



MONASH
University

MALAYSIA

SYNC

**TO INDUSTRY
WITH PHD** *Page 2*

**INDUSTRY
4.0** *Page 3*

**GRANT
RECIPIENTS** *Page 6*

**RESEARCH
FOCUS** *Page 7*

A scenic photograph of a green, forested hillside with several wind turbines. The sun is setting behind the hills, creating a warm, golden glow. The foreground is filled with the dark green foliage of pine trees.

Towards
**a sustainable
future**

ISSUE 1, AUGUST 2018



Letter from the Editor

Welcome to “SYNC”, the inaugural newsletter by the School of Engineering (SOE), Monash University Malaysia. This newsletter serves as a platform to keep the school community “sync”-ed and promote collaboration on interdisciplinary research. We achieve this by updating the members of the school with the latest information on their research activities and achievements.

This issue centers on the theme of United Nations’ Sustainable Development Goals (SDGs). In line with this, research at SOE and at the global level working toward SDGs, is featured. To support research at SOE, few available platforms and funding opportunities are highlighted.

Besides being informative, the newsletter is intended to be engaging. We feature interview with an alumnus and involvement of our academics in the industry. In addition, there are interactive activities and competitions with attractive prizes up for grabs.

The first issue is a culmination of an effort by a proactive team and we are recruiting, so do join us! You are also encouraged to share your own ideas, experiences and passions with us for the upcoming issues. As we aspire to boost the productivity and morale of the SOE at Monash Malaysia, we thank you for your interest in the newsletter and hope you will find it enjoyable.

Let us **SYNC - Say Yes ‘N’ Collaborate**.

Shalini Darmaraju
Editor
(GRS)

Editorial Team

Journalist : Arshia Fathima (GRS)

Reporters : Fang Sheng Lim (GRS), Talha Shahid (GRS)

Advisors : Dr Poh Phaik Eong, Dr Zulhilmi Paiz

Feedback and Suggestions

mum.soe.sync@monash.edu

Contents

Welcome from the Head of School 1

Spotlights

To Industry with PhD 2

The Adoption of Industry 4.0 at The Business Radio Station
(BFM 89.9) 3

Women at Monash Malaysia 4

Congratulations to Our Graduates 4

Award Winners 5

Grant Recipients 6



Welcome from the Head of School



This year, Monash University Malaysia celebrated its 20th anniversary as one of the few institutions rated as 'Tier 6 – Outstanding' by Setara in Malaysia. The School of Engineering, as a premier engineering School in Malaysia, has been active in engaging interdisciplinary research to address the national priorities of Malaysia. We are very proud of the achievements made by our staff and students, such as the numerous external grants received, publications in high ranked journals, impactful industrial collaborations, and prestigious awards.

I am pleased to introduce you to the first issue of the school research newsletter – SYNC, published by the School research community. The newsletter will keep you abreast of the latest research and opportunities available in the School and serves as a medium to engage with all our stakeholders. I hope it will be a useful and enjoyable read as we strengthen our interdisciplinary research collaborations and make progress towards our aspiration to become a world-class research school.

Professor Anthony Guo
Head of School of Engineering

Research Focus

Photocatalysis for Sustainable Energy Production	7
Intelligent and Sustainable Transport Planning and Management	7
Global Engineering News	8
Videos to Watch - Science Fiction Made Real	8

Research Facilities

Nano - Analytical Platform (NAP)	9
Advanced Computing Platform (ACP)	10
Intelligent Lighting Lab (ILL)	11

Break Zone

Discover Monash	12
Opinion Poll	12
Brain Teasers	12
Unscramble	12

Career Boosters

Internal Funding Opportunities	13
External Databases	13
Competitions and Hackathons	14

To Industry with PhD



Our alumnus, Dr Mohamed Afiq Rahmat, speaks to us about his experience of transitioning from a PhD to working in industry.

He completed his PhD in Mechanical Engineering at Monash University and is currently working as a

Communications Advisor for Business Excellence, at Shell Malaysia Exploration & Production.

His inspirations: Michael Leunig, Rustam A. Sani, Elon Musk, & Shamsiah Fakeh.

Could you talk us through your PhD research experience when you were in university?

My research involved studying the fatigue behaviour of stress concentrated alloys with hard coatings. Turns out, despite the fact that stronger surface conditions would typically inhibit crack initiation, such coatings don't necessarily do too well in the presence of other stress concentrators like notches or fretting conditions. The devil is in the detail as the saying goes.

