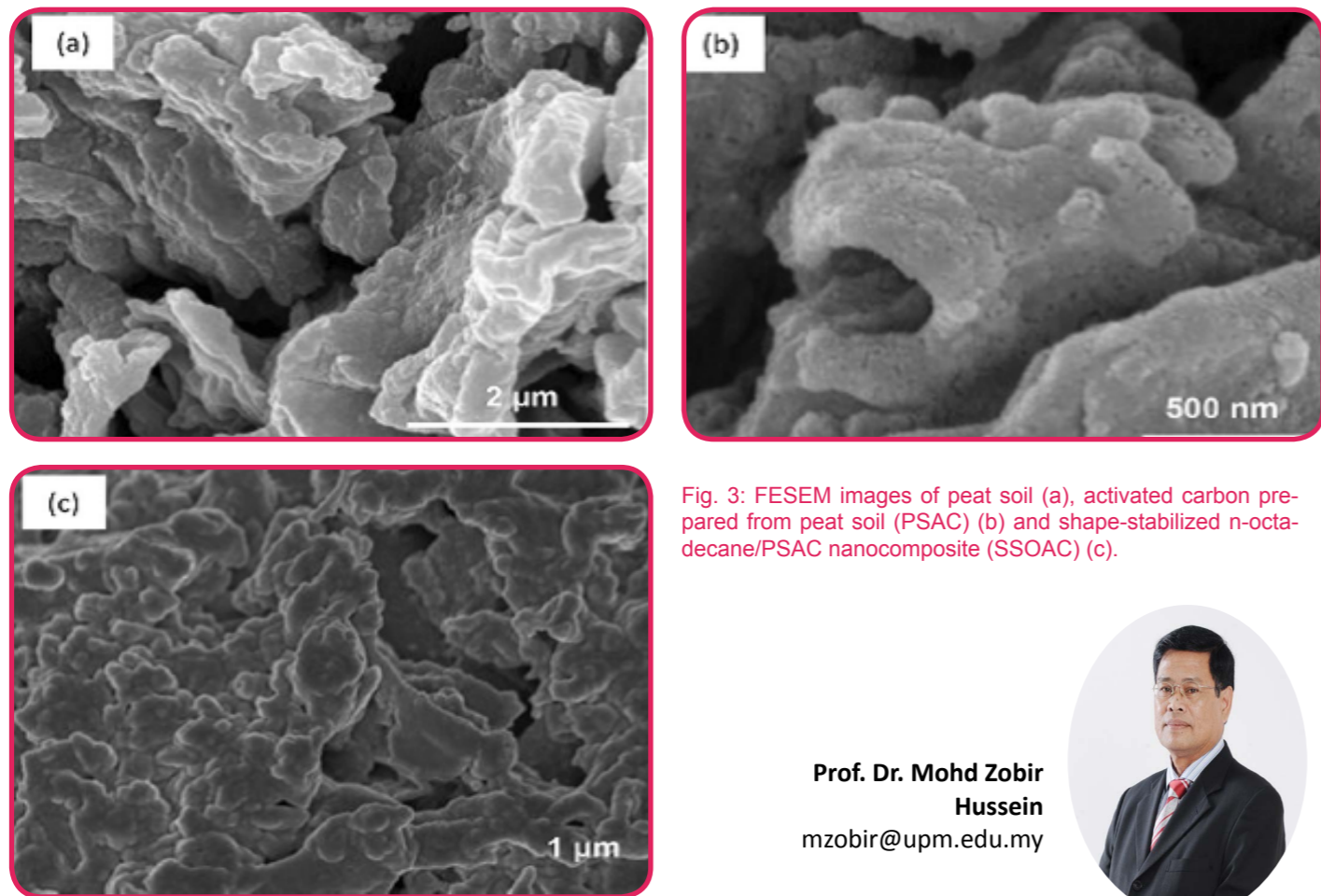


Fig. 3: FESEM images of peat soil (a), activated carbon prepared from peat soil (PSAC) (b) and shape-stabilized n-octadecane/PSAC nanocomposite (SSOAC) (c).



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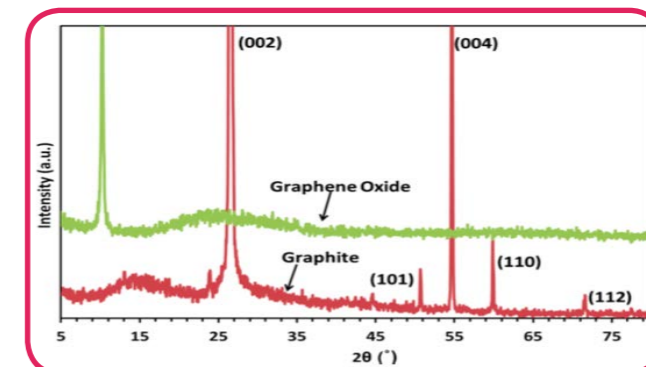
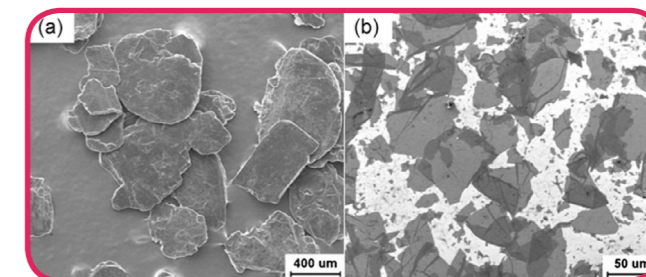
RESEARCH HIGHLIGHT

Graphene Oxide Nanofluids

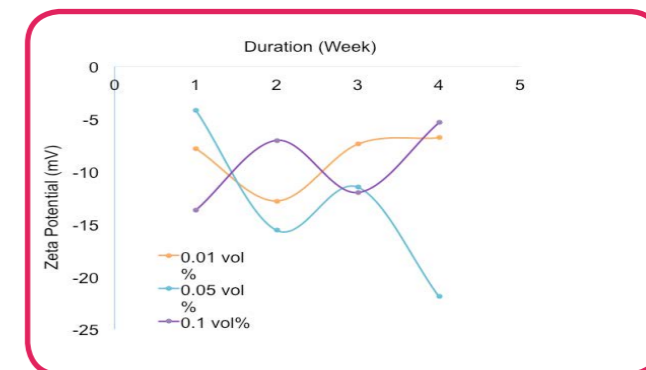
Nanofluids are fluids with a dispersion of nanomaterials which find application as heat transfer fluids in the electronics and cooling industry. Recently graphene has been identified as having superior thermal conductivity compared to the ubiquitous carbon nanotubes and other types of metal oxide nanoparticles which can enhance the thermal conductivity of base fluids such as water and ethylene glycol. In this work, graphene oxide (GO) obtained from a simplified Hummers method was used to prepare GO enhanced nanofluids. Two types of base fluids were used; deionized water (DW) and commercial ethylene glycol (EG). The inherent hydrophilic nature of the GO enabled it to be dispersed into the base fluids without the need for additional surfactants. The DW and EG nanofluids having a loading of 0.01, 0.05 and 0.1% by volume of GO, virtually displayed relatively long term stability for up to one month.



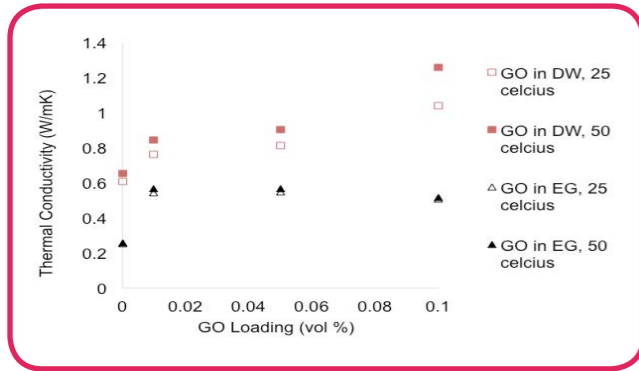
The thermal conductivity of the nanofluids were measured using a transient heated needle whilst the rheological properties were measured using a rheometer. The thermal conductivity and rheological properties were measured at 25 and 50 oC. It was found that the highest enhancement in thermal conductivity was achieved for 0.1 % GO in DW at 50oC and 0.05 % GO in EG at 25oC with values of around 92% and 112% enhancement respectively.



