

RMC Bulletin

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INNOVATION ACHIEVEMENTS

- PERINTIS 2014 ■
- ITEX 2014 & 2015 ■
- IUIIC 2015 ■

RESEARCH ACHIEVEMENTS

- PRIVATE RESEARCH PROJECTS ■
- FRGS RESEARCH PROJECTS ■
- HTC CONSULTANCY PROJECT ■

ISSN 2289-1242



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I am delighted to introduce the 3rd issue of RMC Bulletin, which reminds us of our exceptional accomplishments in encouraging IUKL's academic unit in national and international research and innovation activities. Thus, this issue aims to showcase the achievements and accomplishments of academicians and researchers from IUKL from January 2014 to December 2015.

Both 2014 and 2015 had been vibrant, engaging and at the same time integrative and challenging with various activities, all related to the area of research, development and innovation. Time flew by, with substantial contributions and accomplishments to the development and success of the RMC unit.

Noting on the research achievements, Prof. Dr. Faridah Ibrahim brought in three (3) private research projects; Dr. Sylvia Chieng succeeded in securing one (1) FRGS research grant awarded by MOHE and one (1) consultancy research project endowed by HTC KL, led by Assoc. Prof. Dr. Faris Gorashi. RMC grateful to them for all their hard work and dedication.

RMC was also thrilled to bag in many awards from various innovation competitions such as ITEX and PECIPTA, despite being new to the research and innovation division and hosting it's very first edition of 'Pertandingan Rekapipta dan Inovasi Institusi Pengajian Tinggi Swasta' (PERINTIS).

In addition, RMC would also like to take this opportunity to thank Prof. Dr. Faridah Ibrahim, Assoc. Prof. Dr. Kong Wei, Mdm. Naimah Yusoff and Mdm. Thana Pakkiam respectively, for their research article contributions in this Bulletin. Their articles strive to combine academic excellence with professional industrial relevance and focus.

I hope that RMC will persistently continue to develop and unremittingly facilitate IUKL's academicians in enhancing the quality, scope and diversity of their respective research and innovation activities.

Happy reading.

Annie Yap Ai Kin
Chief Editor

FOREWORD BY THE PRESIDENT & VICE CHANCELLOR

First of all, on behalf of Infrastructure University Kuala Lumpur (IUKL), I extend my warmest congratulations to RMC and its Editorial Board for its success and efforts in publishing RMC Bulletin No. 3, which serves as a platform to disseminate news on the University's achievements and accomplishments in areas of research, consultancy and innovation.

This issue illustrates a significant milestone in our progress and development since RMC Bulletin No. 2 in 2013. It provides us with an opportunity to reflect on our humble beginnings, and look forward to an exciting future, as we continue to develop in the related areas of research, consultancy and innovation.

I am extremely pleased that, in line with our vision to be a respectable world ranked University, IUKL is making significant progress and receiving recognition in the form of research funds from various external funding bodies like MOHE and HTC KL within the research context.

I am also contented with the present consultancy services offered by Faculties and the I-Geo Disaster Research Centre. The first of the many, started in 2015, attempting to equip external clients with rigorous trainings and seminars on existing methods, standards and guidelines through the embodiment of the knowledge economy into their respective work-related environments. This affirmative strategy will not only showcase IUKL's excellence and expertise, thus promoting IUKL as the preferred consultant of choice, but it will also contribute monetarily to IUKL's generation of income.

Apart from that, I am also delighted that academicians and researchers had persistently work hard in hosting IUKL's first inaugural national research innovation and invention competition called 'Pertandingan Rekacipta dan Inovasi Institusi Pengajian Tinggi Swasta' (PERINTIS) in year 2014 which was co-organized by the Ministry of Science, Technology & Innovation Malaysia (MOSTI) and supported by the Ministry of Education Malaysia (MOE). Congratulations also to all parties involved in winning medals at the ITEX and PECIPTA events too.

May this short overview of the various achievements arouse our readers' interest and boost their inspiration so that the academic community in IUKL will participate in more research, consultancy and innovation related activities and record outstanding achievements both nationally and internationally.

Once again, I congratulate all who have worked so hard to make the year of 2014 and 2015, with its challenges and changes, a shared success.



Prof. Dr. Roslan Zainal Abidin

*President & Vice Chancellor
Infrastructure University Kuala Lumpur (IUKL)*

RESEARCH WORKSHOP

IUKL RESEARCH RETREAT @ Shangri-la Hotel, Putrajaya, 29th December 2014

RMC committed to continue the effort of organising the IUKL Research Retreat at Shangri-la Hotel, Putrajaya on 29th December 2014. A total of twenty-four lecturers joined the workshop in preparing fifteen research proposals for MOHE's grants (i.e. FRGS, PRGS & LRGS) and MOSTI's funds. RMC was honoured to invite two panel members, Prof. Dr. Hasanah Mohd. Ghazali (UPM) and Prof. Dr. Ruzy Suliza Hashim (UKM) to share their experiences in securing grants from external funding bodies as well as providing guidance and advice on improving the research proposals.





PROPOSAL WRITING FOR SOCIAL SCIENCES

RMC in collaboration with the Center of Postgraduate Studies (CPS) had conducted a half day research workshop on Proposal Writing in the Social Sciences. The workshop was held at the Postgraduate Discussion Room, CPS, Block 2, IUKL on 23 May 2014 (Friday) from 8.30 a.m. - 12.15 p.m. This research workshop was for all IUKL academicians and postgraduate students. Assoc. Prof. Dr. Siti Zobidah Omar, from Faculty of Modern Languages and Communication, UPM was invited as the honourable guest speaker.

ENGINEERING PROPOSAL WRITING

The collaboration effort continued for the "Proposal Writing in the Engineering" which was held on 11 July 2014 (Friday) from 8.30 a.m. - 12.15 p.m. at the Postgraduate Discussion Room, CPS, Block 2, IUKL. Prof. Dr. Ideris Zakaria, Vice President of IUKL was invited as the honourable guest speaker. Both workshops received thunderous applause and support from IUKL's researchers and IUKL's postgraduate students.



IUKL RESEARCH & CONSULTANCY PROJECTS

LIST OF IUKL INTERNAL RESEARCH FUND (2010 – 2015)

IUKL Internal Research Fund was formed to encourage IUKL's academic staffs to kick start their research in the institution. Usually the IUKL Internal Research Fund will be open twice a year for applications to apply. Below shows the list of research projects which were approved under the IUKL Internal Research Fund since 2010 until 2015.

