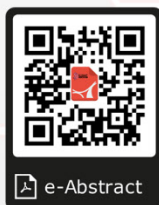




# International Conference on Semiconductor Materials and Technology

"INNOVATION TOWARDS A SUSTAINABLE TOMORROW"

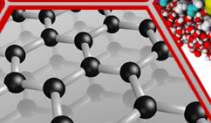
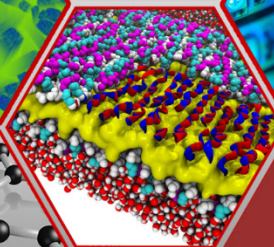
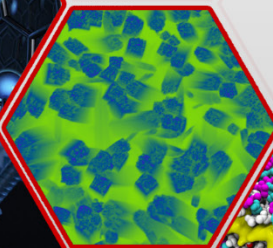
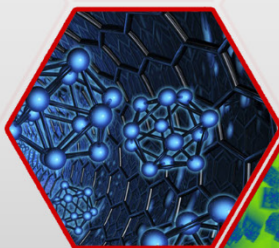
## PROGRAMME BOOK

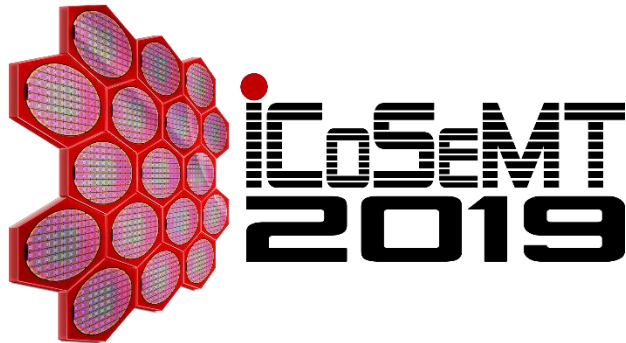


e-Abstract

**29 & 30 APRIL 2019**

Flamingo Hotel by the Beach,  
Penang, Malaysia





International Conference on  
Semiconductor Materials and Technology  
[ICoSeMT] 2019

29 & 30 April 2019

Flamingo Hotel by the beach, Penang, Malaysia

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Copies of this document may be obtained from Institute of Nano Optoelectronics Research and Technology, Universiti Sains Malaysia.

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## ABOUT THE CONFERENCE

International Conference on Semiconductor Materials and Technology (ICoSeMT 2019) is an inaugural event organized by Institute of Nano Optoelectronics Research and Technology (INOR), Universiti Sains Malaysia (USM) in conjunction with the 50<sup>th</sup> Anniversary of USM. The event has shed some lights via the joint organization with Universiti Teknologi MARA Cawangan Pulau Pinang (UiTM CPP), and Collaborative Research in Engineering, Science & Technology (CREST) with the theme "Innovation Towards A Sustainable Tomorrow".

ICoSeMT 2019 provides a premier platform for students, academicians, researchers, scientists, engineers, and practitioners in Malaysia and outside the country to share insights and relevant information with regards to the innovations, trends, and challenges encountered either in the research or in the commercial world in order to ensure a sustainable achievement in semiconductor materials and technology.

ICoSeMT 2019 solicits contributions of abstracts, papers, and posters, featuring the theme and four main topics of the conference, encompassing:

### a) Optical and Electronic Materials

- Narrow and Wide Band Gap Semiconductors
- Diamond, Graphene, and Carbon Nanotubes
- Piezoelectric and Ferroelectric Materials
- Electroluminescent Materials
- Colour-Changing Materials
- Energy Storage Materials
- Dielectric Materials
- Porous Structures
- Nanostructures
- Superconductors

### b) Organic and Polymeric Materials

- Organic Semiconductors
- Conductive Polymers
- Polymer Electronics and Coatings
- Polymer Catalysts and Characterization
- Composite Polymers and Biopolymers
- Functional Polymers and Polymer Hybrid Materials

### c) Devices

- Optoelectronics
- Sensors and Actuators
- Power & Electronic Devices
- Novel Devices
- Photovoltaics
- MEMS/NEMS
- Contacts and Interconnects
- Fabrication Processes
- Integrated System Design
- Modelling and Simulation

### d) Packaging Technology

- Phosphor Technology
- Lens and Optics
- Thermal Management
- Front End Assembly Processes
- Back End Processes and Applications
- Failure Analysis and Reliability

## GENERAL INFORMATION:

### Information for Participants

The pre-registration desk is located near the hotel lobby at 5.00 pm to 8.00 pm on Sunday 28 April 2019.