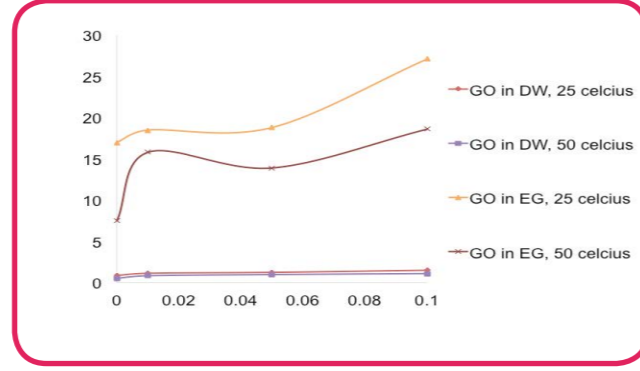
The viscosity of the nanofluids at all three loadings generally decreased with temperature and the level of enhancement was independent of viscosity within the measured temperature range. can be very easily magnetized and demagnetized.



Zeta potential of nanofluid with 0.05 vol% GO loading generally increased from week 1 to 4 indicating increased stability. Sedimentation of particles could be seen at the bottom of the jar (b), leaving the top part of the jar (where sample for measurement was taken) with a relatively stable dispersion of GO.



- GO-DW nanofluids: Thermal conductivity increases as GO loading and temperature increases. This is attributed to the improved stochastic motion of GO sheets.
- GO-EG nanofluids: Thermal conductivity was seen to increase at 0.01 vol%. However, increasing GO loading to above 0.05% led to the decrease in thermal conductivity.



- Low viscosity of nanofluid at high temperature is due to weakening of interparticle and intermolecular adhesion forces.
- Viscosity directly proportional to GO loading and inversely proportional to temperature.

Comparing the results with the results of graphene and graphene oxide in literature, it was concluded that as produced GO in this work has great potential to be used for heat transfer nanofluids application.

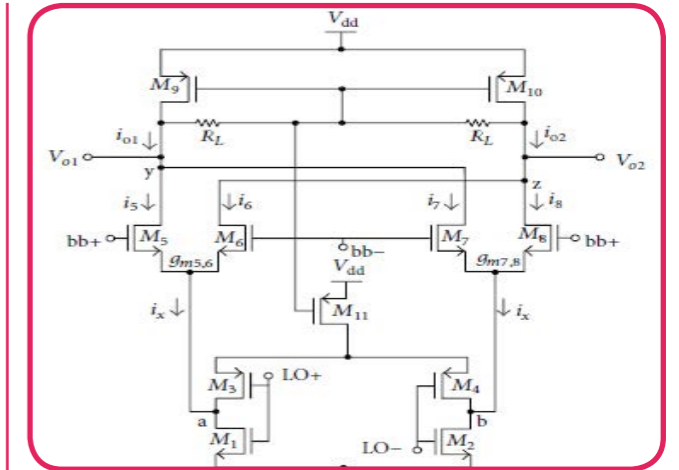
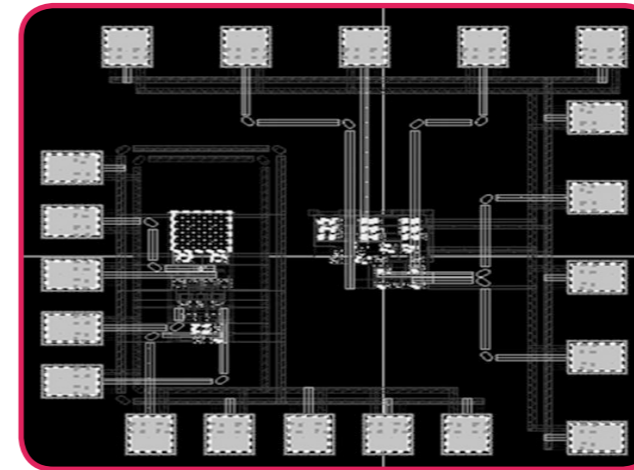
Nanofiller	Base Fluid	Conc. (vol %)	Temp. (°C)	Maximum Enhancement (%)	Reference
Functionalized graphene	Distilled water	0.05	25	16	Baby & Ramaprabhu, 2011
			50	75	
Graphene nanoplatelets	Distilled water	0.08	25	1	Mehrali et al., 2014
			50	5	
Graphene nanosheets	Ethylene glycol	5.0	60	86	Yu et al., 2011
Graphene oxide	Distilled water	0.1	25	71	Present study
			50	92	
			50	89	
	Ethylene glycol	0.05	25	112	
			50	89	

Assoc. Prof. Dr. Suraya Abdul Rashid
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RESEARCH HIGHLIGHT

Low Power Up-Conversion Transmitter for Medical Remote Sensing



Low power up-conversion transmitter can be adapted in medical remote sensing such as wireless endoscopy application. Considering the loss against frequency in a body wireless communication, ISM band of 434 MHz is employed in the design of the transmitter. This band has lower loss and relatively higher data rate compared to other standards. With the carrier power of -5 dBm, the proposed mixer has an output referred 1 dB compression point of -0.5 dBm with a corresponding output third-order intercept point (OIP3) of 7.1 dBm. Inductor less architecture was adopted in the circuit design to reduce the circuit area, thus contribute to the reduction of capsule size. The core component of transmitter, the up-conversion mixer and ring oscillator is realized on CMOS 0.13 μm technology with voltage supply of 1.2 V. Both the mixer and ring oscillator consumes 1.57 mA of current, brings the dc power consumption of the transmitter to be 1.88 mW. Data rate of 3.5 Mbps ensure it can transmit high quality medical imaging. The proposed up-conversion and ring oscillator achieved low power and less area while still having the good performance.

Assoc. Prof. Dr. Suhaidi Shafie
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ARTICLE 2014

Biosensor detects fungal rot in oil palms

A team of international researchers in Malaysia is developing a portable biosensor to detect and ultimately help prevent the spread of the most devastating disease that infects oil palm trees.

The proposed biosensor is designed to identify the fungus *Ganoderma boninense*, which is considered the major cause of basal stem rot and upper stem rot disease.

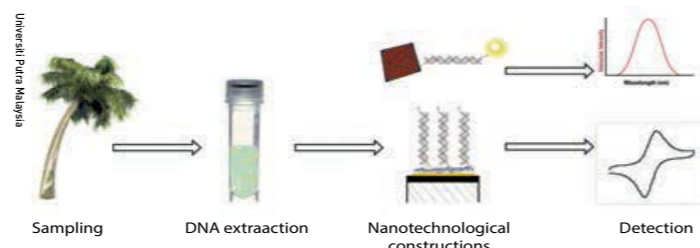
"Fungi that rot and eventually kill oil palm trees may be costing some South-East Asian countries US\$500 million a year," report the researchers in a review paper published in *SpringerPlus*.

One of the world's main sources of edible oil, the oil palm is also a significant precursor of biodiesel fuel.

"Oil palm trees start bearing fruit after 30 months of planting and are productive for 20 to 30 years," state the authors. "They are the most efficient oil-bearing crop in the world."

To help sustain the economic benefits of the palm oil industry, the team, led by Professor Nor Azah Yusof of Universiti Putra Malaysia, hopes to control fungal rot through early detection of the *G. boninense* fungus. "Once young palms show symptoms of the disease they usually die within one or two years, while mature trees can survive for only three or so years," the researchers explain.

A tree that is 50% infected is already useless, says Professor Yusof. But if caught early enough, this fungal infection can be controlled using a number of methods



including chemical treatments and sanitation measures designed to prevent uninfected trees from contacting the roots of infected trees.

So far, the researchers have shown that their *G. boninense* biosensor functions at a laboratory scale. "Our next step is to develop a portable device for the sensor system," says Professor Yusof. "We plan to use an imaging technique, with which we can develop a smartphone app for detecting this fungus."