| PHASE 2010 | | | | | |
|--------------|---|--|---------|----------------|-----------|
| No. | TITLE | PROJECT LEADER | FACULTY | STATUS | |
| | | | | START | END |
| 1 | The Guiding Grid: Assessment to Support Learning | Dr. Karthiyaini Devarajoo Archanaa Maniappen | SCLS | January 2010 | Completed |
| 2 | Interference of L1 in L2 Writing Skills among Chinese Speaking Learners | Assoc. Prof. Dr. Christiantine Della | SCLS | June 2010 | Completed |
| 3 | Gamma Rays Irradiation Effects on High Temperature Superconductor YBCO with Nano-sized Particles Additions | Dr. Kong Wei | SASF | January 2011 | Completed |
| PHASE 1/2011 | | | | | |
| No. | TITLE | PROJECT LEADER | FACULTY | STATUS | |
| | | | | START | END |
| 1 | Predicting Purchase Intention for Halal Cosmetic Product | Kamaljeet Kaur | SCLS | May 2011 | Completed |
| 2 | Nation branding: Public perception of the 1 Malaysia campaign | Assoc. Prof. Dr. Siti Maziha Mustapha | SCLS | June 2011 | Completed |
| 3 | Interlingual Interference of L1 (Arabic) on L2 (English) Syntactic Structures of Libyan EFL Students' Writing in the English Language | Suraya Amirrudin | SCLS | January 2011 | Completed |
| 4 | Relationship between Interactions-Based Diversity and Intercultural Sensitivity Among Undergraduates Students | Norzita Yunus | SCLS | January 2011 | Completed |
| 5 | Integrating Facebook As A Communication Tool to Support Language Learning and Teaching | Zulkarnin Zakaria | SCLS | July 2011 | Completed |
| 6 | Kajian Keberkesanan Pelaksanaan Matapelajaran Wajib Universiti di IPTS di Persekitaran Lembah Kelang | Dr. Che Pee Saad | SASF | September 2011 | Completed |
| 7 | Factors that Determine Students' Preference in Selecting Higher Learning Institution | Jaya Chitra Ramalu | SASF | June 2011 | Completed |
| 8 | The Effectiveness of Problem-Based Approach For Programming Course: Tertiary Education | Robiatul A'dawiah Jamaluddin | SITI | June 2011 | Completed |
| 9 | The Effectiveness of Social Network Application as a Educational Tools for Information Technology | Suhaila Sardi | SITI | June 2011 | Completed |
| PHASE 1/2012 | | | | | |
| No. | TITLE | PROJECT LEADER | FACULTY | STATUS | |
| | | | | START | END |
| 1 | Sustainable Cultivation and Supply of Temperate Species Sea Cucumber & Scallops | Lee Su Yee | SASF | February 2012 | Completed |
| 2 | A Study of Student and Staff Expectations and Experiences on Academic and Social Life in a Private Higher Education Institution | Dr. Che Pee Saad | SASF | September 2012 | Completed |
| 3 | A Novel Approach to Reuse Alum Sludge in Pottery Manufacturing and Building Material Using Silica and Thermal Curing | Dr. Faris Gorashi | SETI | January 2013 | On-going |
| 4 | The Preferred Teaching and Learning Style of Engineering Students and Their Lecturers at KLIUC | Harold Poong Wan Hing (taken over) | SCLS | August 2012 | Completed |
| | | Dr. Angela Abu-Asba (Leader left the University) | | | |

| PHASE 1/2013 | | | | | |
|--------------|---|-------------------------------------|---------|----------------|-----------|
| No. | TITLE | PROJECT LEADER | FACULTY | STATUS | |
| | | | | START | START |
| 1 | Fixed Scalar for QN-SD in Solving Large Scale of Unconstrained Optimization Problems | Mohd Asrul Hery Ibrahim | FASF | March 2013 | Completed |
| 2 | Retailing Model Between Foreign Hypermarket and Local Minimarket in Malaysia | Dr. Goi Mei Teh | FBA | Jane 2013 | Completed |
| 3 | Factors Influencing Sijil Pelajaran Malaysia Students in Choosing Their Tertiary Education Pathway through STPM, A-Level or Foundation Programmes | Hanita bt Ismail | FASF | August 2013 | Completed |
| PHASE 2/2013 | | | | | |
| No. | TITLE | PROJECT LEADER | FACULTY | STATUS | |
| | | | | START | END |
| 1 | Design of Dual-Band H-Shaped Patch Antenna for DCS and WLAN Applications | Thana Pakkiam A/P Krishnan | FETI | November 2013 | Completed |
| 2 | A New Healthcare Information Platform: Youth Consumer Behavior And Confidence Level Towards Healthcare Websites | Liew Chee Kit | FACE | September 2013 | Completed |
| 3 | Effectiveness of Integrated Marketing Communication (IMC): A Study on IMC Strategy Towards IUKL Rebranding | Dr. Khor Mi Nee | FACE | October 2013 | Completed |
| 4 | Correlation between IUKL Engineering Students' Performance in Mathematics and Their Learning Attitudes | Nora'Asikin Abu Bakar | FAST | December 2013 | Completed |
| 5 | Directory of soil erodibility profile at Muda River and Muar River | Naimah Yusoff | FETI | January 2014 | Completed |
| PHASE 1/2014 | | | | | |
| No. | TITLE | PROJECT LEADER | FACULTY | STATUS | |
| | | | | START | END |
| 1 | Application of an extended Stimulus-Organism-Response framework to Higher Educational Institutions | Vigneswari Kalidas | FBA | January 2014 | Completed |
| 2 | The Role of Feng Shui Element and other Related Variables in Developers' Corporate Image Building | Liew Chee Kit | FACE | October 2014 | Completed |
| PHASE 1/2015 | | | | | |
| No. | TITLE | PROJECT LEADER | FACULTY | STATUS | |
| | | | | START | END |
| 1 | Relationship among resources, processes and outputs of mosques in Malaysia | Muhd Fauzi Bin Abd. Rahman | FBA | March 2015 | Completed |
| 2 | Islamic Leadership Principles and Accountability of Islamic Insurance Institutions: A PLS Path Modelling Approach | Raja Rizal Iskandar bin Raja Hisham | FBA | March 2015 | On-going |
| 3 | Identification of Malaysian Marine sponge <i>Stylissa</i> sp. Using DNA barcoding approach | Aizat bin Mohd Razali | FASF | June 2015 | On-going |
| PHASE 2/2015 | | | | | |
| No. | TITLE | PROJECT LEADER | FACULTY | STATUS | |
| | | | | START | END |
| 1 | Factors Influencing Poor Academic Performance of the International Students of IUKL: Focusing in Mathematics and Science subjects | Hanita bt Ismail | FASF | October 2015 | On-going |
| 2 | Comparison between Local and Foreign Students in Terms of Student Characteristics and Learning Methods that Affect Academic Performance | Jaya Chitra Degala Ramalu | FASF | November 2015 | On-going |

LIST OF IUKL EXTERNAL RESEARCH PROJECT GRANTED (2010 – 2015)

RMC is committed to give full support and assistance to IUKL's academic staffs who apply for the external research funding. RMC will share all information whenever there are opportunities from the external research fund bodies such as MOHE grants, MOSTI funds, Toray and etc. The list shown below is the list of research projects which were granted from external funding bodies since 2010 until 2015.

| YEAR | NAME OF GRANT | PROJECT TITLE | PROJECT LEADER | AMOUNT GRANTED (RM) | STATUS |
|------|--|--|--------------------------------|---------------------|-------------|
| 2011 | HTC KL | Erosion risk potential categorization in Langat River | Prof. Dr. Roslan Zainal Abidin | 193,000 | Completed |
| 2011 | FRGS (MOHE) | Gamma ray irradiation effects on high temperature superconductor Y-Ba-Cu-O with nanomagnetic particles additions | Dr. Kong Wei | 74,000 | Completed |
| 2012 | LRGS (MOHE) | Water & Energy safety (UCOREN project) | Prof. Dr. Roslan Zainal Abidin | 27,500 | Completed |
| 2013 | PRGS (MOHE) | Steel Fibre (SteFib) Column | Dr. Nurharniza Abdul Rahman | 300,000 | Completed |
| 2014 | FRGS (MOHE) | Phase formation and transport current enhancement of thallium-based high temperature superconductors with artificial pinning | Assoc. Prof. Dr. Kong Wei | 95,000 | In Progress |
| 2014 | HTC KL | A Novel Approach To Reuse Alum Sludge In Manufacturing of Building Material and Pots Admixtures and Thermal Curing | Assoc. Prof. Dr. Faris Gorashi | 174,300 | Completed |
| 2014 | FRGS (MOHE) | Production of Bio-ethanol from Temukut (Brewers rice) | Dr. Sylvia Chieng | 131,500 | In Progress |
| 2014 | Wah Seong Corporation Berhad | Proposal to Conduct a Study in Wah Seong | Dr. Khor Mi Nee | 17,000 | Completed |
| 2014 | Al Hijrah Media Corporation | Ke Arah Penjenamaan TV Alhijrah- Analisis Penontonan dan Pemrograman | Prof. Dr. Faridah Ibrahim | 46,264 | Completed |
| 2014 | Pasau University, Germany | Ethic Media and Cosmopolitan Communication: between inclusion and exclusion-Malaysia | Prof. Dr. Faridah Ibrahim | 10,000 | Completed |
| 2014 | Institut Penyiaran Dan Penerangan Tun Abdul Razak (IPPTAR) | Penonjolan imej wanita dan kanak-kanak di drama televisyen/Portrayal of women and children in TV drama. | Prof. Dr. Faridah Ibrahim | 40,000 | Completed |