What made you go into industry? Do you think industries should hire more people with higher qualifications or research backgrounds?

I joined a multinational corporation with the encouragement of a good friend back when we were both finishing up our PhDs. The initial idea was to stick through academia and make a dent in the world through teaching and championing STEM-pathway. But soon after, I realised the potential of being at the forefront of applied science (the view is quite different compared to in the ivory tower), where commercially viable technological solutions are accelerated to solve bigger problems (and make a quick buck too!) Therefore, when the opportunity presented itself, the decision was not difficult to make. I disagree that hiring managers would entertain you with an employment position just because of your qualifications. While it may get their attention, there's a lot more to it than just grades. Having

experience in research might be different, as I will explain below.

How was the shift from research settings to the industrial field, for you?

I've noted two things that I gained from the PhD experience which I believe gives me a competitive edge when it comes to translating skills from research to industry. These are:

1. The ability to articulate independent thought - this is a researcher's forte to structure theories and be bold enough to carry through with explaining them within the realm of falsifiability. Originality is scarce in the industry, where you are typically expected to follow SOPs (or best practices). But it is important to know when to wield this sword as efficiency is highly regarded in the industry. Time is money!
2. Being comfortable with uncertainties - engineers have a keen eye for precision but researchers, on the other hand, delve deep into the pits of uncertainty. This quality is something I find to be useful in greenfield projects, where a lot of things are unknown, and in driving change management in the organisation (or when giving birth to new knowledge in the case of academia). The caveat that comes with this is to be able to balance the trade-offs.

What advice do you have for our graduate research students?

Read extensively and don't be afraid to try new things (I am an engineering doctorate but I'm doing corporate communications... for now!)

Having experienced both industry and research, what can be done to bring academia and industry together?

Academics can gain from attaining business acumen while the corporate suite can gain from the wisdom of intellectual pursuit. Now lock them in a room and don't open the door till both parties understand how they complement each other!

The Adoption of Industry 4.0 at The Business Radio Station (BFM 89.9)

You have probably heard of these current trends. Did you know that these trends are not just a sensation but also a revolution around the globe? The fourth industrial revolution or Industry 4.0 is the reality we face now with a “fusion of technologies blurring the lines between physical, digital, and biological spheres”.*

Big data, Internet of Things (IoT), artificial intelligence (AI), autonomous vehicles, 3D printing, nanotechnology ...

“visualize desired outcomes and then take small steps”.

For example, industries can begin by digitizing and improving efficiency with the use of sensor networks, while simultaneously developing “upscaling programs” to train workers to face this change.

Facing this revolution, let us ask, “How ready am I for Industry 4.0?”

On a BFM 89.9 radio podcast (12th of April 2018), Associate Professor Edwin Tan Chee Pin (R) and Dr Veera Ragavan (C) speak about the adoption of Industry 4.0. They tell us how to get ready for this revolution and discuss how Monash University supports students like us to connect with the industry. They also discuss the concerns that come along with this massive change including data privacy, security, and most importantly the loss of jobs. As challenging as these concerns seem to be, digital technology provides the industry with a competitive advantage through increased efficiency and adaptability. Therefore, to grow with this change, industries at risk need to

The entire podcast can be accessed here
<https://goo.gl/HvQbLo>



Source: Pixabay

*Source:
“The Fourth Industrial Revolution: What It Means and How to Respond.”
World Economic Forum. Accessed May 9, 2018.



From the Right:
Associate Professor
Tan Chee Pin
(R) and Dr Veera
Ragavan (C) from
Monash University
Malaysia on BFM
89.9 Radio with
Jeff Sandhu (L)
for a podcast on
Industry 4.0.



Women at Monash Malaysia

Monash University Malaysia has many initiatives this year promoting women in science and engineering (WISE). A few notable events this year include:



8 March 2018

World Café for Women at Monash Malaysia themed 'Time is NOW - Rural and Urban Activists Transforming Women's Lives' was held in celebration of International Women's Day 2018 (IWD 2018).

10 April 2018

Fit & Fab with Monash Malaysia alumnae in celebration of International Women's Day and in line with the 'Respect. Now. Always.' campaign by Monash University.

19 June 2018

Future Women Leaders Conference to support women who are actively involved in the field of Engineering and Information Technology (IT) education and research. Professor Cordelia Selomulya from Monash University (Clayton Campus) was the keynote speaker.



Congratulations to Our Research Graduates!