For further information contact:
Professor Nor Azah Yusof
Institute of Advanced Technology
Universiti Putra Malaysia
Email: azahy@upm.edu.my



Materials Synthesis and Characterization Laboratory

MSCL

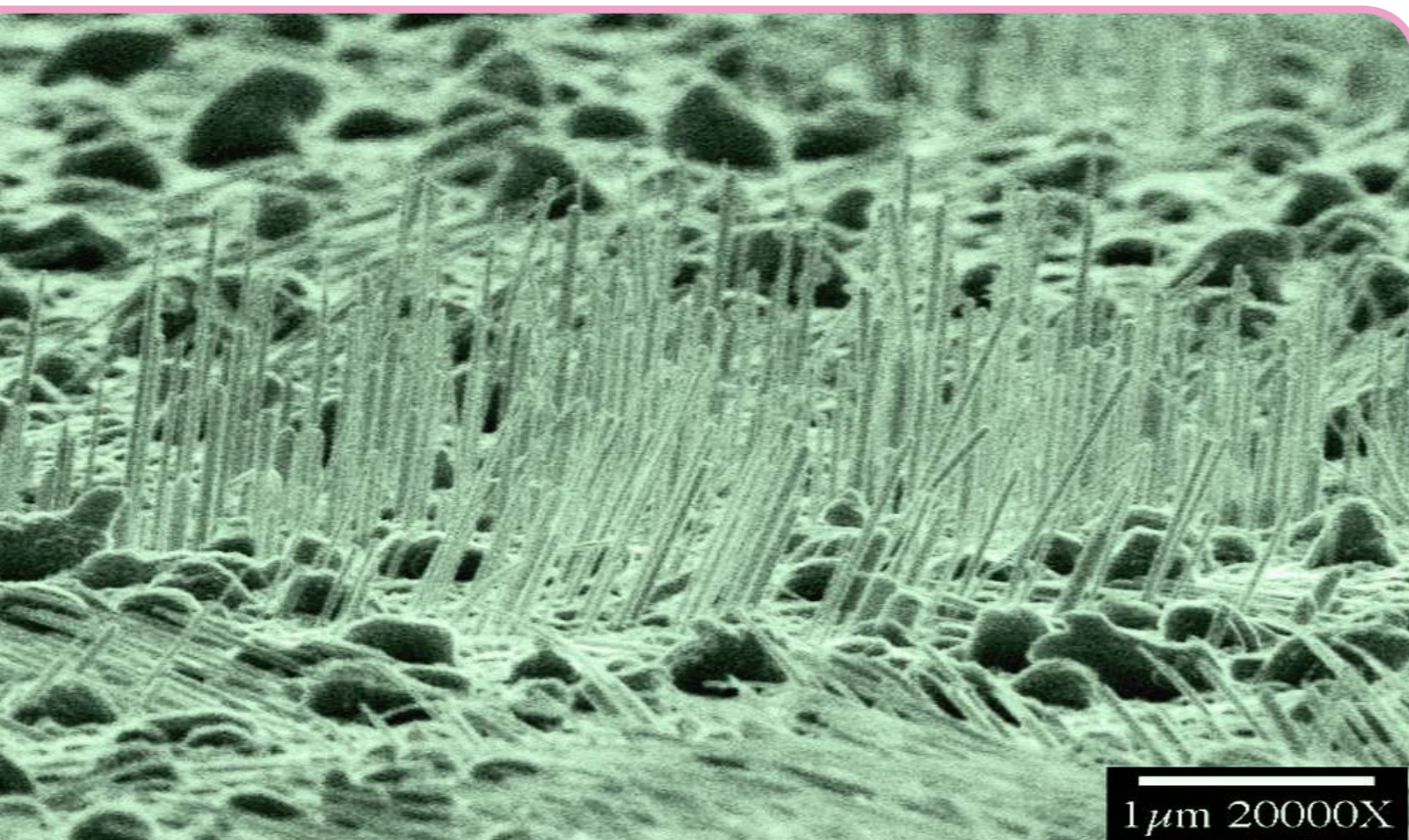
Materials Synthesis and Characterization Laboratory (MSCL) was established on 1st November 1999 and formerly known as Advanced Materials Research Center (AMRC) and later was changed to Advanced Materials Laboratory (AML). In line with university's restructuring, its name was changed to Advanced Materials and Nanotechnology Laboratory (AMNL) in 2006. Recent restructuring in 2012 has seen AMNL evolving to Materials Synthesis and Characterization Laboratory (MSCL) to be in tune with advanced materials and nanotechnology research focus. This laboratory is one of the three research laboratories under the Institute of Advanced Technology (ITMA). MSCL focuses in three main activities :

OBJECTIVES

1. To be a leading research centre in advanced materials and nanotechnology.
2. To develop world class research laboratory in advanced materials and nanotechnology.
3. To disseminate knowledge and innovative technologies through publications, seminars and conferences.

1. Interdisciplinary research and development work in advanced materials and nanotechnology.
2. Postgraduate research programs.
3. Dissemination of innovative knowledge and technologies in advanced materials and nanotechnology.





MSCL Research Group

I) Nanomaterials

This program focuses on the synthesis and characterization of nanomaterials and their building blocks which involves the use of nanosized materials. The study of these materials covers the fundamental aspects towards their potential application. The research on nanocomposite materials and nanostructured materials includes but is not limited to nanometals, nanoalloys, nanoceramics, carbon nanotubes and layered double hydroxides.

II) Functional and Structural Materials

This program focuses on synthesis and characterization of nanomaterials and their building blocks which involves the use of nanosized materials. The study of these materials covers the fundamental aspects towards their potential application. The research on nanocomposite materials and nanostructured materials includes but is not limited to nanometals, nanoalloys, nanoceramics, carbon nanotubes and layered double hydroxides.

Lab Members

Assoc. Prof. Dr. Khamirul Amin Matori
Head of Laboratory
B. Sc. (Hons) (UPM), M. Sc. (UPM),
Ph. D (Sheffield, U.K.)
Expertise :
Glass, Glass Ceramic

Prof. Dr. Mohd Zobir Hussein
Head of Nano Materials
B. Sc. (Hons) (UKM), Ph. D (Reading, U.K.)
Expertise :
Nano Materials and Materials Chemistry

Assoc. Prof. Dr. Mansor bin Hashim
Head of Advanced and Functional Materials
B. Sc. (UM), M. Sc. (Dundee, U.K.), Ph. D (Dundee, U.K.)
Expertise :
Magnetic Materials,
High T_c Superconductor

Prof. Dr. Azmi Zakaria
Research Associate
B. Sc. (Hons) (UKM), M. Sc. (Belfast, U.K.), Postgraduate
Diploma (Wales, U.K.), Ph. D (Wales, U.K.)
Expertise :
Applied Optics (Photothermal Physics, Solar Energy),
Material Science (Zinc Oxide based ceramics)

Prof. Dr. Zulkarnain Zainal
Research Associate
B. Sc. (Hons) (UKM), Ph. D (UMIST, U.K.)
Expertise :
Physical Chemistry
High T_c Superconductor

Prof. Dr. Abdul Halim Shaari
Research Associate
B. Sc. (Hons) (UKM), M.Sc. (Southampton, U.K.), Ph. D
(Hull, U.K.)
Expertise :
High T_c Superconductor, Magnetic Materials, Thin Films
Physics

Prof. Dr. Taufiq Yap Yun Hin
Research Associate
B.Sc. (Chemistry) (UPM), M. Sc. (UPM), Ph.D
(UMIST, U.K.)
Expertise :
Heterogeneous Catalysis, Selective Oxidation,
Advanced Materials, Renewable Energy, Biodiesel
Production, Biomass Conversion, Hydrogen
Production and Natural Products Chemistry

Assoc. Prof. Dr. Abdul Halim Abdullah
Research Associate
B. Sc. (Hons) (New Brunswick), Ph.D (Dundee, U.K.)
Expertise :
Materials Chemistry