Booth exhibitor and participant can set up their booth and poster at the Ground Floor on Sunday 28 April 2019 starting from 8.00 pm to 10.00 pm. On Monday 29 April 2019, all booths and posters need to be set up before 9.30 am.

Badges are required for admittance to all sessions, lunch, coffee and tea break. **Please ensure that the badge is with you all the time.**

Individuals are not allowed to pick up badges for participants other than themselves, unless Conference Staff give approval in advance.

Conference Cancellation Policy: No refund is allowed for cancellation.

### Information for Presenters

For Oral presenter, presentation time is limited to 15 minutes. This includes 10 minutes for presentation and 5 minutes for Q&A. All oral session rooms are equipped with a projector, a laptop computer, and a screen. The laptops are not equipped to accommodate audio sound. We recommend all speakers to bring their presentation files and use the laptop computer provided. The laptop computers operate in Window. Presenters who want to use Macintosh should bring their own computers and check whether it is compatible with the projector before the session. Presenters are requested to upload their presentations to the room laptop in due time before their session starts.

For Poster presenter, the poster should be A1 size: 84.1 cm x 59.4 cm. A sign designating the poster board number will be provided by secretariat and it is positioned at the upper left/right corner of the board. Presenter can set up their poster one day before the conference (i.e., Sunday 28 April 2019) starting from 8.00 pm to 10.00 pm. On Monday 29 April 2019, all posters need to be set up before 9.30 am. All poster presenters should remove their poster on Tuesday 30 April 2019 starting from 4.15 pm to 5.30 pm.

### Awards

Both Oral presentations and Poster presentations will be evaluated by the evaluation committee for the awards. Awards will be given to the best oral and poster presentations. Winners will receive a cash prize and a certificate of award.

## FOREWORD FROM DEPUTY MINISTER OF MINISTRY OF ENERGY, SCIENCE, TECHNOLOGY, ENVIRONMENT AND CLIMATE CHANGE (MESTECC)



My heartiest congratulations to the committee members of the International Conference on Semiconductor Materials and Technology (ICoSeMT 2019) for their hard work in organising this conference. The theme of this conference, "Innovation Towards A Sustainable Tomorrow" has captured the interest of the Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC), towards a cleaner and healthier environment in Malaysia by 2030. To achieve that, MESTECC has launched Malaysia's Roadmap Towards Zero Single-Use Plastics 2018-2030. Plastic pollution has become a global problem that needs to be addressed in a sustainable manner to save the

environment for future generation. It is our hope that with expertise at hand, we can provide a better solution to produce eco-friendly products in place of plastics that can harm the health of human and animals.

I believe this international conference would provide the best platform for academicians, researchers, scientists and industrial players to exchange ideas on latest findings, establish international networking and create collaboration in their respective area of expertise. The global challenges in academic, research and development require a transnational and trans-institutional exchange of knowledge and technology. This international conference has made the aspiration possible by the collaboration between Universiti Sains Malaysia (USM), Universiti Teknologi MARA Cawangan Pulau Pinang (UiTM CPP), and Collaborative Research in Engineering, Science and Technology (CREST) as joint organisers in promoting the research discussions in semiconductor materials, devices and packaging technologies. To become successful innovation hubs, universities and research centres are tasked to strengthen their researches. In conjunction with this conference, I would like to take this golden opportunity to congratulate USM on its 50<sup>th</sup> Anniversary.

The government has set aside a considerable amount of allocation in its annual budget to fund and support research & development (R&D) projects undertaken by government research institutions and universities. As such, it is valid for the government to expect the money spent on research to be able to create value, wealth and improve the livelihood of the citizens. Considering this, the academicians and researchers are encouraged to share their latest work and findings in order to realise this country's aspirations.