Group photograph taken during the April 2018 Graduation Ceremony in Sunway Resort Hotel & Spa with Dean of Engineering (Professor Elizabeth Croft – 9th from the right) and Head of School of Engineering (Professor Anthony Guo – 8th from the right)

The 7th of April 2018 was a memorable night for the School of Engineering as a total of 19 MEngSc and PhD students were present for their graduation ceremony in Sunway Resort Hotel & Spa. The ceremony was attended by Professor Elizabeth Croft (Dean of Engineering), Professor Anthony Guo (Head of School of Engineering Malaysia), Professor Julia Lamborn (Associate Dean – Education) and academic staff from various disciplines in the School of Engineering.

Congratulations to our recent graduates and wishing them the best in their future endeavours!



Doctor of Philosophy

- Dr Parisa Amouzgar
- Dr Gan Jie Sheng
- Dr Lam Weng Hoong
- Dr Lay Kok Keong
- Dr Cathie Lee Wuen Pei
- Dr Lim Sing Sheng
- Dr Lim Swee Lu
- Dr Mohammad Ali Mohammadzaeh Kashan
- Dr Ooi Jong Boon
- Dr Song Cher Pin
- Dr David Tandiono Tan
- Dr Tee Lee Hong

Master of Engineering Science (Research)

- Choo Cheng Keong
- Khor Hong Weng
- Jay Yang Lee
- Ng Ming Leong
- Ong Hon Lim
- Samuel Jia Wei Tang
- Lim Hui Hui (in Absentia)

Award Winners

Academic Staff Achievements

Professor Chai Siang Piao and Associate Professor Wu Ta Yeong from the School of Engineering were awarded the prestigious Malaysia's Research Star Award for 2017.

Professor Chai was the recipient under the Young Researcher Award category while Associate Professor Wu received it under the category of Frontier Researcher.

Vice Chancellor's Intercampus PhD Mobility Scheme Award Winners 2017-2018

Kong Xin Ying
Arvind Rajan
Kamran Soomro
Saaveethya Sivakumar
Vidya Sundaram

IChemE Awards

Dr Ong Wee Jun, a PhD alumnus from the School of Engineering, received the prestigious IChemE's Singapore Young Researcher Award in 2017. Dr Ong is currently a research scientist at the Institute of Material Research and Engineering (IMRE), Agency for Science, Technology and Research (A*STAR), Singapore.

Dr Tan Lling Lling, a PhD alumnus from the School of Engineering, received the prestigious IChemE's Malaysia Young Researcher Award in 2017. Dr Tan is currently serving as an Assistant Professor at Heriot-Watt University Malaysia.

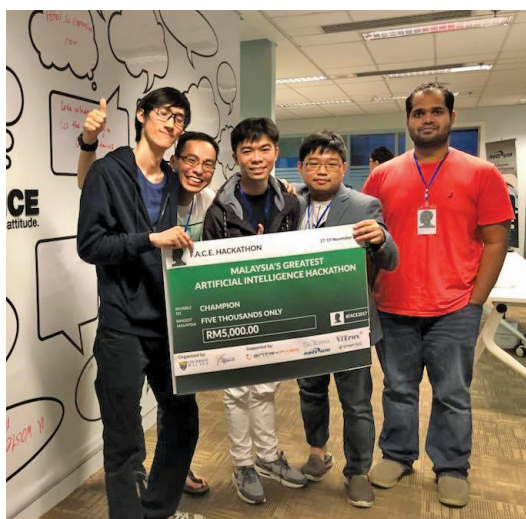


ITEX 2018 Awards

Gold: Hydrogel-Based Biosensor For Rapid Point-Of-Care Diagnosis Of Hepatitis B Infection - Dr Ooi Chien Wei, Professor Tey Beng Ti, Dr Lim Swee Lu, Professor Chan Eng Seng

Silver: Automated Non-destructive Crack Detection for Aluminium Casting with High Precision – Associate Professor Wang Xin, Dr Tan Ming Kwang, Dr Tan Boon Thong, Mr Edward Boey, Mr Terence Lee, Mr Eng Zi Jie

Bronze: Wearable Circadian Lux Sensor (WCLS) - Dr Vineetha Kalavally, Anas Mohamed, Hassan Maheed Mohamed
More info at <https://goo.gl/sdRqmE>



FaceHack 2017 Winners

Five alumni from the School of Engineering recently won FaceHack 2017, a signature Artificial Intelligence (AI) hackathon in Malaysia. Kee Chee Yau, Darren Yim, Sanush Abeysekera, Yeow TK and Alvin Neam Heng Lee, who obtained their degrees in Bachelor of Electrical and Computer Systems Engineering (Honours) and Bachelor of Mechatronics Engineering (Honours), impressed the judges with their unique idea of developing a working prototype and a real-demo makeup solution within 48 hours.