LIST OF REGISTERED CONSULTANCY PROJECT (2015)

RMC is also committed to extend full support and assistance to IUKL's academic staffs that are providing their professional services in various fields of expertise to clients outside the institution. The list shown below is the list of registered consultancy projects with RMC in year 2015.

| REGISTRATION NO. | CONSULTANCY CATEGORIES | PROJECT LEADER | PROJECT TITLE | PROJECT PERIOD | GROSS INCOME (RM) |
|----------------------|------------------------|---------------------------|--|---------------------|-------------------|
| IUKL/RMC/2015/CS/(1) | Training / Workshop | Mdm. Naimah Yusoff | 4th I-GEO Seminar on Pavement Industry in Malaysia | 27 April 2015 | 39,128 |
| IUKL/RMC/2015/CS/(2) | Training / Workshop | Mdm. Naimah Yusoff | "In House Training on River Bank Erosion Prediction" | 13 May 2015 | 19,900 |
| IUKL/RMC/2015/CS/(3) | Training / Workshop | Mdm. Naimah Yusoff | 5th I-GEO Seminar on Landslide Hazards and Disaster Management | 15 June 2015 | 16,850 |
| IUKL/RMC/2015/CS/(4) | Training / Workshop | Assoc. Prof. Dr.Kong Wei | Introduction to SPSS for Postgraduate Students | 19 August 2015 | 1,230 |
| IUKL/RMC/2015/CS/(5) | Training / Workshop | Mohd Sofiyhan Sulaiman | Earthquake Risk in Malaysia: Past, Present and Future | 5 October 2015 | 4,570 |
| IUKL/RMC/2015/CS/(6) | Training / Workshop | Ir. Mohd Nasir Bin Hussin | Esteem and STAAD Pro Training | 21 November 2015 | 2,000 |
| IUKL/RMC/2015/CS/(7) | Training / Workshop | Ir. Mohd Nasir Bin Hussin | Staad Pro Training | 10-17 December 2015 | 3,400 |



Phase Formation and Transport Current Enhancement of Thallium-based High Temperature Superconductors with Artificial Pinning Centers

Assoc. Prof. Dr. Kong Wei

Faculty of Applied Science and Foundation Studies, IUKL

The discovery of high temperature superconductors (HTS) with critical temperature (T_c) above 77 K (boiling point of liquid nitrogen), has attracted much attention into the superconductors' research especially on the practical application. Superconductors are the potential materials for applications such as transmission cables, generators, motors, etc. Until 2008, only certain compounds of copper and oxygen (cuprates) were found to exhibit HTS properties. These cuprate compounds include yttrium barium copper oxide (YBCO), bismuth strontium calcium copper oxide (BSCCO), thallium strontium calcium copper oxide (TSCCO) and mercury barium calcium copper oxide (HBCCO).

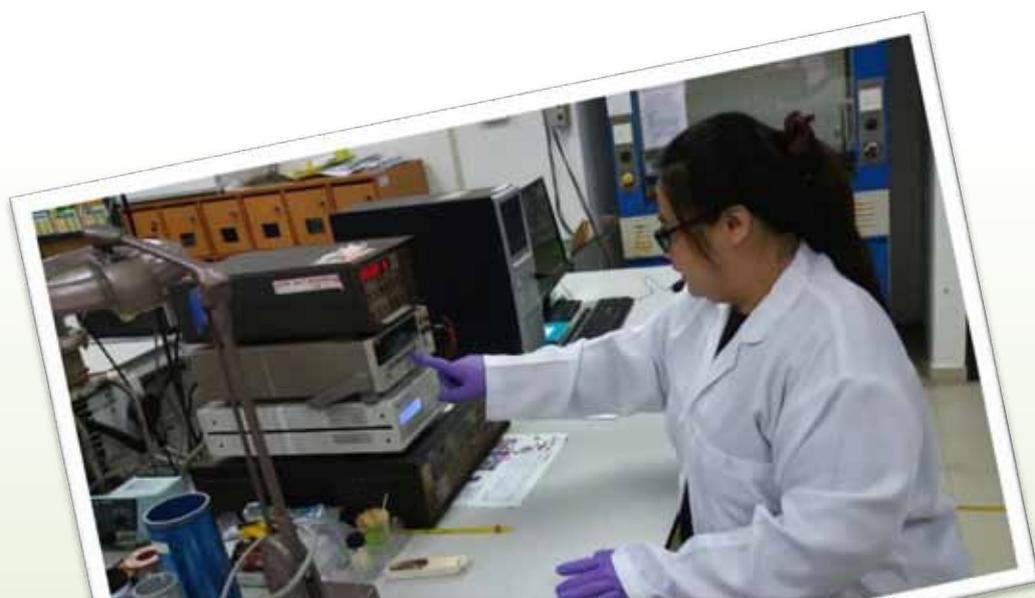
Thallium-based superconductors have received significantly less attention than yttrium-based or bismuth-based superconductors. It is not easy to prepare pure form thallium-based superconductors. Various partial substitutions need to be done to optimize the critical temperature and phase formation. The intrinsic properties of superconductors like weak link effects and weak pinning capability have hindered the performance of superconductors and led to low transport critical current density. The main problem faced is the rapid decrease in the critical current density with an increase in temperature and magnetic field. In this case, the pinning strength is an important factor affecting the transport properties of the superconductors. Suitable artificial pinning centers need to be employed in order to enhance the transport current carrying capacity. However, studies of artificial pinning on thallium-based superconductors are still very limited. This work, reveals the effects of artificial pinning centers on the phase formation and transport current enhancement of thallium-based high temperature superconductors.

Bulk thallium-based superconductors ($Tl_{0.85}Cr_{0.15}Sr_2CaCu_2O_{7-δ}$) (TI-1212) were prepared by using high purity oxide powders via solid state reaction method. Artificial impurities like nano particles Al_2O_3 , nano particles SnO_2 and graphene were added to TI-1212 superconductors. The lattice parameters and phase formation of the samples were characterized by X-ray Diffraction (XRD). The critical temperature (T_c) and transport critical current density (J_c) were determined by using the four point probe method. The morphology of the samples was studied by Scanning Electron Microscopy (SEM) while the distribution of artificial pinning centers was determined by Energy Dispersive X-Ray Analysis (EDX).

XRD measurement was carried out by using a Siemens D5000 diffractometer with $CuK\alpha$ radiation source to identify the resultant phase. Lattice parameters a and c for the tetragonal, were calculated by using the X'pert HighScore software. The volume fraction of the 1212 and 1201 phase was estimated by assuming that the amounts of 1212 and 1201 phase are proportional to the strongest diffraction line of each phase. All of the samples indicated a dominant phase of TI-1212 with a minor phase of TI-1201. The lattice parameters a and c were found at 3.821 Å and 12.027 Å, respectively. All samples showed the tetragonal lattice structure which belongs to the $P4/mmm$ space group. By adding the artificial pinning centers (nano particles Al_2O_3 , SnO_2 and graphene), the volume fraction of TI-1212 phase increased.