Assoc. Prof. Dr. Jumiah Hassan
Research Associate
B.Sc. (Northern Illinois, U.S.), M.Sc.
(Washington State, U.S.), Ph.D (UPM)
Expertise :
Dielectric Properties of Materials At Microwave
And Low Frequencies

Assoc. Prof. Datin Dr. Sharida Fakurazi
Research Associate
B.Sc. (Hons) (Dundee, U.K), Ph.D (Imperial College
School of Science, Technology And Medicine,
South Kensington, London)
Expertise :
Molecular Pharmacology and Toxicology

Dr. Md Shuhazly Mamat@ Mat Nazir
Research Associate
B.Eng (Hons) Nottingham, UK
Ph.D Nottingham, UK
Expertise :
Carbon nanostructures: Synthesis and
applications Nanomaterials Characterisations
PEM Fuel Cells and Electrolysers Nanomaterials
Characterisations

Dr. Samikannu Kanagesan
Post Doctoral
M.Sc., Mphil., Ph.D.
Expertise :
Magnetic Materials

Lab Members

Dr. Ismayadi Ismail
Research Officer
B.Sc. (UKM) , M.Sc. (UPM)
Expertise :
Magnetic Materials

Rosnah Nawang
Research Officer
B.Sc. (USM), M.Sc. (USM)
Expertise :
Polymer Technology

Noor Lina Shamsuddin
Assistant Engineer
Certificate of Power Electronic Engineering,
Diploma of Electronic Engineering
Expertise :
Repairing of Computers and Electrical Equipment

Sarinawani Abdul Ghani
Science Officer)
B.Sc. (UPM)
Expertise :
Nano Materials

Mohd Kadri Masaud
Assistant Engineer
Certificate of Electronic Engineering(Relationship),
Diplomae of Electronic Engineering
Expertise :
Repairing of Computers and Electrical Equipment



Materials Processing and Technology Laboratory

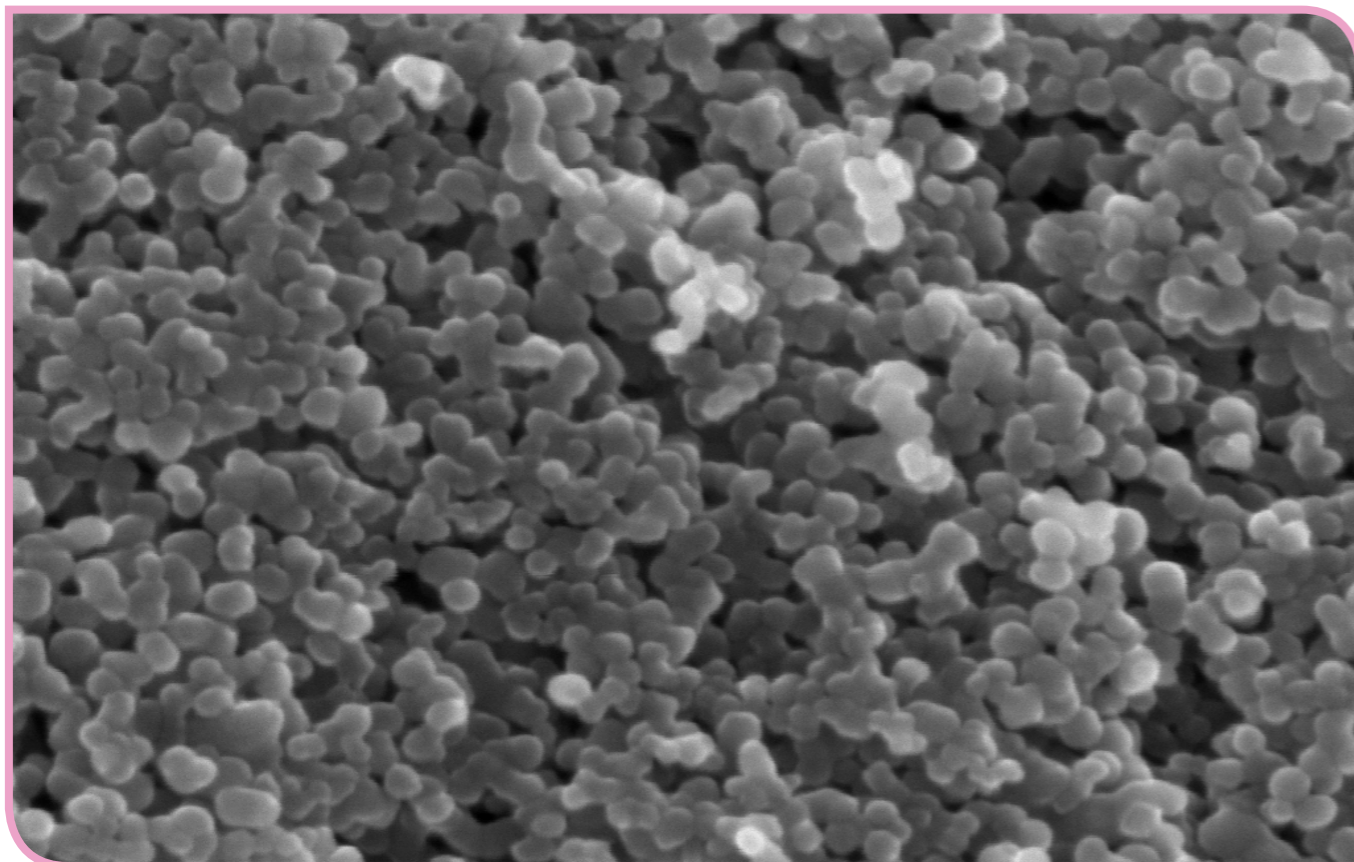
MPTL

Materials Processing and Technology Laboratory (MPTL) was established to fulfill the research necessity in Advanced Materials Processing and Nano Materials. MPTL was developed to complement the ITMA ecosystem, which aims to be a leader in the field of Nanotechnology and Advanced Materials. MPTL will focus on developing and promoting research in Materials Technology and Advanced and Nano Materials Processing in Malaysia. The main activities of the laboratory are :

1. Conducting research in related fields.
2. Postgraduate research programs.
3. Provide trainings and consultancy services.

OBJECTIVES

1. To be a leading research center in processing and technology for advanced materials and nanomaterials.
2. To produce experts in the field of processing and technology for advanced materials and nanomaterials.
3. To be a knowledge dissemination center of processing and technology for advanced materials and nanomaterials
4. To build a network of strategic partnership between local and international researchers from public and private institutions.



MPTL Research Group

I) Materials Technology

This program focuses on research in the engineering of nano and advanced materials to increase its functionality and values. Materials technology begins with the production of goods from raw materials to processing them into the shapes and forms needed for specific applications. Materials technology is a constantly evolving discipline, and new materials with interesting properties lead to new applications. For example, the combination of different materials into composites gives rise to entirely new material properties. In this group, nano-composites and hierarchical nanostructure coated on carbon fiber have been successfully developed for various applications. The existing knows how and facilities in nano-composite and Chemical Vapor Deposition (CVD) open other venues for research such as superconductor thin film and the application of graphene.

II) Advanced and Nano Materials Processing

This program focuses on research in nanotechnology and advanced materials production in a scale which allows for commercialization step of the materials. This requires in-depth research in several fields. The first part is in the field of modelling and simulation process that can determine the parameters in material's processing. The second part is designing a reactor for materials production optimizing. The third part is safety in materials handling, particularly nano materials. The successful processing technology has been achieved by this group is technology in processing Carbon Fibre and Carbon Nanotubes using Chemical Vapor Deposition (CVD).