"Our product, The Make-Up Artist, uses the provided face detection API and leverages statistical details to return important feature points of a face and recommend suitable makeup styles and products," said Kee.

Grant Recipients

Fundamental Research Grant Scheme (FRGS) Year 2017 by Ministry of Higher Education

Principal Investigator	Project Title
Professor Chai Siang Piao	Development Of Highly Efficient Z-Schematic Photocatalysis System With Enhanced Electron Transfer For Overall Water Splitting Under Visible Light Irradiation
Associate Professor Tan Chee Pin	Development of Observer Schemes for Soft Robotic Systems to Achieve State Estimation and Fault Detection
Dr Narayanan Ramakrishnan	Investigation into Graphene Integrated Langasite based Acoustic Coupled Resonators towards Devising Highly Sensitive Gas Sensors
Dr Surya Girinatha Nurzaman	Towards Efficient Search by Autonomous Mobile Robots in Uncertain Environments: An Investigation of The Fundamental Biologically Inspired Principle
Dr Tang Siah Ying	Assessing the Role of Sulfate Group in Single Step in-situ Formation of Fe_3O_4 -CNC Bionanocomposites and its Application for Remote Controlled Drug Release
Dr Vivi Anggraini	Movement of Leachate Through Compacted Clay Liners Using Local Clay Deposits: Fundamental Mechanism and Suitability

External Industry Grants Awarded in 2018

Principal Investigator	Funding Agency / Industry
Professor Chan Eng Seng	Arkema Tiochemicals (M) Sdn. Bhd.
Associate Professor Tan Chee Pin	Malaysian Textile and Apparel Centre (MATAC)
Dr Joanne Lim	Collaborative Research In Engineering, Science and Technology (CREST)
Dr Narayanan Ramakrishnan	Piezo Parts Co. Ltd.
Dr Veera Ragavan	APM Engineering & Research Sdn. Bhd.
Dr Pooria Pasbakhsh	Hard Shell FZE

Campus Sustainable Community Grants Awarded in 2018

Principal Investigator	Project Title
Professor Khu Soon-Thiam	Bandar Sunway "River of Sustainability"
Associate Professor Tan Chee Pin	Sustainable Intelligent Transportation Ecosystem
Dr Daniel Kong	Development and Implementation Studies on Interlocking Solar Concrete Paver (ISCP) Systems

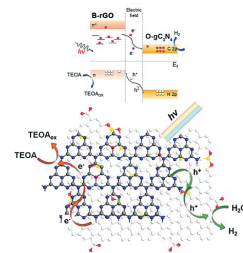
MUM-Sunway Group of Companies Grant Awarded in 2018

Principal Investigator	Project Title
Dr Arshad Salema	Techno-Economic Feasibility Assessment Of Using Renewable (Solar) Energy For The BRT Sunway Transport System
Dr Ahmad Mousa	Development of a Sustainable Permeable Geopolymer Pavement System Using Fine Industrial Waste

Photocatalysis for Sustainable Energy Production

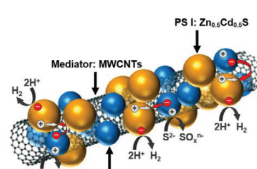
Our research primarily focuses on rational design and fabrication of novel photocatalytic materials ingeniously arranged in nano-platform. We use these nanomaterials for photocatalytic water splitting and photoreduction of carbon dioxide into fuels. The developments include a highly efficient Z-scheme system for overall water splitting to produce H_2 fuels. We also construct low bandgap energy nanocomposites for carbon dioxide reduction into energy-rich hydrocarbon products.

For years, our group has devoted extensive efforts to exploring the properties of new nanocarbon materials towards designing efficient photocatalytic systems, for

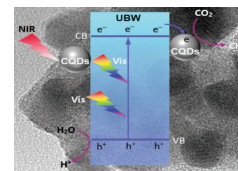


Doped nanocomposites splitting water.

nanocomposites for photocatalytic hydrogen production via water splitting. These fine-tuned nanocarbon-mediated multi-component systems impose strong synergistic effects that lead to massive improvement in photocatalytic activity. A noteworthy achievement by our group is the realization of Near Infrared (NIR)-driven CO_2 reduction witnessed in CQDs decorated Bi_2WO_6 nanosheets to harness light from broader solar spectrum. Our group hopes to pave a future path with our findings in the field of renewable solar energy harvesting.