All of the samples showed the superconducting state with critical temperature (T_c) above 77 K. At 77 K, samples with 0.02 wt.% nano-sized Al_2O_3 , 0.03 wt.% nano-sized SnO_2 and 0.001 wt.% graphene showed the enhanced J_c , at 2660 mAcm^{-2} , 3260 mAcm^{-2} and 3010 mAcm^{-2} , respectively. As compared to the pure ($\text{Tl}_{0.85}\text{Cr}_{0.15}$) $\text{Sr}_2\text{CaCu}_2\text{O}_{7-\delta}$, ($J_c = 820 \text{ mAcm}^{-2}$), the transport critical current density have been significantly enhanced. Nano particles Al_2O_3 , SnO_2 and graphene have acted as effective artificial pinning centers in Tl-1212 superconductors. However, the excessive addition of artificial pinning centers caused degradation in T_c and J_c .

In conclusion, artificial pinning centers have successfully improved the phase formation and enhanced the current carrying capacity of thallium-based superconductors. This finding can be applied in the fabrication of *superconducting tapes and wires*.



Assoc. Prof. Dr. Kong Wei in Her Research Lab

Ethnic Media and Cosmopolitan Communication: Between Inclusion and Exclusion - A Malaysian Case

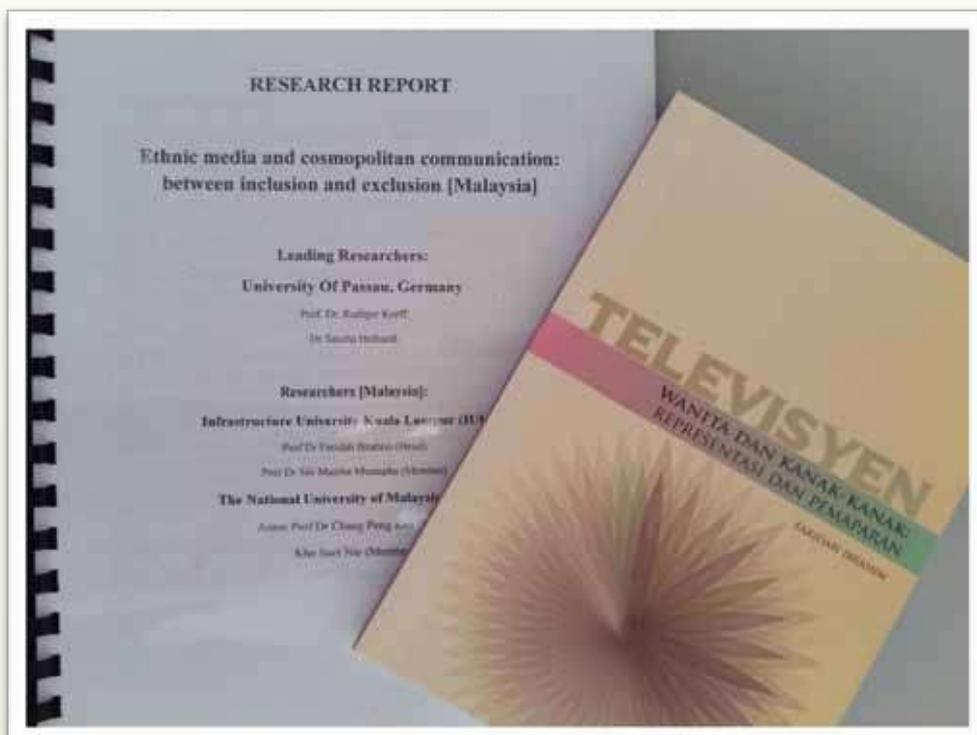
Professor Dr. Faridah Ibrahim

Faculty of Arts, Communication and Education, IUKL

The research grant from the University of Passau is based on a collaborative research entitled “Ethnic Media and Cosmopolitan Communication: Between Inclusion and Exclusion (A Malaysian case)”. The collaboration is between Prof. Dr. Rudiger Korff and Dr Sascha Helbardt from University of Passau, Germany, Prof Dr Faridah Ibrahim and Prof Dr Siti Maziha Mustapha from Infrastructure University Kuala Lumpur and Assoc. Prof Dr Chang Peng Kee and Ms Kho Suet Nie from Universiti Kebangsaan Malaysia. This grant is part of a bigger grant whereby it also covers researchers in Thailand and Myanmar, each researching in their own country.

The Malaysian team received RM10, 000 of research funding. The research was carried out using content analysis, survey research and interview techniques to collect data in Malaysia. The research covered a six month period from November 2014 to April 2015. The findings of the quantitative and qualitative research showed that ethnic media, notwithstanding its general orientation in catering to the needs and interests of a particular ethnic community, has been playing a considerably important – albeit often overlooked and perhaps underappreciated – role in Malaysia’s nation building process.

The findings showed that ethnic media has been playing a constructive role in nation building in at least three aspects (a) consciously cultivating a sense of national belonging and constructing a Malaysian identity among its readers, (b) cautiously expressing and framing the community’s concerns in a positive and non-confrontational light; and (c) collaborating with and contributing to the government’s efforts in making Malaysia, a stable, harmonious, united and progressive nation.



Technical Report and Book Published from the Researches

Television, Women and Children: Representation and Image Portrayal

Professor Dr. Faridah Ibrahim
Faculty of Arts, Communication and Education, IUKL

The IPPTAR research entitled 'Television, Women and Children: Representation and Image portrayal' was also a collaborative research between IUKL and UKM headed by Prof. Dr. Faridah Ibrahim, FACE, IUKL. Research members from IUKL were Ms Amlia Hazlin Ahmad Mokhtar, Ms Norzita Yunus, Ms Dil Froz Sayed Halem Shah, Ms Munirah Ilias, and Ms Farah Alwani Hamzah. Researchers from UKM were Assoc. Prof Dr Normah Mustafa, Assoc. Prof. Fuziah Kartini Hassan Basri and Assoc. Prof Dr Wan Amizah Wan Mahmud. With a total funding of RM40,000 from the Ministry, the research aimed to study on the portrayal of images of women and children in Malaysian television dramas. The period of study was six months beginning June 2015. A book based on the data obtained from the study was co-published by IUKL and IPPTAR in 2016. On the overall, the findings showed that the dual images of women and children are still prevalent on television dramas in Malaysia. Women's images are still stereotyped with the 5Fs – Fashion, Food, Family, Furnishing and Fun. The study calls for a gender-sensitised content producers. Where women and children are concerned, the researchers suggested that television dramas should be more future oriented, rational, highly informative, educational and inspiring.



Focus Group Discussions: In-depth Interviews with Practitioners

A Novel Approach to Reuse Alum Sludge in Manufacturing of Soil Erosion Protection Blocks/Bricks Building Material Using Admixtures and Thermal Curing

Assoc. Prof. Dr. Faris Gorashi, Prof. Dr. Roslan Zainal Abidin, Naimah Yusoff
Faculty of Engineering & Technology Infrastructure, IUKL

The research is funded by Humic Tropic Centre Kuala Lumpur under Department of Irrigation and Drainage (DID) for the amount of RM 168, 620.00. The duration of the research was two years which started in December 2014 and ended in December 2015. The research team members were Prof. Dr. Roslan Zainal Abidin and Naimah Yusoff with Assoc. Prof. Dr. Faris Gorashi as the project leader.

Alum Sludge also known as aluminium hydroxide-containing sludge which is a by-product of chemical coagulation process of hydrated aluminium sulphate addition to water. The research aims to reuse alum sludge in optimum amounts for river bank protection materials, roof tiles and clay bricks material with the optimum strength. Alum Sludge also known as aluminium hydroxide-containing sludge is a by-product of chemical coagulation process of hydrated aluminium sulphate addition to water.