I strongly encourage more scientific researches to be conducted to ensure the good outcomes for Malaysia to provide key strategies in becoming a strong and knowledgeable country. I sincerely hope that the collection of articles from this conference will be valuable resources for our future references amongst the academicians and researchers and will be able to inspire further researches into the vibrant areas of the Science, Technology and Innovation (STI).

Thank you.

**YB ISNARAISSAH MUNIRAH MAJILIS**

**Deputy Minister of Energy, Science, Technology, Environment and Climate Change (MESTECC), MALAYSIA**

## FOREWORD FROM VICE CHANCELLOR OF UNIVERSITI SAINS MALAYSIA (USM)



*Assalamualaikum Warahmatullahi Wabarakatuh and Salam Sejahtera.*

On behalf of Universiti Sains Malaysia (USM), it is a great pleasure for me to welcome all participants to the International Conference on Semiconductor Materials and Technology (ICoSeMT2019).

This conference was jointly organised by the Institute of Nano Optoelectronics Research and Technology (INOR), USM, Universiti Teknologi MARA Cawangan Pulau Pinang (UiTM CPP), and Collaborative Research in Engineering, Science and Technology (CREST). I would like to express my sincere gratitude to the organising committee of the conference chaired by Professor Dr. Zainuriah Hassan for initiating the conference in conjunction with the USM's 50<sup>th</sup> Anniversary. Congratulations to all the committee members for all the hard work in ensuring the success of this event.

The theme of the conference is "Innovation Towards A Sustainable Tomorrow". As one of the leading research universities in Malaysia, USM continues in its strides towards empowering research and innovation to raise the university up to the global academic standards. From a research, an innovation can enhance the technology development and could benefit the others. I hope this conference will create a platform for researchers to share their knowledge and findings as well as their innovations, and thus encouraging greater collaboration and networking among the participants.

Finally, I sincerely hope this conference would be a success and I wish all delegates to have a fruitful conference. To the international delegates, you may wish to take this opportunity to explore Penang's capital, George Town which has been designated a World Heritage Site by UNESCO on 7 July 2008. The Historic City of George Town is located not far from here. It is rich in unique attractions of historical architectures. Besides the interesting heritage, Penang is also well-known as one of the most popular food havens in Asia, where a wide variety of delicious cuisines is commonly available. And to all delegates from out of town, do spare some time to visit the USM Main Campus, also known as the 'University in a Garden'. Situated in Minden, it's a 45-minute drive from here, and I assure you that you will be enthralled by its beautiful and scenic natural surroundings.

Thank you.

**PROFESSOR DATUK DR. ASMA ISMAIL, FASc.**

**Vice-Chancellor of Universiti Sains Malaysia (USM), MALAYSIA**



## FOREWORD FROM DEPUTY VICE CHANCELLOR (RESEARCH AND INNOVATION) OF UNIVERSITI SAINS MALAYSIA (USM)



*Assalamualaikum Warahmatullahi Wabarakatuh and Salam Sejahtera.*

It gives me great pleasure to welcome all delegates to the International Conference on Semiconductor Materials and Technology (ICoSeMT 2019). Welcome to Penang, Malaysia, the Pearl of The Orient.

On behalf of Universiti Sains Malaysia (USM) Division of Research and Innovation, I would like to express my sincere gratitude and congratulate the organising committee for ensuring the success of this conference.

ICoSeMT 2019 is an inaugural event organised by the USM Institute of Nano Optoelectronics Research and Technology (INOR) with the theme "Innovation Towards a Sustainable Tomorrow". This event provides a premier platform for students, academicians, researchers, scientists, engineers and practitioners in Malaysia and abroad to share insights and relevant information with regard to the innovations, trends and challenges encountered either in the research or in the commercial world, leading to more sustainable outcomes in semiconductor materials and technology.

USM continues to enhance its research towards more cutting-edge practices and create new opportunities to help mankind, by establishing translational research centres working towards achieving scientific breakthroughs and creating new technology platforms to provide people-focused solutions. In conducting research, USM takes a different route and puts emphasis on creating an impact to society by creating sustainable research products that are affordable and accessible to the poor and needy. Therefore, it is our hope that this event will succeed in generating many new research findings, innovations, and ideas that will change the lives of the bottom billion and enhance their socio-economic well-being, which is very much in tandem with the vision and mission of the University.