MWCNTs nanocomposite.



CQDs carbon dioxide reduction mechanism.



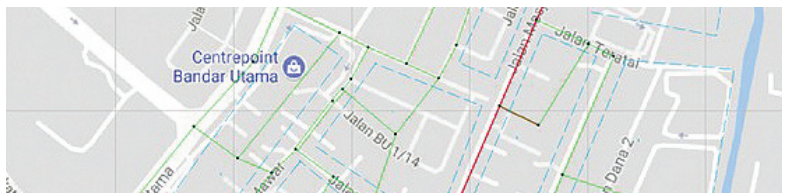
Research by:
Professor
Chai Siang Piao
and team

Further reading:
Journal of Materials Chemistry A (2018) 6:3181-3194, Chemical Engineering Journal, 316 (2017): 41-49 and *Nano Research* 10, no. 5 (2017): 1720-1731.

Intelligent and Sustainable Transport Planning and Management

Recently, there has been a big shift in transport planning and management as the focus moves away from constructing transport infrastructure to providing reliable transport services and improving their accessibility. Specifically, there is a need for an integrated, well-coordinated and reliable traffic system.

To tackle these challenges, we are working on a multidisciplinary, intelligent and smart transportation ecosystem with an aim to smoothen traffic flow in Bandar Sunway. Dynamic traffic modelling incorporates time-dependent traffic demand and supply generated



The queue length development using a dynamic traffic model during AM peak hour.

from readily available big data. These models enable better management of urban transportation. Through voluntary travel demand management, we can reduce commuter reliance on road traffic.

Our research also focuses on transport network vulnerability to mitigate the negative impact of road disruptions. The team investigates scenarios of road disruptions and develops a dynamic traffic model that incorporates traveller behaviour during the disruption. Our study on dynamic road vulnerability modelling is funded by the Ministry of Higher Education, Malaysia through the FRGS grant. At the lower level of traffic planning, we also developed a mesoscopic traffic-modelling-based cell transmission model (CTM). This model extends to lane changing in the coordinated setting of urban arterial networks and assesses the effect of the occurrence of lane changing on overall transport network performances.



Research by:
Dr Susilawati
and team

Global Engineering News

Research efforts around the world develop technological advancements such as new materials or devices that can change the way we live. A few advancements are highlighted here based on their potential impact on SDGs. All the articles can be read on ScienceDaily.com.



Cementless fly ash binder makes concrete 'green'

To manufacture concrete in a sustainable way, a composite binder from fly ash can now replace Portland cement. Fly ash is a by-product of coal-fired power plants. Engineers at Rice University used Taguchi Analysis for the chemical composition, and computational optimization to develop the binder from industrial waste.



Combining living muscles with robots

Biohybrid robots could be the next prosthetics. The latest biohybrid robot developed at the University of Tokyo can mimic the human finger. Comprised of live muscle tissues draped onto a robot skeleton, the robot can even pick up a ring.



Low-cost ancient sun-powered tech for water purification

Qiaoqiang Gan and his team from the University at Buffalo have upgraded solar still technology by draping black carbon-dipped paper over stills to absorb and vaporize water, thereby generating clean water. The launch of Sunny Clean Water, a startup, will bring this technology to the market.



Natural material stronger than steel

In an effort to mimic wood architecture, researchers at KTH Royal Institute of Technology have now organized cellulose nanofibrils (CNFs) to develop lightweight fibres stronger than metal and alloys.



3D Printed Food

Researchers at Ewha Woman's University, South Korea have developed a platform to 3D print food microstructures. Jin-Kyu Rhee said that people could potentially have cartridges of powdered food ingredients that could be 3D printed and cooked according to needs.



Waterproof and Elastic Zn Ion Yarn Batteries

Researchers in China have overcome the challenge to create durable and flexible batteries for wearable electronics. The rechargeable yarn battery is made with carbon nanotubes coated with Zn as anode and MgO as cathode.