Lab Members

Dr. Mohamad Amran Mohd Salleh
Head of Laboratory
Bachelor Sc. Chemical Engineering (University of Western Ontario, Canada)
Ph.D Chemical Engineering (University of Birmingham, England)
Expertise :
Particle Technology, Biochar and Nanotechnology, Carbonaceous Particulates

Prof. Dr. Robiah Yunus
Director / Research Associate
B.Sc.(Chemical Eng),M.Sc. in Integrated Design of Chemical Plant,PhD in Chemical Engineering
Expertise :
Renewable Energy, Reaction Engineering, Process Engineering

Prof. Ir. Dr. Barkawi Sahari
Research Associate
B.Sc. (Hons), First Class, Mechanical Engineering University of Nottingham,
Ph.D. Mechanical Engineering, Stress Analysis, University of Nottingham
Expertise :
Mechanical Engineering, Stress Analysis, Finite Element Analysis, Automotive Engineering, Crash Analysis

Prof. Madya Dr. Norhisam Misron
Research Associate
B. Eng. (Shinshu University, Japan), M. Eng. (Shinshu University, Japan), Ph.D Eng. (Shinshu University, Japan)
Japanese Language Intensive Course(UM, Malaysia)
Expertise :
Electrical Machine, Power Electronic Drive, Magnetic Sensor

Prof. Madya Dr. Mohd Halim Shah Ismail
Research Associate
B.Eng. Chemical Engineering (University of Wales, Swansea, U.K)
M.Eng. Chemical Engineering (UTM, Malaysia)
PhD, Chemical Engineering (University of Sheffield, U.K)
Expertise :
Gas Cleaning & Palm Oil Re-Engineering

Dr. Syafiee Syam
Head of Advanced and Nano Materials Processing
Chem. Eng. (S.T) (Indonesia),
DEA (Valladolid, Spain), PhD (Valladolid)
Expertise :
Machine Learning, Fast Model Predictive Control, Positive Linear Systems, Robust Optimal Control

Prof. Madya Dr. Suraya Abdul Rashid
Head of Materials Technology
B. Chemical Engineering (University of Nottingham, U.K) , Ph.D (Imperial College London, U.K)
Expertise :
Nanotechnology and Nanomaterials

Prof. Ir. Dr. Mohd Sapuan Salit
Research Associate
B.Eng. (Newcastle, Aus.),M.Sc. (Loughborough),
Ph.D (DeMontfort, Leicester)
Expertise :
Composite Materials, Concurrent Engineering

Dr. Shafreeza Sobri
Research Associate
B. Engineering, Chemical Engineering (UTM, Malaysia), Ph.D, Chemical Engineering (Electrochemistry),
(University of Newcastle upon Tyne, U.K)
Expertise :
Corrosion, Electrochemistry

Dr. Mohd Hanif Yaacob
Research Associate
B.Eng (Hons) Electronic Computer System (Salford University, U.K),
M.Sc. Communications and Network Engineering (UPM, Malaysia), Ph.D in Electrical and Computer Engineering (RMIT University, Australia)
Expertise :
Electronic & Optical Communication

Lab Members

Dr. Hamdan Mohamed Yusof
Research Associate
B.Eng. (Hons) (UTM), PhD (Canterbury)
Expertise : Process Safety, Materials

Dr. Umer Rashid
Research Fellow
B.Sc. Sciences (University of The Punjab, Lahore, Pakistan), M.Sc. Chemistry (University of Agriculture, Faisalabad, Pakistan), PhD. Chemistry (University of Agriculture, Faisalabad, Pakistan)
Expertise :
Renewable Energy (Biodiesel)

Siti Zulaika Razali
Research Officer
Bc. of Chemicals Engineering (UPM), M.Sc. Science (UPM)
Expertise :
Chemical Engineering (Process)

Roslina Abdul Rashid
Science Officer
B.Sc. of Electrical & Electronic Engineering (USM)
Expertise :
Electrical and Electronics Engineering- Control, Robotics and Automation

Zakky Yamanie Jamiauddin
Assistant Engineer
Certificate of Mechanical Engineering
Expertise :
Mechanical

Dr. Dayang Radiah Awang Biak
Research Associate
B.Eng. (Hons) (CWRU), PhD (Birmingham)
Expertise :
Heat Transfer; Modelling; Food Processing; Crystallisation; Pharmaceutical Products, Nanoscale Technology

Juraina Md Yusof
Research Officer
B.Sc. of Electrical & Electronic Engineering (USM)
Expertise :
Electrical and Electronics Engineering- Control, Robotics and Automation

Mohd Ali Mat Nong
Research Officer
B.Sc. of Electrical & Electronic Engineering (UPM)
Expertise :
Electric and Electrical Engineering

Ab Haffiz Ab Jalil
Assistant Engineer
Diploma of Electrical Engineering (Politeknik Sultan Salahuddin Abdul Aziz Shah)
Expertise :
Electronics



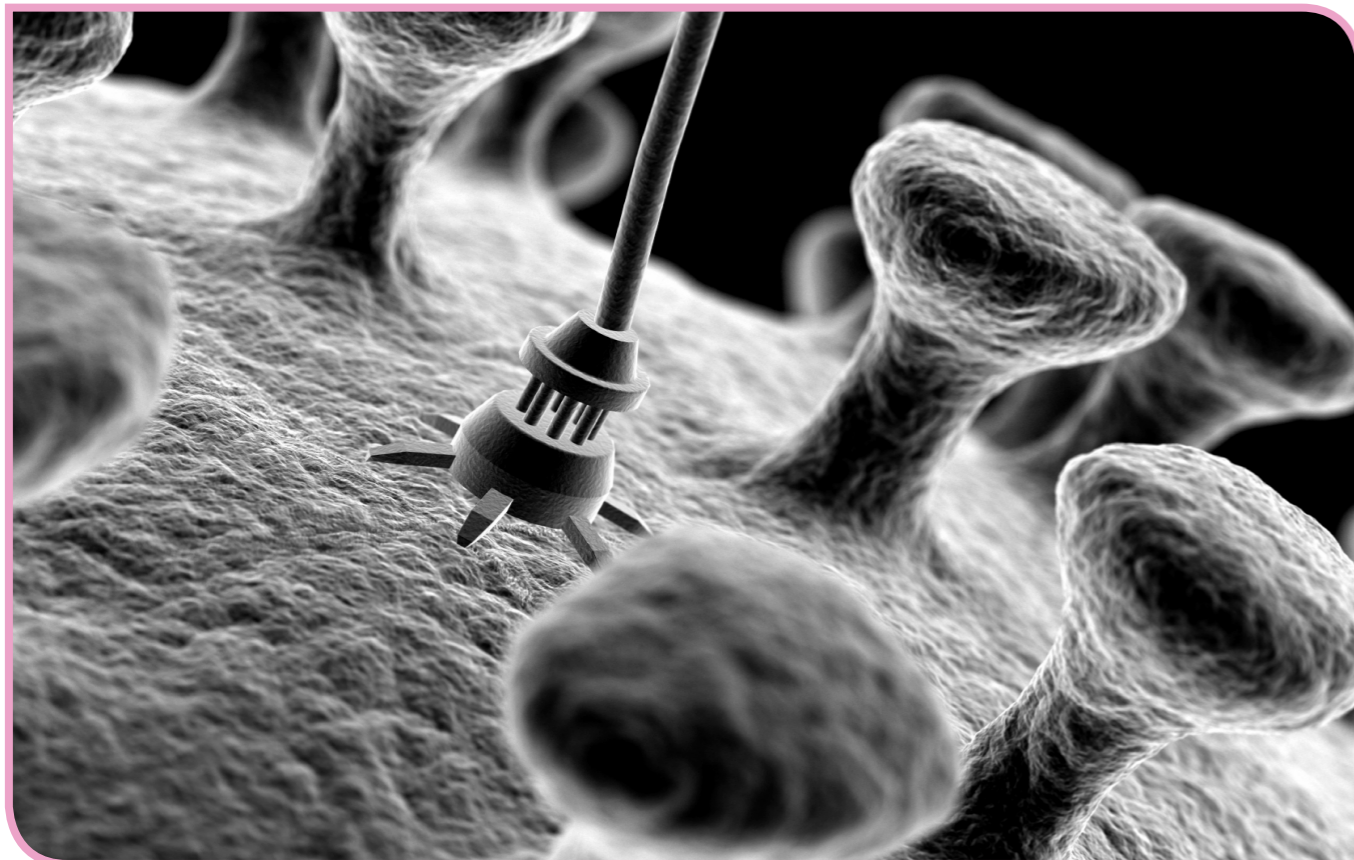
Functional Devices Laboratory

FDL

Functional Devices Laboratory (FDL), formerly known as Sensor Technology Laboratory (STL) had been restructured and renamed in line with ITMA new ecosystem. The laboratory aims to be a leader in sensor technology and electron devices for nanotechnology and advanced materials. The main activities of the laboratory are conducting research in related fields, post-graduate programs, provide trainings and consultancy services.