Presently as many as 462 water treatments plants (WTPs) in Malaysia produce up to 11,536 million liters of treated water daily. An estimated of over 2.0 million tons of water treatment sludge or residue (WTS) is produced annually by the water operators throughout Malaysia (Industry et al. 2010). Disposal cost of alum sludge from water treatment plant to sanitary landfill is RM 400/metric tons. It costs RM 800 Million/year to treat alum sludge.

This study provided series of trials to produce 3 major products namely soil erosion protection blocks/self-compacting concrete with dimension of 130 mm thickness, width 190 mm and length 340 mm as shown in Figure 1, clay cement bricks with dimension of 215 mm x 105 mm x 65 mm as shown in Figure 2 and clay roof tiles with dimension of 265 mm x 105 mm x 10.5 mm as shown in Figure 3.

The products were tested for compression strength test, workability test and water absorption test. The sample of concrete block with 15 % of alum sludge produce the most competitive result. Meanwhile for clay cement brick, the proportion of 70% alum sludge, 20 % clay and 10 % silica fume is the most optimum mix proportion.

The research indicated promising results as evident in the title. The potential of reusing alum sludge in producing soil erosion protection blocks and other construction materials can provide a sustainable solution using green materials. It will be of benefit to the environment if alum sludge which is the waste from water treatment plant to be used for construction material production rather than disposing it to the environment and at the same time polluting the environmental.



Alum sludge after drying



Figure 1: Self Compacting Concrete

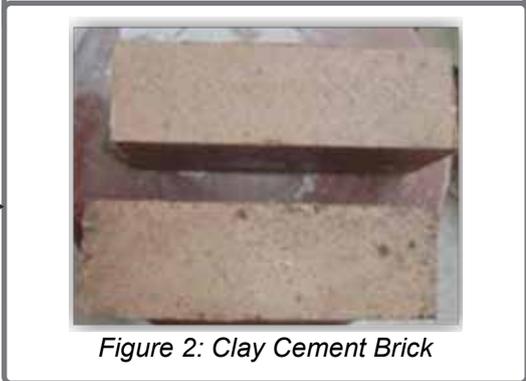


Figure 2: Clay Cement Brick



Figure 3: Clay Roof



Research Team Members at Water Treatment Plant Gunung Semangol

Directory of Soil Erodibility Profile at Muda River and Muar River

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This research was funded by Infrastructure University Kuala Lumpur for the amount of RM 18,748.00. The duration of the research was two years from January 2014 to December 2015. The research committee consisted four members, headed by Naimah Yusoff as the project leader. She was assisted by Prof. Dr. Roslan Zainal Abidin, Noorbaya Mohd Salleh and Wani Kasmiah Mohd Sapuan. This research aimed to determine the degree of soil erodibility and identify erosion risk category and potential along the Muda and Muar rivers respectively.

River bank failures are common concerns in Malaysia especially during the heavy rainy seasons. One of the significant factors that cause river bank erosion is the textural composition along the river banks. This can be presented by the degree or level of soil erodibility.

The Muda River which is located in the Kedah state is a major source of water supply and sand mining for the northern states. Meanwhile, the Muar River is one of the major rivers in the southern state. Fieldwork includes soil sampling (as shown in Figure 1) which was collected at 2 km intervals along with the specific soil erosion features noted along the Muda and Muar River. Sieve analysis and hydrometer tests were conducted for all soil samples collected along the river banks and the "ROM" scale (after the researchers' first names: Roslan and Mazidah) was used to determine the degree of soil erodibility ; low, moderate, high, very high and critical based on the percentage composition of sand, silt and clay.



Figure 1 Site visit and soil sampling

| MUAR RIVER | | |
|--------------------|-----------------------------|------------------------------|
| EROSION RISK LEVEL | LEFT SIDE OF RIVER BANK (%) | RIGHT SIDE OF RIVER BANK (%) |
| LOW | 84.73 | 94.67 |
| MODERATE | 15.27 | 5.33 |
| HIGH | NIL | NIL |
| VERY HIGH | NIL | NIL |
| CRITICAL | NIL | NIL |

| MUDA RIVER | | |
|--------------------|-----------------------------|------------------------------|
| EROSION RISK LEVEL | LEFT SIDE OF RIVER BANK (%) | RIGHT SIDE OF RIVER BANK (%) |
| LOW | 11 | 18 |
| MODERATE | 31 | 30 |
| HIGH | 13 | 10 |
| VERY HIGH | 1 | 6 |
| CRITICAL | 19 | 11 |

Figure 2: Erosion Risk at Muda River

Based on the above tabulation of 150 samples collected at Muda River, the erosion risk for Muda River varies from low, moderate, high, very high and critical (as shown in Figure 2). The “Moderate” scale of erosion shows the highest percentages for both the right and left sides of the river bank whereas, the “Very High” scale of erosion shows the lowest percentages for both sides of the river bank.

Meanwhile, the erosion potential risk for Muar River is indicated lesser. There is no high, very high and critical category identified. The erosion risk for the left side of river bank is 15.27 % and 84.73 % respectively, for moderate and low. Meanwhile, the erosion risk for the right side of the river bank is 5.33 % and 94.67 % for moderate and low.

By determining the soil erodibility level, the risk of river bank failure at any location along the river bank can be made known. Thus, this valuable information would certainly enable the concerned government and private authorities to plan, design and construct most suitable preventive measures in arresting river bank erosion.

Design of Dual Band H-Shaped Antenna for Dcs and Wlan Applications

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Tremendous growth in wireless markets demand products that are capable of providing multiple radio services within a single device. The desired antennas will be low profile and smaller sized with multiband characteristics. Micro strip patch configuration is a potential candidate that can be considered for the current radio designs due to low fabrication cost, low profile and ability to integrate with other electronic devices.

This research presents the performance of a dual-band H-shaped patch antenna for DCS and WLAN applications. The proposed antenna employs a microstrip feed line and a FR4 substrate on which an H-shaped slot is cut using the etching technique. This structure exude for Digital Communication System DCS (1.710-1.880) GHz and for Local Area Network WLAN (5.15 -5.35) GHz. A commercially available software CST Microwave Studio simulation showed that the proposed design exhibits a return loss of 15.36 dB and 23.493 dB at 1.81 GHz and 5.295 GHz respectively. Further, for each, there was a power gain of 2.45 dBi and 2.1 dBi, and the VSWR was less than 2 for both bands while efficiency is between 80 to 90%. The proposed antenna has a very simple structure, which makes the design simpler and enables easy fabrication. It could possibly be employed in a modern communication system that has constraints in size and weight.



Fabricated Antenna

IUKL WON GOLD AND SILVER MEDALS

@ i-ENVEX 2014, UNIMAP

Infrastructure University Kuala Lumpur (IUKL) is delighted to win the Gold and Silver Awards in the International Engineering Invention & Innovation Exhibition (i-ENVEX 2014) organized by Universiti Malaysia Perlis (UNIMAP). The event was held from 11th to 13th April 2014.

The objective for IUKL to participate in the i-ENVEX 2014 was to showcase the creativity, knowledge and research skills of its students and staff in creating innovations and inventions that will benefit the society, improve the quality of life and enhance the socio economic well-being of the nation. The products that have been chosen to compete at i-ENVEX 2014 were *The Robustness of SteFib Column* led by Dr. Nurharniza Abdul Rahman and *Reuse of Sugarcane Bagasse as Biosorbent* by Mr. Wai Kien Tat.