Videos to Watch Science Fiction Made Real



1. On the Quest to Invisibility - Metamaterials and Cloaking
<https://youtu.be/jseHPnqXIPY>

Photo by Lionel Gustave on Unsplash



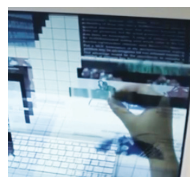
4. Metal that breathes
<https://goo.gl/xr4JoN>

Pixabay



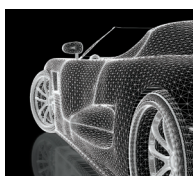
2. Would you live in a floating city in the sky?
<https://goo.gl/8QrVJF>

Pixabay



5. Reach into the computer and grab a pixel
<https://goo.gl/9UNXYe>

Snapshot from TEDx



3. The incredible inventions of intuitive AI
<https://goo.gl/C9nyx2>

Pixabay

Nano - Analytical Platform (NAP)

The Nano – Analytical Platform (NAP) is a multidisciplinary research infrastructure platform for nanoscale materials characterization. NAP hosts state-of-the-art instrumentations that facilitate the imaging and analytical investigation of materials from a wide range of disciplines. With excellent facilities, we offer a diverse range of research and commercial capabilities. We welcome samples from industries, research institutions and universities as well as collaborations with researchers from the region and across the globe.

We are currently collaborating with and offering our services to Uzma Engineering, Corelab, Murphy Oil Corporation, Kellogg's Asia, Molkveld (M) Sdn Bhd,

Inofine Chemicals and Novugen Pharma. We prioritize services to external parties and are committed to a minimum lead-time of within 2 weeks of the booking.

With workshops and training, students can request to use the NAP facilities independently. Regular users can also request advanced training. Recently, the national workshop on FE-SEM and Raman Spectroscopy was held on 3 & 4 April 2018.

Key instruments at nap

- High Resolution Transmission Electron Microscope (HR-TEM)
- Field Emission Scanning Electron Microscope (FE-SEM)
- Variable Pressure Scanning Electron Microscope (VP-SEM)
- Atomic Force Microscope (AFM)
- Raman-Photoluminescence Spectroscopy (Raman-PL)
- X-Ray Diffractometer (XRD)

Facility location: Building 5, Level 1, Monash Malaysia

For pricing/info, please visit our website
<https://goo.gl/25iYEj>

Or contact:

Professor Chai Siang Piao - chai.siang.piao@monash.edu

Mr. Azarudin Ahmad - azarudin.ahmad@monash.edu



Dr Chang Wei Sea (L) shows the HR-TEM at NAP to the Dean of Faculty of Engineering, Professor Elizabeth Croft (R) during her visit on 6 April 2018

Advanced Computing Platform (ACP)

The Monash Malaysia – Advanced Computing Platform (ACP) infrastructure was established in Monash University Malaysia to support research activities and also provide effective and powerful computing services. The centre aims to support multidisciplinary research in the natural and social sciences, business, medicine, pharmacy, IT and engineering.

The facility is currently used for research in (but not limited to) the following fields of study – computer vision, image processing, optical networks, machine learning, pattern recognition, combustion, turbulent flow, nanomaterials, genomes analysis and disease association studies. Significant research activities currently supported by the platform are in genomics and in the generation and control of fluid turbulence.

Key instruments of the acp

- 12 server units consisting of E5-2650 v2 processors
- 1 server unit of E5-2683 v4 processors
- 224 processor cores
- 3.2 terabytes of RAM
- 120 TB storage

- 2 Nvidia Tesla P100 Graphical Processing Unit (GPU) cards
- Using Load Sharing Facility (LSF) for its workload management

Unified Research Computing (URC) platform

A new virtualized platform to replace physical research workstations. This is a new service that is currently offered to all researchers.

Key instruments of the urc

- 1 server unit consisting of E5-2650 v4 processors
- 2 server units consisting of E5-2640 v4 processors
- 64 cores physical processor cores
- 1.7 terabytes of RAM
- 10 TB usable storage
- 1 Nvidia Tesla M60 GPU card
- Running on a Nutanix Prism virtualization platform
- Virtual machines provided are Microsoft Windows 10 based

Facility location:

ITS Server Room, Building 9, Level 5, Monash Malaysia

Contact details:

Website - <https://goo.gl/9M4g8r>

Email - mum.shared.research.computing@monash.edu

Advanced Computing Platform Coordinator - Associate Professor Tan Chee Pin

Research IT Operation Lead - Wan Mohd Azreen Wan Md Noor

CAPTURE IT!