OBJECTIVES

1. To be a leading research center in sensor technology and electron devices for advanced materials and nanomaterials.
2. To produce experts in the field of sensor technology and electron devices for advanced materials and nanomaterials.
3. To be a knowledge dissemination center of sensor technology and electron devices for advanced materials and nanomaterials.
4. To build a network of strategic partnership between local and international researchers from public and private institutions.



FDL Research Group

I) Sensor Technology

Sensor technology includes the study and preparation of sensing material and characterized by related transducer, signal processing and design of system or devices (including micro and nanoscale) in development of sensor to meet society and industrial demands. Sensor system includes (but not limited to) electronic sensors, biosensors, and chemical sensors. Sensor technology has a very important role as the key technology to support a wide variety of research and industrial applications. It is also a vital element that can be applicable to water security, environment and green technology.

II) Electron Devices

Electron Devices is a program that has been offered under this laboratory starting from 2012. This program aims to perform basic and applied research in the growth of semiconductors and related electronic materials, as well as micro analysis with the aim of developing new and improved electronic devices. The vision in this area is next generation electronic devices and sensors for improved performance and reliability in complex environments. Research areas include nanoelectronics and MEMS, RF and energy harvesting.

Lab Members

Prof. Dr. Nor Azah Yusof
Head of Laboratory
B.Sc. (Hons), Universiti Kebangsaan Malaysia
Ph.D., Universiti Kebangsaan Malaysia
Postdoctoral in Institute of Biotechnology,
University of Cambridge
Expertise :
Chemical and Biosensor, Molecular Imprinted Polymer

Assoc. Prof. Dr. Suhaidi Shafie
Research Associate
B.Eng. University of Ryukyus, M.Sc. Tokyo University of
Agriculture and Technology, Japan,
D. Eng. (Nanovision) Shizuoka University, Japan
Expertise :
CMOS Image Sensor, Porous Silicon, Solar Cell,
VLSI Design, Analog TV/VCR Tuners

Prof. Ir. Dr. Mohd Zainal Abidin Abdul Kadir
Research Associate
B.Eng (UPM), PhD (Manchester), P.Eng, C.Eng (UK),
MIET, SMIEEE, MIAENG
Expertise :
Lightning Protection, High Voltage Engineering,
Insulation Coordination

Prof. Madya Dr. Zurina Zainal Abidin
Research Associate
B.S. Chemical Engineering Loughborough University
UK, M.S. Biotechnology, University of Manchester
Institute Science and Technology, U.K,
Ph.D BioChemical Engineering, University of
Manchester, U.K
Expertise :
Biochemical Engineering, Bioseparation, Membrane
Filtration, Wastewater Treatment

Dr. Jaafar Abdullah
Research Associate
B.Sc. (Hons.) in Chemistry, Ph.D in Analytical
Chemistry Biosensor, Universiti Kebangsaan Malaysia,
Expertise :
Chemical and Biosensor

Assoc. Prof. Dr. Mohamad Nizar Hamidon
Head of Electron Devices Program
B.Sc. Hons. Universiti Malaya, M.Sc. Universiti
Kebangsaan Malaysia,
Ph.D (University of Southampton)
Expertise :
Microelectronics (Sensor Technology), MEMS,
Devices Fabrication and Packaging,
Wireless System

Prof. Dr. Mohd Adzir Mahdi
Research Associate
B.Eng. Universiti Kebangsaan Malaysia,
M.Sc. Universiti Malaya,
Ph.D Universiti Malaya
Expertise :
Photonic Devices, Optical Communications

Dr. Shahrul Ainliah Binti Alang Ahmad
Research Associate
B.Sc. (Hons) in Industrial Chemistry, Universiti
Putra Malaysia, Ph.D in Physical and Analytical
Chemistry, University Of Sheffield, Postdoctoral in
Physical and Analytical, University Of Sheffield,
Postdoctoral in
Organic Synthesis, Surface Modification and Elec-
trochemistry, University Of New South Wales
Kepakaran / Expertise :
Industrial Chemistry

Dr. Yap Wing Fen
Research Associate
B.Sc. in Physics (with education), Ph.D in
Applied Optics, Universiti Putra Malaysia
Expertise :
Optical Based Sensor

Dr. Janet Lim Hong Ngee
Research Associate
B.Sc. Oleochemistry, M.Sc. Catalysis and Surfactants
Universiti Kebangsaan Malaysia,
Ph.D Material Science Universiti Putra Malaysia
Expertise :
Graphene Based Polymer Nanocomposites

Lab Members

Dr. Nasri Sulaiman
Research Officer
B.Eng, Universiti Putra Malaysia, M.Sc., University of Southampton, Ph.D University of Edinburgh
Expertise :
Evolvable Hardware (EHW) and Digital Signal Processing

Dr. Mohd Khair Bin Hassan
Research Associate
Diploma of Electrical & Electronic Engineering ,ITM, B.Eng. (Hons) Electrical and Electronic Engineering, University of Portsmouth, UK , M.Eng. (Electrical) Major in Control System, Universiti Teknologi Malaysia, Ph.D. Automotive Engineering, Universiti Putra Malaysia
Kepakaran / Expertise :
Energy Engineering, Control System

Dr. Reza Hajian
Research Fellow
B.Eng, Universiti Putra Malaysia, M.Sc., University of Southampton, Ph.D University of Edinburgh
Expertise :
Evolvable Hardware (EHW) and Digital Signal Processing

Pn. Intan Helina Hasan
Research Officer
B.Sc. Yokohama National University
Expertise :
Electronics and Computer Engineering

Md. Ali Rani
Science Officer
B.Sc. Universiti Putra Malaysia
Expertise :
Forest Management

Dr. Suriati Paiman
Research Associate
B.Sc. in Industrial Pysics, M.Sc. (Physics) in Thin Film Physics Universiti Teknologi Malaysia, Ph.D in III – V Compaund Semiconductor Nanotecnology Australian National Nanotechnology
Expertise :
Compound Semiconductor Materials Science (III-V semiconductors), Compound Semiconductor Nanotechnology and Photovoltaics

Dr. Yusran Sulaiman
Research Associate
B.Sc. (Hons) (UTM), M.Sc. (UTM), Ph. D (Durham, U.K)
Expertise :
Electroanalytical Chemistry and Materials Chemistry

Dr. Mohammad Faruq
Post Doctoral
B.Sc (Chemistry)& M.Sc (Organic Chemistry) Acharya Nagarjuna University
Ph.D. Southern University and A&M College, USA
Postdoctoral in Southern University and A&M College (USA), NorthWest University (South Africa)
Expertise :
Cancer nanotechnologies, Nanomaterials for biomedical applications, Nanotoxicology, Nanocatalysis

Rosiah Osman
Research Officer
B.Sc. The University of Southwestern Louisiana (Lafayette)
Expertise :
Electrical and Electronics Engineering

Wafi Azimin Mohd Jan
Assistant Engineer
Certificate of Electronic Communication
Expertise :
Electronics Communication

FIELD OF STUDY

Nanosciences

Nano-size materials exhibit novel and superior physical and chemical properties, phenomena and processes, which are different from those of bulk materials. Metal nanoparticles have been intensively studied recently due to their novel optical, electronic, magnetic and electrochemical properties. In particular, silver nanoparticles have many potential applications in optical waveguides, optical switches, molecular identification, catalysis, pronounced surface plasmon resonance absorption, surface enhanced Raman scattering and surface-enhanced fluorescence. The properties of metal nanoparticles depend on several factors such as the electron density, size and shape of the nanoparticles, dielectric constant of the medium. The group has embarked on the preparation of polymer/metal nanocomposites by reduction of g radiation, chemical and physical methods. Various characterization techniques are employed including SEM, TEM, XRD, UV-visible spectroscopy and electrical properties.