The Robustness of SteFib Column received a Gold Award in the category of Building, Construction & Materials while Reuse of Sugarcane Bagasse as Biosorbent received a Silver Award in Agriculture & Environment and Renewable Energy category. Prior to i-ENVEX 2014 participation, both products participated in the internal competition organized by IUKL. Reuse of Sugarcane Bagasse as Biosorbent was awarded with “The Most Promising Inventor” in Infrastructure University Innovation and Invention Competition (IUIIC2012). The Robustness of SteFib Column secured Silver Award at IUIIC2013. We are very pleased that we won the Gold and Silver Awards at i-ENVEX 2014 as it re-affirms the quality of the research products by our young researchers.



JUKL WON GOLD AND SILVER MEDALS

25TH INTERNATIONAL INVENTION, INNOVATION & TECHNOLOGY EXHIBITION 2014 (ITEX 2014)

Infrastructure University Kuala Lumpur (IUKL) created another success story when its researchers won gold and silver medals at the International Invention, Innovation and Technology Exhibition 2014 (ITEX 2014) which was held on 8th to 10th May 2014 at the Kuala Lumpur Convention Centre (KLCC). This is a second time IUKL participated in ITEX since its first participation in ITEX 2012.

The invention that won the gold medal at the ITEX 2014 was ***The Toughness of Steel Fibre Square Concrete Column*** by Dr. Nurharniza Abdul Rahman under Building & Construction category. Dr. Fariba Jafari won a silver medal for her product - ***Microstrip Moisture Sensor for Grain*** in Agriculture category.

ITEX 2014 award is a fantastic achievement for IUKL as it strives to be recognised as one of the leading Private Higher Learning Institutions with the niche in soft and hard infrastructure knowledge and technology.





THE HOST

PERTANDINGAN REKACIPTA DAN INOVASI INSTITUSI PENGAJIAN TINGGI SWASTA 2014 (PERINTIS 2014)

The 'Pertandingan Rekacipta dan Inovasi Institusi Pengajian Tinggi Swasta (PERINTIS 2014)' organized by the Research Management Centre (RMC) of Infrastructure University Kuala Lumpur (IUKL) in partnership with Ministry of Science, Technology and Innovation (MOSTI) and supported by Ministry of Education (MOE), is a pioneering effort undertaken by Infrastructure University Kuala Lumpur (IUKL) to bring together all the private higher education institutions and other educational institutions in Malaysia to reach a common goal which is innovating for a sustainable future. PERINTIS is a biennial competition and IUKL is honoured to host the inaugural edition this year.

The event was officiated by Y.Brs. Dr Zulkifli Mohamed Hashim, Deputy Chief Secretary (Science) as representative for Y.B. Datuk Dr. Abu Bakar Bin Mohamad Diah, the Deputy Minister of the Ministry of Science, Technology and Innovation Malaysia (MOSTI) who hoped that through this event, many IP creations may be successfully commercialized and reach the market place, both locally and abroad.

"This year, 97 groups of inventors are showcasing their products. This shows a positive response and an encouraging support and interest by the academic communities like the private and public higher education institutions, Polytechnics, MRSMs, Science Secondary Schools and National Secondary schools from all over Malaysia. IUKL is very optimistic that PERINTIS 2014 will be able to create awareness and inculcate the culture of invention and innovation among educators as well as students. This competition encourages the participants to think out of the box and be bold in exploring into new ideas in our efforts to sustain the future" said Professor Dr Roslan Zainal Abidin, President and Vice Chancellor of Infrastructure University Kuala Lumpur in his speech.



IUKL's continuous effort in promoting invention and innovation has brought us to this momentous event. In addition to the usual gold, bronze and silver medals, the best of the best products were also honoured by being awarded special awards which include Best Young Inventor Award, Most Promising Invention Award, Best Commercial Potential Award, Best Booth Award and Malaysian Research and Innovation Society (MyRIS).

In addition to that there were internationally sponsored Special Awards from Hong Kong Invention Association (HKIA) and Korea University Invention Association (KUIA).

Below is the summary of winners:

| GOLD AWARD | | |
|--------------|--|--|
| No. | Title of Invention | Institution |
| 1 | Plastik Bakteria Kulit Pisang | Kolej Vokasional (Pertanian) Teluk Intan |
| 2 | Banana Peel Eco-Latex | Sekolah Menengah Sains Pokok Sena |
| 3 | Super Green Portable Hydro Generator | MRSM Muadzam Shah |
| 4 | Pytha-Ler | MRSM Tun Abdul Razak |
| 5 | Pollutant Gas Trapper Innovation Of Wet Scrubber From Waste To Trap Gas Pollutant(Soot) Particles | Sekolah Berasrama Penuh Integrasi(SBPI) Rawang |
| 6 | New Innovation In Epoxy Coating : Cockle Shells As A Filler | Sekolah Berasrama Penuh Integrasi(SBPI) Rawang |
| 7 | Stress Treatment Using Realistic And Immersive Relaxing World Through Vr Technology | Universiti Tenaga Nasional (UNITEN) |
| 8 | "Ron" Classification For Forecasting River Bank Erosion | Infrastructure University Kuala Lumpur(IUKL) |
| 9 | IQ-Stick Game | Universiti Pendidikan Sultan Idris (UPSI) |
| 10 | Cap Color Interactive | Universiti Pendidikan Sultan Idris (UPSI) |
| 11 | Novel Geogreen-Coat | Universiti Malaysia Perlis (UNIMAP) |
| 12 | Aleps: An Elearning Tool For Supporting Acquisition Of Problem Solving Skill In Students | University Of Malaya (UM) |
| 13 | Black Air Gun | Politeknik Sultan Salahuddin Abdul Aziz Shah |
| 14 | The Sturdiness Of Composite Column | Infrastructure University Kuala Lumpur(IUKL) |
| 15 | Enabling Milling Machine As Friction Stir Welding Unit | Universiti Kuala Lumpur (UniKL) |
| SILVER AWARD | | |
| No. | Title of Invention | Institution |
| 1 | From Waste To Wealth:"Inorganic Neutralizer And Heavy Metal Adsorbent" | Sekolah Berasrama Penuh Integrasi(SBPI) Rawang |
| 2 | Herbal Mouth Wash | Kolej Vokasional (Pertanian) Teluk Intan |
| 3 | Solar Gen | Sekolah Menengah Sains Selangor |
| 4 | Multistationary' | SMA Izzuddin Shah |
| 5 | The Potential Of Hair As Protective Coat For Plant From Acid Rain | MRSM Alor Gajah |
| 6 | From Waste To Wealth : Super Ag Lime Blend | Sekolah Berasrama Penuh Integrasi(SBPI) Rawang |
| 7 | Calcium Ammonium Nitrate Fertiliser (Can) From Cockle Shells Waste | Sekolah Berasrama Penuh Integrasi(SBPI) Rawang |
| 8 | Recycled Aluminium From Beverage Cans As An Alternative To Hazardous Lead In Soldering Abstract | Sekolah Menengah Sains Selangor |
| 9 | Sustainable Bamboo Dome | Infrastructure University Kuala Lumpur(IUKL) |
| 10 | A Novel Zeolite Adsorption Dryer For Preservation Of Bioactive Compounds In Food Products | University Of Nottingham |
| 11 | The Use Of Image-Processing Technique To Characterize Grain-Size Distribution | Infrastructure University Kuala Lumpur(IUKL) |
| 12 | Oil Palm Male Flower Spikes (Opmfs) Fiber: A Potential Non-Wood Based Raw Material For Pulp And Paper Industry | Universiti Tun Hussein Onn Malaysia (UTHM) |
| 13 | Dowel Connection In Glulam Timber | Infrastructure University Kuala Lumpur(IUKL) |
| 14 | Hybrid Materials Lamination For Marine Application | Universiti Kuala Lumpur (UniKL) |
| 15 | A Novel Geopolymer Ceramic | Universiti Malaysia Perlis (UNIMAP) |
| 16 | Vehicle Air-Cond Condenser Spray | Infrastructure University Kuala Lumpur(IUKL) |
| 17 | Voltaic Tubby Backpack | Infrastructure University Kuala Lumpur(IUKL) |
| 18 | Novel Plant-Based Coagulant-Flocculant For The Treatment Of Agricultural Wastewater | University Of Nottingham |
| 19 | Sewage Fat As A Sustainable Binder Components In Metal Injection Moulding | Universiti Tun Hussein Onn Malaysia (UTHM) |
| 20 | The Dynamic Stabilized Earth Block | Infrastructure University Kuala Lumpur(IUKL) |
| 21 | Durian Rinds: A Potential Non-Wood Based Raw Material For Pulp And Paper Industry | Universiti Tun Hussein Onn Malaysia (UTHM) |
| 22 | Design Of Simple Floating Clock | Infrastructure University Kuala Lumpur(IUKL) |
| 23 | Prefabricated Bamboo Chalet – Single Storey | Infrastructure University Kuala Lumpur(IUKL) |
| 24 | Polymer Solution Delivery System | SEGi University |
| 25 | Word Recognition Through Malay Animal Fables | Universiti Putra Malaysia (UPM) |
| 26 | Geopolymer Composites Pipe Via Filament Winding Method | Universiti Malaysia Perlis (UNIMAP) |
| BRONZE AWARD | | |
| No. | Title of Invention | Institution |
| 1 | Hatch Tech - Pengeram Telur Mudah Alih | Kolej Vokasional (Pertanian) Teluk Intan |
| 2 | Trash To Treasure: Organic Neutralizer,Oil And Odor Removal | Sekolah Berasrama Penuh Integrasi(SBPI) Rawang |
| 3 | Thermoplastic Starch: The Potential In Making A Renewable And Biodegradable Plastic | MRSM Alor Gajah |
| 4 | Miracle Roselle | Sekolah Menengah Sains Selangor |
| 5 | Development Of Ultrasound Knee Image Improvement For Osteoarthritis Detection | University Of Malaya (UM) |
| 6 | Reuse Of Sugarcane Bagasse (Scb) As Biosorbent Media | Infrastructure University Kuala Lumpur(IUKL) |
| 7 | Motorized Sand Sieve Machine (Moressma) | Politeknik Port Dickson |
| 8 | Waste Polystyrene As New Binder System In Metal Injection Moulding | Universiti Tun Hussein Onn Malaysia (UTHM) |