Take a photo that represents your research & feature in the next issue!
The photo must be original and unaltered.

Prizes for top 3 winners

Open to all SOE staff & PG students

Submit entries by **15 Nov'18** to

mum.soe.sync@monash.edu



Intelligent Lighting Lab (ILL)

The Intelligent Lighting Laboratory (ILL) exists to develop lighting systems which are human-centric with a focus on human user experience and well-being. It is a multidisciplinary infrastructure facility for research focusing on solid-state lighting (SSL) and its applications in intelligent lighting, visible light communications (VLC), light-driven visual inspection systems, mobile control of lighting, wearable spectral sensors and fabrication of micro and nano-devices.

The team can design systems employing LED luminaires, use intelligent lighting to improve living conditions, enhance pattern recognition capabilities with optimal background lighting and design micro/nano devices for sensing purposes.

ILL has research links with multinational and Malaysian-based lighting companies, Sleep Research Centre (Monash Australia), and other leading centres of excellence in the region and Europe. Our current industry collaborators include OSRAM Opto Semiconductors and ITRAMAS Corporation Sdn Bhd.

We currently run a one-day workshops for undergraduates from other Malaysian universities under the auspices of CREST on an annual basis. We plan to

soon introduce short courses on solid state lighting with an industry focus. Facility pricing varies from RM500 to RM1000 and is charged on a per-day basis.

Our specialist services include:

Photometric and radiometric characterization of LEDs
Spectral Imaging
Calibrated light sources
Light booths with standard illuminants
RF Magnetron sputtering

Key instruments at ILL

- Spectrometers, integrating spheres, light booths, tunable light sources
- Multi-spectral cameras
- A VLC test bed
- RF Magnetron sputtering and thermal evaporator for thin-film fabrication
- RF Probe station
- A chemical vapor deposition facility
- A semi-clean room fabrication facility for 4-inch wafer level fabrication

Facility location: Building 5, Level 8, Monash Malaysia

For pricing/info, please visit our website

<https://goo.gl/aHrtEm>

Or contact:

Dr Vineetha Kalavally - vineetha@monash.edu

Associate Professor Tan Chee Pin -

tan.chee.pin@monash.edu



AEC 2019
Call for Volunteers

Join us in organizing the conference
Develop soft skills & networks for your career

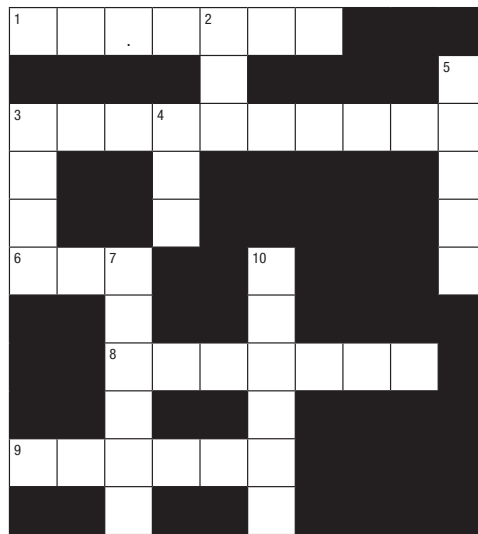
Contact us at:
mum.soe.aec@monash.edu

Advanced Engineering Colloquium (AEC) is a student oriented conference open to students and researchers.



Discover Monash

Win vouchers! The top three teams (comprising of three members each) to email first will win. Fill in the crossword and take a group selfie at each clue. Email the solved puzzle and the photographs to mum.soe.sync@monash.edu. Submit by **30th August 2018**.



Clues:

Across

1. Engineering Librarian
3. Here lie PS and coffee
6. The 10⁻⁹ lab
8. The _____ Theatre
9. The centre to sweat it out (take an active gif here)

Down:

2. Smart lighting lab
3. The entrance opposite the SunU-Monash BRT station & near the canopy walk
4. Potential JARVIS lab
5. A 10-year-old memory will be found near this place
7. Get your parcels from here
10. Ancora Imparo (take a selfie with this 3D answer on campus)

Opinion Poll

What do you think are the top 3 traits that a researcher must have? Submit your view on the following Google Form: <https://goo.gl/forms/JU3y1jJkXmHrly2>

The results from the poll can be viewed after submission and will be shared in the next issue as well.

Brain Teasers

Q: Imagine you have unlimited water and two buckets of 5L and 3L. How would you measure 4L with them?
You have nothing else to help you measure accurately.