Nanotechnology has become one of the most important and exciting forefront fields. Various devices in the nanoscale will be created in the near future. Demands for nanosized materials are increasing due to new inventions and innovations in nanotechnology. One of nanomaterials that have garnered the interest of researchers in the world is CNTs which deemed to change the scale of our current equipment. Based on the need of rising interests in synthesizing CNTs for nanotechnology, commercial PLAD systems and components with low start-up cost must also reached the market . We have designed an inexpensive new chamber for the pulsed laser ablation deposition (PLAD) system to synthesis carbon nanotubes (CNTs). A T-shaped steel vacuum chamber was designed which has a cylindrical shape, with diameter of about 15cm and 45cm length.

Advanced Materials

Advanced Materials Engineering is designed to train students in the materials and processes fields, for the purpose of integrating them in high-tech and traditional technological industries or in materials research at advanced degree levels. This program aims at preparing students with in-depth multi disciplinary knowledge, current issues and practices in the field of Advanced Materials such as composite, ceramic, electronic materials, magnetic material, smart material, plastic and polymer. Nanotechnology has become one of the most important and excit

Green Engineering

Green Engineering is the process and design of products that conserve natural resources, and impact the natural environment as little as possible. The term is often applied to system or device that requires engineering, and incorporates sound environment principles. Though green engineering is somewhat more expensive, many countries, recognizing the value of such work, have begun to offer tax breaks, and other incentives to those who incorporate its use.

Nanotechnology

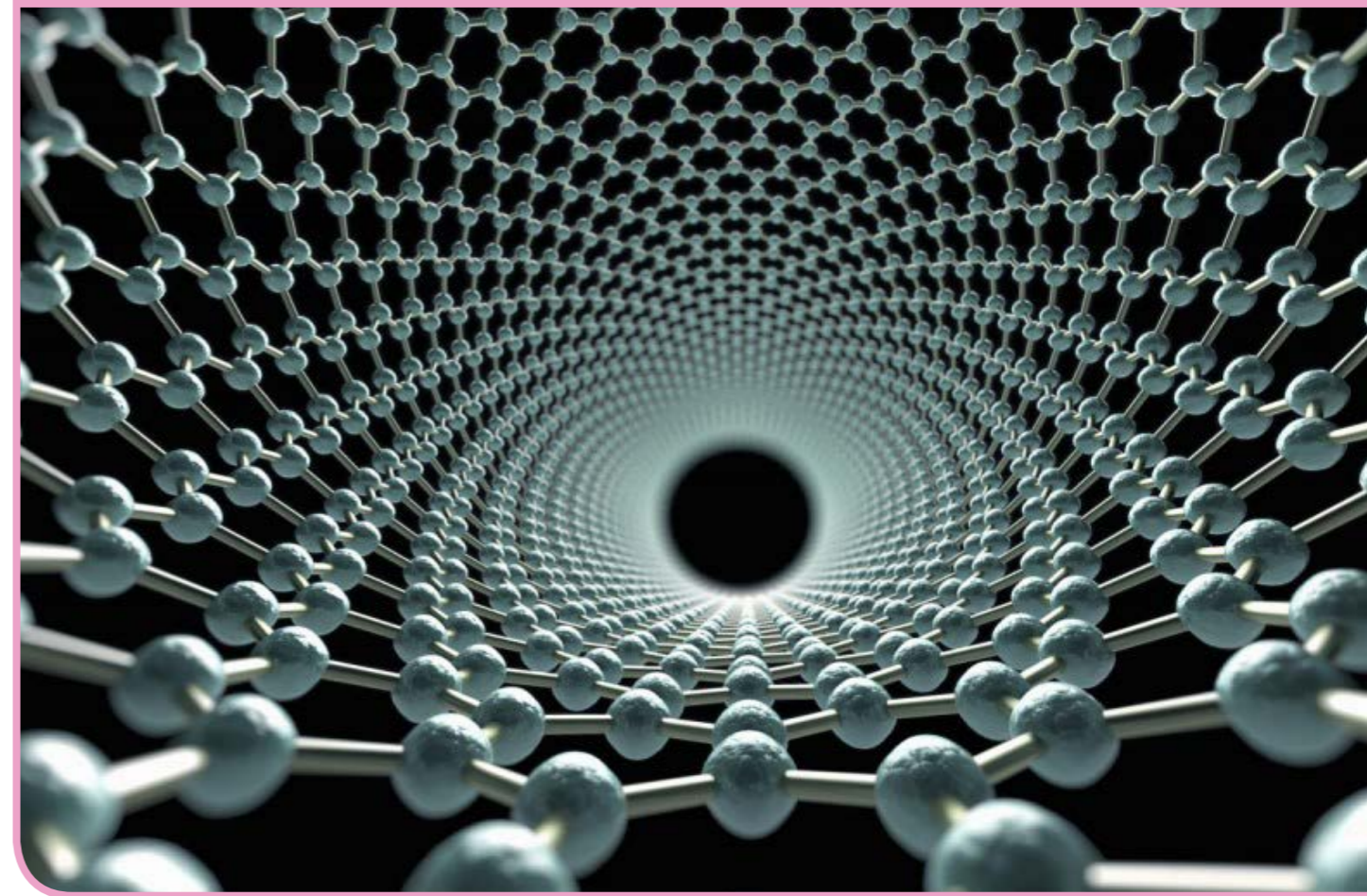
This program aims at preparing students with knowledge related to Nanotechnology which deals with developing materials, devices, or other structures possessing at least one dimension sized from 1 to 100 nanometres. Nanotechnology is the study of manipulating matter on an atomic and molecular scale. Nanotechnology entails the application of fields of science as diverse as surface science, organic chemistry, molecular biology, semiconductor physics, microfabrication. Some of typical applications of nanotechnology are in sensor, in delivery system, nanoabsorbents, nano electronic, nano machine, nanocomposites, nanotubes, and nanocarbons.

Energy

The field of energy engineering covers both fundamental and applied research that involves development, design and usage of alternative energy, renewable energy and sustainable technology. Renewable energy covers solar, wind, hydro, tidal, biomass and hydrogen energies. Research areas for renewable energy covers machine development, instrumentation, energy generation, energy storage that are environmentally friendly. For development of solar energy system, its instrumentation covers solar tracking device, modification of stirling engine, water drainage system, solar mirrors and smooth operation for the energy generation for a solar bowl. Wind farm requires a generation system, energy distribution and energy storage facilities. Development of gasifier and purification of synthesis gas for generation of electrical energy direct from oil palm biomass and generation of gases from biomass and some aspects of biomass energy generation. Animal tracking system and development of automatic methane gas generation are challenges for this research. Development of smart window, smart chimney and use of photo voltaic in creating a healthy indoor environment are part of sustainable technology. Students are required to take courses in related fields as stated and to conduct research as well as presenting research results in seminars.

Sensor Technology

Sensor Technology Engineering is the design and development of sensors to meet the need of the growth in products and services that utilize information from different types of sensors. Sensor technology has a very important role as the key technology to support a wide variety of research and industrial application. It is also a vital element that can be applicable in agriculture, water security, environment and green technology. The term is applied mostly in development of sensor networks, which also include wireless sensor networks (WSN). Although sensors can include electronic sensors, biosensors, and chemical sensors, the focus will be on the development and design of the electronic sensors.



POST GRADUATES

Number of students enrollment in 2014

Year	2014		2013	
	Local	International	Local	International
Master	36	16	28	14
Ph.D	42	32	28	21
Total	78	46	56	35
	124		91	

Number of Student Admission to ITMA on 2014

Year	2014		2013	
	Local	International	Local	International
Master	6	1	4	2
Ph.D	5	4	3	1
Total	11	5	7	3
	16		10	

Number of Students Graduated in 2014

Year	2014	2013
Master	14	9
Ph.D	9	4
Total	23	13



Linkages & Networking

Malaysia Association of Muslim Scientists (PERINTIS)

ITMA in collaboration with the Malaysia Association of Muslim Scientists (PERINTIS) has organized a program, called Kem Saya mahu Jadi Saintis on November 15, 2014 with participation from students aged 12 to 15 years old. The objective of the organization of this program is to support the recommendations of UPM in order to carry out the transfer of knowledge to society .