| | | |
|----|---|--|
| 9 | Moss Bryophyte Chlorophyll Sensitized Solar Cells | University Of Malaya (UM) |
| 10 | My Tag – Tag N Take App | Infrastructure University Kuala Lumpur(IUKL) |
| 11 | Effects Of Mixed Salts On Phthaloylchitosan Gel Polymer Electrolyte In Dye-Sensitized Solar Cell | University Of Malaya (UM) |
| 12 | Integrated Road Traffic System | Infrastructure University Kuala Lumpur(IUKL) |
| 13 | Processibility Of Waste Animal Sources As Sustainable Biomaterial By Using "Green Metal Injection Moulding" | Universiti Tun Hussein Onn Malaysia (UTHM) |
| 14 | Manual Casting Machine | SEGi University |
| 15 | A Study On The Development Of Bamboo Village | Infrastructure University Kuala Lumpur(IUKL) |
| 16 | Co-Pyrolysis Of Empty Fruit Brunch And Palm Oil Sludge: An Economical Pathway For High Grade Bio-Oil | UCSI University |
| 17 | The Potential Of Natural Green Dye Applied For Coating Films | University Of Malaya (UM) |
| 18 | Implementation Of Bb84 And B92 Qkd Protocols On 802.11i Wlan | Infrastructure University Kuala Lumpur(IUKL) |
| 19 | Site Specific Public Art: Light Dispersion Technology | Infrastructure University Kuala Lumpur(IUKL) |
| 20 | Mobile Fruit Picking Shelter. | Infrastructure University Kuala Lumpur(IUKL) |
| 21 | Temperature And Humidity Monitoring Using Robot Control Via Smartphone | Infrastructure University Kuala Lumpur(IUKL) |
| 22 | Implementation Of Green Technology In Routing Protocols | Infrastructure University Kuala Lumpur(IUKL) |
| 23 | Fv Biofertilizer | Infrastructure University Kuala Lumpur(IUKL) |
| 24 | Flat Pack Bag Pack | Infrastructure University Kuala Lumpur(IUKL) |
| 25 | My Purse Locator | Infrastructure University Kuala Lumpur(IUKL) |
| 26 | Luminous Hexahedron As A Site Specific Public Art Using Solar Energy | Infrastructure University Kuala Lumpur(IUKL) |
| 27 | Hybrid Fan For Renewable Energy | Politeknik Sultan Salahuddin Abdul Aziz Shah |
| 28 | Fyp Online Assessment | Infrastructure University Kuala Lumpur(IUKL) |
| 29 | e-BERRIES | Infrastructure University Kuala Lumpur(IUKL) |
| 30 | Magic Signage Translator | Infrastructure University Kuala Lumpur(IUKL) |



21 - 23 MAY 2015 | KUALA LUMPUR CONVENTION CENTRE MALAYSIA



IUKL WON SILVER AND BRONZE MEDALS AT ITEX'15



The 26th International Invention and Innovation Exhibition (ITEX'15) was held from 21 to 23 May 2015 at the Kuala Lumpur Convention Centre. The three-day event was memorable for IUKL as both teams won Silver and Bronze medals along with certificates of appreciation hence, marking another achievement for IUKL. The team that brought home the Silver medal was headed by Mr. Mohd Sofiyan Sulaiman and assisted by Ms. Nik Nuraini Azhari; lecturers from the Faculty of Engineering and Technology Infrastructure and their product are, 'The Use of Image Processing Technique to Characterize Grain Size Distribution' which is important in fluvial research to obtain grain size distribution.



The Bronze medal team was represented by Ir. Tengku Anita Raja Hussin, a lecturer, and students, Nurul Amanina Baharim, and Thanendran Subramaniam; all from the Faculty of Engineering and Technology Infrastructure. Their product is the 'Dowel Connection in Glulam Timber'. This was a study on the maximum pull-out strength and stress of glued-in-timber connection.



4TH INFRASTRUCTURE UNIVERSITY INNOVATION & INVENTION COMPETITION (IUIIC 2015)

The 4th Infrastructure University Innovation & Invention Competition (IUIIC 2015) which was held on 09 September 2015, Wednesday at the Multipurpose Hall, IUKL was organized by the Research Management Centre (RMC) of Infrastructure University Kuala Lumpur (IUKL). The event was officiated by YBhg Dato' Sri Ir. Chong Ket Pen, Executive Vice Chairman / Group Managing Director of Protasco Berhad who wanted to witness the remarkable growth of research and innovation from various academic institutions all over Malaysia that not only benefit the society and improve the quality of life but also enhance the socio economic well-being of the nation.

“Research and development are crucial components to innovation and invention. The products of invention and innovation must be sustainable to the environment. This year’s theme ‘Eco-Innovation Empowering Global Sustainability’ is most appropriate. It reminds us that it is very important to innovate and invent to improve the living standards and protect the environment so we can achieve global sustainability.” said Professor Dr. Roslan Zainal Abidin, President and Vice Chancellor of Infrastructure University Kuala Lumpur in his welcoming speech.