Lastly, I hope everyone will find the interactions stimulating, exciting and inspiring.

Thank you.

**PROFESSOR IR. DR. ABDUL RAHMAN MOHAMED, FASc.**

**Deputy Vice-Chancellor (Research and Innovation) of Universiti Sains Malaysia (USM), MALAYSIA**

## FOREWORD FROM THE RECTOR OF UNIVERSITI TEKNOLOGI MARA, CAWANGAN PULAU PINANG (UiTM CPP)



*Assalamualaikum Warahmatullahi Wabarakatuh and warm regards.*

On behalf of Universiti Teknologi MARA (UiTM) Cawangan Pulau Pinang, we are very delighted to be invited by Universiti Sains Malaysia (USM) to jointly organise the International Conference on Semiconductor Materials and Technology (ICoSeMT 2019), with the theme 'Innovation towards a Sustainable Tomorrow' in conjunction with the 50<sup>th</sup> Anniversary of USM.

In line with the Eleventh Malaysia Plan (11 MP) which is targeting for economic growth through innovation for sustainability and resilience, and the Fourth Industrial Revolution (IR 4.0), this international conference should provide golden opportunities for students, academicians, researchers, scientists, engineers, and industry players to exchange idea, knowledge, and expertise in the fields related to Semiconductor Materials and Technology. Nanotechnology has great potentials in securing our future because it enables the creation of functional materials, devices, and systems by controlling matter at the atomic and molecular scales, and to exploit novel properties and phenomena such as in health monitoring; sensors using newly-invented nanomaterials and manufacturing techniques that can be employed in traffic sensors to help manage congestion and prevent accidents and many more roles that we can imagine in the future.

I hope that all participants will enjoy the conference sessions, networking opportunities, and many attractions that Penang has to offer. May this conference bring about a meaningful outcome. Last but not least, I would like to congratulate Fakulti Kejuruteraan Elektrik and Jabatan Sains Gunaan from UiTM Cawangan Pulau Pinang for collaborating with Institute of Nano Optoelectronics Research and Technology (INOR), USM, and Collaborative Research in Engineering, Science and Technology (CREST) to make this event successful.

Thank you.

**ASSOCIATE PROFESSOR. TS. DR. MOHD HISBANY MOHD HASHIM**

**Rector of Universiti Teknologi MARA Cawangan Pulau Pinang (UiTM CPP), MALAYSIA**

## FOREWORD FROM CHIEF EXECUTIVE OFFICER OF COLLABORATIVE RESEARCH IN ENGINEERING, SCIENCE & TECHNOLOGY (CREST)



*Selamat Datang* and Welcome to ICoSeMT 2019.

Greetings to all. I am delighted to welcome all delegates of the International Conference on Semiconductor Materials and Technology (ICoSeMT 2019) at the Flamingo Hotel by the Beach, located in the beautiful island of Penang, also known as the Silicon Valley of the East for its industries.

On behalf of the Collaborative Research in Engineering, Science & Technology (CREST), I would like to congratulate the members of Institute of Nano Optoelectronics Research and Technology (INOR), Universiti Sains Malaysia, Penang, Universiti Teknologi MARA Cawangan Pulau Pinang (UiTM CPP), and CREST to be able to organise this international conference for the first time and also in conjunction with the 50<sup>th</sup> Anniversary of USM. The commitment among ICoSeMT members who have been playing an active role in organising this event reflects their contribution in strengthening semiconductor research and practice in Malaysia.

The theme of ICoSeMT 2019 is "Innovation Towards A Sustainable Tomorrow". This is aligning to the continuous growth in Electronics and Electrical (E & E) i.e. semiconductor and optoelectronic in the emerging markets of 4th Industrial Revolution which mean a great opportunity for every one of us in semiconductor ecosystem. The continuous miniaturization of semiconductor devices into a wearable, thinner and light form factor yet demanding higher computing power and communication speed demands for new packaging schemes, silicon & substrate design and materials to ensure two most crucial aspects of energy and thermal are managed within the performance and lifetime of these devices. These market trends, product evolution and technology challenges will shape our research tomorrow.