This is to strengthen the strategic collaboration of university-industry-community through the organization of programs involving experts in business transformation, especially in young people to cultivate their interest in science and technology. It is hoped that the community network program will be conducted continuously in an effort to fulfill the corporate social responsibility ITMA.



Participants of KEM 2014





Linkages & Networking

PUTRA GRAPHENE 2014 (Putra Colloquium on Graphene 2014)

December 16, 2014, UPM, Serdang.
 - Institute of Advanced Technology (ITMA) had organized the Putra Colloquium on Graphene 2014 (PUTRA GRAPHENE'14) with the theme 'Graphene: Synthesis and Application' at Dewan Taklimat, Faculty of Engineering, UPM. The program was officiated by the Director of ITMA, Prof. Dr. Robiah Yunus.

This program is a continuation of the Putra Colloquium on Nanomedicine which was held on April 8, 2014. A total of 9 people were invited to be the speakers, including two speakers from Nano Malaysia Berhad and MIDA. Graphene is one of the most active areas of research carried out among UPM researchers in particular and Malaysia in general. Research on graphene is one area which is gaining popularity among UPM researchers.

About 54 participants attended the PUTRA GRAPHENE 2014 involving students and researchers from within and outside UPM which included a representative of Scomi Oiltools Sdn. Bhd. The program which was held for one day had invited speakers to present their research in the field of Graphene and sharing their achievements with the participants.

Among the speakers present were Ms. Suraya Susah (MIDA), Dr. Rezal Khairi (Nano Malaysia Berhad), Dr. Janet Lim Hong Ngee (ITMA), Assoc. Prof. Dr. Suraya Abdul Rashid (ITMA), Dr. Mohd Hanif Yaacob (ITMA), Assoc. Prof. Dr. Wan Zuha Wan Hasan (ITMA), Dr. Jaafar Abdullah (ITMA), Dr. Nor Azowa Ibrahim (Faculty of Science, UPM) and Dr. Ahmad Shukri Mohammed Noor (Faculty of Engineering, UPM). This activity aimed to provide input to researchers and potential researchers in developing Graphene research in Malaysia.



Mrs. Surayu Susah from MIDA

List of Visiting Professors



Prof. Datuk Dr. Halimaton Hamdan,
 Malaysian Nanotechnology
 Association (MNA)
 Malaysia.



Prof. Dr. Arokia Nathan
 Electrical Engineering
 Division
 Cambridge University



Prof. Dr. Masaaki Tamagawa
 Department of Biological Functions
 and Engineering
 Kyushu Institute of Technology
 Japan.



Prof. Dr. Paul Berger
 Department of Electrical
 and Computer Engineering
 The Ohio State University
 USA



Prof. Dr. Edward Yi Chang
 Department of Materials Science
 and Engineering,
 National Chiao Tung University
 Hsin Chu, Taiwan.



Prof. Dr. Ahmed Kamal
 Indian Institute of Chemical Technology
 India.



Prof. Dr. Mehmet Etrugrul
 Ataturk University
 Erzurum,
 Turkey



Dr. Parasuraman Padmanabhan
 Nanyang Technological University
 Singapore



Human Resource

POST AT ITMA 2014

In 2014, ITMA has 48 staffs including 14 from academics position and 34 from non-academics position.

Table 8 : Total number of ITMA (Academic) Management and Professional Group in 2014

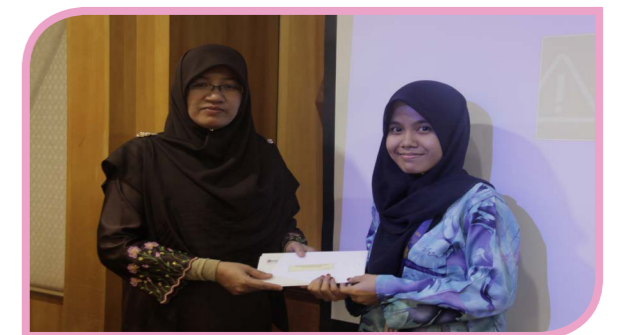
Position	Status		
	Permanent	Contract	Total
Professor	2	-	2
Associate Professor	1	-	1
Senior Lecturer	2	-	2
Research Fellow	-	4	4
Post Doctoral	-	5	5
Total	5	9	14

Table 9 : Total number of ITMA (Non-Academic) Management and Professional Group in 2014

Position	Status		
	Permanent	Contract	Total
(Non-Academic) Management and Professional Group	13	2	19
Implementation Group	17	2	19
Total	30	4	38

Table 10 : Overall Total Staff by Grade in 2014

Position	Grade	Status		
		Permanent	Contract	Total
Professor	VK7	2	-	2
Associate Professor	DS54	1	-	1
Senior Lecturer	DS52	2	-	2
Research Fellow	UDQ10	-	1	4
	UDQ5		1	
	UDQ8		2	
Post Doctoral	UPD10-1	-	2	5
	UPD8		2	
	UPD 9-1		1	
Management Officer	N44	2		3
	N41		1	
Publication Officer	N41	-	1	1
Research Officer	Q43	3	-	7
	Q41	4		
Science Officer	C41	3	1	4
Assistant Engineer	J29	6	-	6
Secretary	N28	1	-	2
	N27	1		
Administrative Assistant	N17	6	2	8
Operation Assistant	N4	1	-	2
	N1	1		
Driver	R3	1	-	1
Total		34	14	48





UPM EXCELLENCE SERVICES AWARD

Every year, UPM will hold a ceremony to celebrate outstanding staff in the performance of their duties. Four of ITMA staffs have been selected to receive the Anugerah Perkhidmatan Cemerlang (APC) for year 2013. A heartfelt congratulations to the recipients and may this reward will further motivate ITMA staff to excel in their duties in the future.



APC 2014 Recipient (clockwise)
 Md. Ali bin Rani (Science Officer);
 Normah Ludin (Secretary)
 Mohd. Wafi Azimin Muhammad Jan (Assistant Engineer)
 Mahmood bin Ismail (Operation Assistant)

LIST OF COMMITTEES



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 Mrs. Marzieana Ab Rahman

Publication Unit
 Mrs. Marzieana Ab Rahman

Camerman
 Mr. Ab Haffiz bin Ab Jalil

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Chairman :
 Prof. Dr. Robiah Yunus

Secretary : Mr. Din bin Ayup

Members :
 Deputy Director
 Head of Laboratory
 Fellow Researcher
 Post Doctoral
 Research Associates
 Research Officer

Management Meeting

Chairman :
 Prof. Dr. Robiah Yunus

Secretary :
 Din bin Ayup

Member :
 Deputy Director
 Head of Laboratory

ITMA Technical Meeting & Quotations

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Yunus
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Noordin

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Amin Matori
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Mr. Md Ali Rani
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Infrastruktur,
Penyelaras dan Pemantau
Kemudahan dan
Peralatan Penyelidikan**
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**Penyelaras Kesihatan dan
Keselamatan
Pekerjaan**
Mr. Mohd Kadri Masaud

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Mrs. Roslina bt Abdul Rashid
Ms. Nurnazeera Zulkefli

Assistant Engineer
Mr. Nazrul Abdullah
Mr. Mohd Kadri Masaud
Mr. Ab Haffiz Ab Jalil
Mr. Zakky yamanie Jamiauddin
Mrs. Noor Lina Shamsuddin

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Hamidon

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Mr. Mohd Kadri bin Masaud
Mr. Ab Haffiz bin Ab Jalil
Mr. Mohd Wafi Azimin
Mohamad Jan
Mr. Zakky Yamanie Jamiauddin
Mrs. Noor Lina Shamsuddin

ITMA

Staff Activities 2014



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Laboratory Activities 2014





FURTHER INFORMATION

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