(Source Microsoft Interview Question – Business Insider).

Q: Fill in the following 8x8 board with numbers 1 to 64 using a Knight's move (place a number after you move like the knight piece in the game of chess)

(Source: Wikipedia Knight's Tour URL: https://en.wikipedia.org/wiki/Knight%27s_tour) Multiple answers exist.

Unscramble

Clue: Technology Trends

1. RENTINET OF SINGTH
2. TAILRUV RAILETY
3. SIMSEVA PEON ELNOIN ERSUOCs
4. TRAMS SITEIC
5. TONANOCHNYLOGE
6. MIB SATNOW

Internal Funding Opportunities

Graduate Research Travel Subsidy Scheme

Eligibility: Only once during candidature for full-time postgrad students after confirmation.

Award Amount: RM 3000 ceiling amount.

School of Engineering Publication Awards (SEPA)

Eligibility: Full-time Monash GRS. Student must be the first or second author. Students can apply for up to six (6) months from first thesis submission.

Award Amount: RM 3000 for every Q1 paper published.

School of Engineering Consumable Support Fund Policy

Eligibility: Open to GRS whose projects do not receive any form of financial support from internal or external funding sources. Applicants must be within 18 months (for MEngSc) or 36 months (for PhD) of candidature.

Award Amount: RM3000 for OPEX.

Vice Chancellor's Intercampus PhD Mobility Scheme

Eligibility: GRS must have passed confirmation and not presented for Final Review milestone.

Award Amount: AUD 3000 for 4 weeks

Dates: Round 4 – 20 August 2018

External Funding Databases

* Research Professional

For global funding opportunities, Monash University has subscribed to Research Professional to keep updated with them. Create an account with your Monash Email or click here to view the opportunities

<https://goo.gl/U41PNj>

Global Innovation Grant



UAE Expo 2020 Innovation Impact Grant Programme awards USD 100,000 for social enterprises, startups and grassroots that impact the environment positively and generate social value. Go to <https://goo.gl/uGY9G6> to learn more.



Answer for Page 12:

Brain Teasers: Fill the 5 litre can from the tap. Empty the 5 litre can into the 3 litre can - leaving 2 litres in the 5 litre can. Pour away the contents of the 3 litre can. Fill the 3 litre can with the 2 litres from the 5 litre can - leaving 2 litres in the 3 litre can. Fill the 5 litre can from the tap. Fill the remaining 1 litre of space in the 3 litre can from the 5 litre can - leaving 4 litres in the 5 litre can.

Unscramble: 1. INTERNET OF THINGS 2. VIRTUAL REALITY 3. MASSIVE OPEN ONLINE COURSES 4. SMART CITIES 5. NANOTECHNOLOGY 6. IBM WATSON.

Competitions and Hackathons

Participation in competitions and hackathons will engage you in facing real world challenges, enabling you to develop skills for your careers. They are also great resume boosters!

HULT  PRIZE

Hult Prize

An annual competition to develop solutions for a given challenge theme. Applications for 2019 would start in **Oct - Nov 2018**.

ImagineCup 

Microsoft Imagine Cup

An annual competition to develop cloud-based solutions to change the world with a chance to win \$100,000. Applications for 2019 would start in **Oct - Nov 2018**.


BIOMIMICRY
GLOBAL DESIGN
CHALLENGE

Biomimicry Global Design Challenge

The Biomimicry Global Design Challenge (BGDC) is hosted in partnership with the Ray C. Anderson Foundation. This annual competition invites people to address critical sustainability issues with nature-inspired solutions and is open to students and professionals anywhere in the world. Applications for 2019 would open in **Oct 2018**.



Big Ideas @Berkeley

The Big Ideas@ Berkeley is an annual contest held at University of California, Berkeley, USA. The contest aims to provide "funding, support, and encouragement to interdisciplinary teams of students who have big ideas". Applications for next year open around **Nov 2018**.

Innovate Malaysia
Design Competition

Innovate Malaysia Design Competition 2019

Innovate Malaysia Design Competition is the largest design competition in Malaysia, open to all third-year or final-year degree students in engineering, IT or other disciplines. With the goal of promoting innovation culture, students can use this platform to show their projects tackling real-world problems. Applications for next year open around **Oct 2018**.

SYNC
EDITORS
ARTICLES
CALLS FOR
JOIN US
SUBMIT
BY
15 NOV' 2018

Submit your queries & entries to mum.soe.sync@monash.edu