The semiconductor industry is once again experiencing tremendous expansion and revolutionary changes for year 2019. All of us are in the right path to reposition semiconductor industry as a value generator and differentiator for the country and worldwide. I hope we can learn the successful story of ICoSeMT together during these 2 days. See you then!

**JAFFRI IBRAHIM**

**Chief Executive Officer of Collaborative Research in Engineering, Science & Technology (CREST), MALAYSIA**

## FOREWORD FROM CHAIRMAN OF ICoSeMT 2019



*Assalamualaikum and Salam Sejahtera.*

On behalf of the organising committee, I am honoured and delighted to welcome all participants to the International Conference on Semiconductor Materials and Technology (ICoSeMT 2019), which is jointly organised by Institute of Nano Optoelectronics Research and Technology (INOR), USM, Penang, Universiti Teknologi MARA Cawangan Pulau Pinang (UiTM CPP), and Collaborative Research in Engineering, Science & Technology (CREST) in conjunction with the 50<sup>th</sup> Anniversary of USM. It is an inaugural event, which aims to provide a premier platform for students, academicians, researchers, scientists, engineers, and practitioners in Malaysia and outside the country to share insights and relevant information with regards to the innovations, trends, and challenges encountered either in the research or in the commercial world, in order to ensure a sustainable achievement in the field of Semiconductor Materials and Technology.

The theme of ICoSeMT 2019 is "Innovation Towards A Sustainable Tomorrow", featuring four main topics, encompassing Optical and Electronic Materials, Organic and Polymeric Materials, Devices, as well as Packaging Technology. We are delighted to have with us in ICoSeMT 2019, the three distinguished keynote speakers namely, Professor Dr. Hiroshi Kawarada (Waseda University, Japan), Professor Dr. James S. Speck (University of California, Santa Barbara, USA), and Dr. Matthias Sabathil (Osram Opto Semiconductors (Malaysia) Sdn. Bhd.). In addition, ICoSeMT 2019 also features two plenary talks from two renowned speakers, namely Professor Dr. Steven P. Denbaars (University of California, Santa Barbara, USA) and Dr. Rezal Khairi Ahmad (Nanomalaysia Berhad, Malaysia) as well as invited talks by prominent researchers from France, Australia, Iraq, and Malaysia.

We are proud to announce the attendance of 200 participants from various companies, research and academic institutions from 12 countries for this conference. Overall, there are 141 papers that will be presented in oral and poster sessions. Besides the paper presentations, booth exhibitions from 17 main suppliers and service providers from local and overseas in the fields related to Semiconductor Materials and Technology will also be held during this 2-day conference.

Finally, I would like to take this opportunity to deliver my heartiest gratitude to all the committee members for their indispensable contributions towards the success of this conference. I would also like to express my appreciation to our great keynote, plenary, and invited speakers for their willingness to give us their excellent talks, and to all the sponsors and supporters. Finally, my sincere thanks to all presenters and exhibitors for their generous support and outstanding contributions. I wish all participants an enjoyable and successful conference.

Thank you.

**PROFESSOR DR. ZAINURIAH HASSAN, FASc.**

**Chairman of ICoSeMT 2019**

**Cum**

**Director of Institute of Nano Optoelectronics Research and Technology (INOR),  
Universiti Sains Malaysia (USM), MALAYSIA**



## ORGANISING COMMITTEE

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Mohd Aiezat Zulkeply INOR, USM	Mohd Nazri Bakar INOR, USM	Mohd Bukhari Bin Md Yunus JSG, UiTM CPP

**Event Manager:**

Dr. Chuah Lee Siang INOR, USM	Wan Rosdan Rozali INOR, USM
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## PROGRAMME OVERVIEW

Pre-Registration Day (28 April 2019)	
1700 – 2000	Pre-Registration (Main Hotel Lobby) *Oral/Poster/Booth Participants can opt for pre-registration at the main hotel lobby
2000 – 2200	Booth & Poster Set Up (Ground Floor)