There were a total of 61 teams who exhibited their products and competed in the competition. 41 products were from the Institution of Higher Learning category and 20 from Young Inventors category. Below is the list of winners:



Below is the list of winners:

| GOLD AWARD | | |
|--------------|--|--|
| NO | TITLE OF PROJECT | INSTITUTION |
| 1 | Transport of Sediment: Local Scale vs Reach Scale Approach | Faculty of Engineering and Technology Infrastructure, IUKL |
| 2 | CATTAPA - Rawatan Organik Untuk Kegunaan Pertanian | Kolej Vokasional (Pertanian) Teluk Intan, Perak |
| 3 | Botanic Hyperthermal Body Control Gel | Kolej Vokasional (Pertanian) Teluk Intan, Perak |
| 4 | Glanach Ventilator | Raja Perempuan Taayah School, Perak |
| SILVER AWARD | | |
| NO | TITLE OF PROJECT | INSTITUTION |
| 1 | 3Cs- COCO-COIR COMPOST | Faculty of Business and Accounting, IUKL |
| 2 | CN FLASK | SMK Seri Kenangan, Johor |
| 3 | Tobu Troy | Raja Perempuan Taayah School, Perak |
| 4 | HT Abstarter | SMK Seri Kenangan, Johor |
| 5 | Eco-Pot | Sekolah Menengah Sains Pokok Sena, Kedah |
| 6 | Computer Control Device Via Arduino For Disable People Without Fingers | MRSM Gerik, Perak |
| 7 | FG Bioplastic | SMK Seri Kenangan, Johor |
| 8 | An Improvised Earth Electrode System With Bentonite-Kenaf Powder Mix | Sekolah Menengah Sains Raja Tun Azlan Shah |
| 9 | Smart Portable Al-Quran Disposal Machine As An Efficient Way To Dispose Al-Quran | MRSM Muadzam Shah, Pahang |
| BRONZE AWARD | | |
| NO. | TITLE OF PROJECT | INSTITUTION |
| 1 | Emergency Power Supply | Faculty of Engineering and Technology Infrastructure, IUKL |
| 2 | Innovation of SteFib HoCo | Faculty of Engineering and Technology Infrastructure, IUKL |
| 3 | Smoke Absorption System | Faculty of Engineering and Technology Infrastructure, IUKL |
| 4 | Smart Street Lights | Faculty of Engineering and Technology Infrastructure, IUKL |
| 5 | Three-Phase Automatic Load Balancing Device (ALBD) using fuzzy logic | Faculty of Engineering and Technology Infrastructure, IUKL |
| 6 | Design & Fabricating of Small Scale Cutting Fluids Recycling System | Faculty of Engineering and Technology Infrastructure, IUKL |
| 7 | Android Application for Blood Glucose Monitoring for Diabetes (BMG App) | Faculty of Creative Media and Innovation Technology, IUKL |
| 8 | 6lowpan On Healthcare: Machine to Machine Monitoring Device | Faculty of Creative Media and Innovation Technology, IUKL |
| 9 | IUSports | Faculty of Arts, Communication and Education, IUKL |
| 10 | Sladdery - Fun with Words | Faculty of Arts, Communication and Education, IUKL |
| 11 | Development of Building Climate Modelling (BCM) by using Geographical Information System (GIS) | Faculty of Architecture and Built Environment, IUKL |
| 12 | Fun 3D Puzzle (F3dP) | Faculty of Architecture and Built Environment, IUKL |
| 13 | Tire Table | Faculty of Business and Accounting, IUKL |
| 14 | Beyond Safety Helmet | Faculty of Business and Accounting, IUKL |
| 15 | Zico-Sky | Raja Perempuan Taayah School, Perak |
| 16 | Charcoal Pot | Raja Perempuan Taayah School, Perak |
| 17 | Insole Innovation | MRSM Muadzam Shah, Pahang |
| 18 | Superb Highway Spool | MRSM Muadzam Shah, Pahang |
| 19 | Baldosa De Ceramica (From Slag Waste To Ceramic Tile) | Sekolah Menengah Sains Pokok Sena, Kedah |
| 20 | Comprehensive Build Log Of Hexacopter For Robotic Education | MRSM Gerik, Perak |

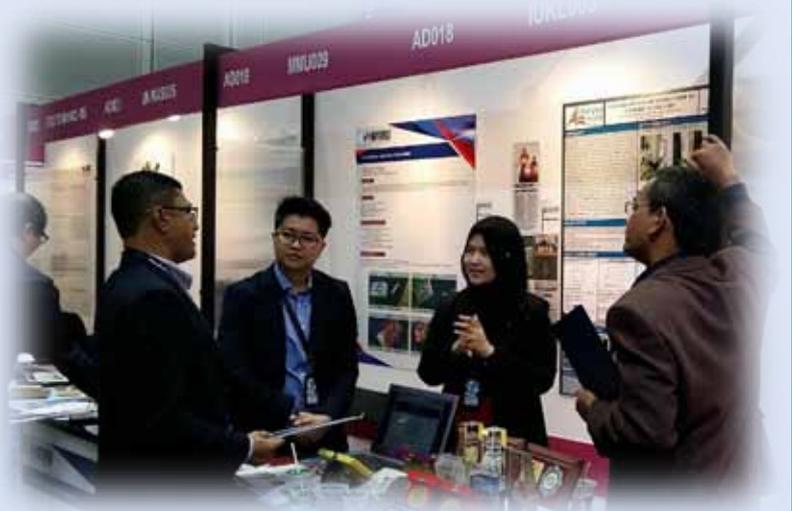




IUKL WON TWO BRONZE MEDALS AT PECIPTA 2015

The Infrastructure University Kuala Lumpur (IUKL) made further strides in the research field after two teams from the Faculty of Engineering and Technology Infrastructure (FETI) won bronze medals at the 14th International Conference and Exposition on Inventions by Institutions of Higher Learning (PECIPTA 2015) which was held from 4th to 6th December 2015 at the Kuala Lumpur Convention Centre.

The bronze medals, along with certificates of appreciation were conferred to Mr. Amirullah Maat, Ms. Najiah Adam Tong, led by lecturer, Dr. Nurharniza Abdul Rahman for their project on 'The Gruffness of Steel Fibre in Concrete Column' under the Art, Design and Creativity cluster, and for the second winning team, they were awarded for their project titled 'The Dynamics of Stabilized Earth Block', under the Manufacturing Technology cluster. This team comprised of Mr. Temple Odimegwu Chimuanya, lecturers, Ir. Tengku Anita Raja Hussin and Ms. Noorbaya Mohd Salleh, the leader of the team.



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- ☒ International Conference on Built Environment (ICBE)
- ☒ International Conference on Business & Management (ICBM)
- ☒ International Conference on Engineering, Information Technology and Science (ICEITS)
- ☒ International Conference on Language, Communication and Education (LANCOMME)

The electronic version is available at
<http://iukl.edu.my/iukl-research-journal/>

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The Stabilisation of Compressed Earth Block Using Laterite Soil
Noorbaya Mohd Salleh, Temple Chimunya Odimegwu and Tengku Anita Raja Hassin

Reuse of Alum Sludge in Construction Materials and Concrete Works: A General Review
Khalid Mohammed Breesem, Faris Gorashi Faris and Isam Mohammed Abdel-Magid

Nomograph of Different Soil Matrix with Respect to Erodibility and Erosivity Coefficients
Nor Azikawati Haron, Junaidah Ariffin and Naimah Yusoff

Evaluating Risks in Construction Projects Based on International Risk Management Standard AS/NZS ISO 31000:2009
Huyhnh Thi Yen Thao, Nguyen Van Tiap and Doan Thi Truc Linh

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Determining Demographic Profiles and Tourists' Motives for Visiting Langkawi Island
Nural Shahida Hamdan and Aminuddin Yusof

Desktop Virtualisation as a Tool to Support IT Virtual Team
Ghaithi AlShifay, Joshua Udofo, Ibrahim Zubair and Hassani Hassan

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