Day 1 (29 April 2019)	
0800 – 0930	Registration (Main Hotel Lobby)
	Booth & Poster Set Up (Ground Floor)
0930 – 1000	<b>Keynote Talk 1</b>
1000 – 1015	Arrival of VVIPs
1015 – 1100	National Anthem Malaysia USM Song & Transformation Video Doa Recital
	Welcoming Speech by <b>YBhg Professor Datuk Dr. Asma Ismail, FASc,</b> Vice-Chancellor, Universiti Sains Malaysia
	Opening Speech by <b>YB Puan Isnaraissah Munirah Majilis,</b> Deputy Minister, Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC), Malaysia
1100 – 1130	Group Photo Session Coffee Break
1130 – 1300	Parallel Oral Sessions
1300 – 1400	<b>Poster Session</b> <b>Booth Exhibition</b>
	Lunch
1400 – 1430	<b>Plenary Talk 1</b>
1430 – 1545	Parallel Oral Sessions
1545 – 1615	Tea Break
	<b>Poster Session</b> <b>Booth Exhibition</b>
1615 – 1745	Parallel Oral Sessions
1800 – 2100	Barbeque Dinner





<b>Day 2 (30 April 2019)</b>	
0830 – 0900	Registration
0900 – 0930	<b>Keynote Talk 2</b>
0930 – 1000	<b>Keynote Talk 3</b>
1000 – 1100	Poster Presentation and Judging Session
	Coffee Break
1100 – 1300	Parallel Oral Sessions
1300 - 1400	<b>Poster Session</b> <b>Booth Exhibition</b>
	Lunch
1400 – 1430	<b>Plenary Talk 2</b>
1430 – 1545	Parallel Oral Sessions
1545 – 1615	Tea Break
	<b>Poster Session</b> <b>Booth Exhibition</b>
1615 – 1715	Parallel Oral Sessions
1715 – 1730	Best Oral Presentation and Best Poster Awards Ceremony
	Closing Speech by <b>YBrS Professor Dr. Zainuriah Hassan, FASc,</b> Chairman, ICoSeMT 2019
1730	End of Ceremony

## BIOGRAPHY OF KEYNOTE & PLENARY SPEAKER

### KEYNOTE SPEAKERS



#### **PROFESSOR DR. HIROSHI KAWARADA**

**Professor of Faculty of Science and Engineering, Waseda University & Director of Green Device Laboratory, Japan**

Dr. Hiroshi Kawarada is the Professor of Faculty of Science and Engineering, Waseda University, Japan where he is the leader of nano-electronics and power-electronics, developing carbon-based material devices including diamond for nano device, bio sensors, microwave and power field effect transistors. He is now the Director of Green Device laboratory, member of Science Council of Japan and he is also a member of Kagami Memorial Research Institute for Materials Science and Technology and a Visiting Professor at Institute of Materials and Systems for Sustainability, Nagoya university, Japan. He was appointed as a Board Member of Japan Applied Physics Society for the years 2005-2007, the Director of Research Organization for Nano-science & Nano-technology from 2009 to 2010 and he was also chosen as the Chairman for New Diamond Forum 2009 to 2014. Along with his carrier, he published 9 books, given numerous invited talks, has more than 300 scientific publications and over 30 patents. His articles, proceedings and patents have been cited by about 9,000 (Google Scholar). He won Minister of Education, Culture, Sports, Science and Technology Award in 2016, Fellow of the Applied Physics Society Fellow Award in 2010 and Superconductivity Science and Technology Award in 2007. Hiroshi Kawarada was one of the recipients of Humboldt Research Fellowship at Applied Solid State Physics Department, Fraunhofer Institute in Germany (1995-1996) and was a former semiconductor device researcher of Hitachi, Ltd (1980-1982). He received the B.S., M.E., and the Doctor of Engineering degrees from Waseda University, Tokyo, Japan, in 1985. From 1986 to 1990, he was an Assistant Professor with Osaka University, Osaka, Japan. In 1990, he joined Waseda University as a Professor.



#### **PROFESSOR DR. JAMES S. SPECK**

**Distinguished Professor of Materials, Seoul Viosys Chair in Materials, Materials Department, University of California, Santa Barbara, USA**

James Speck is a Professor in the Materials Department at the University of California Santa Barbara. In 2007, he and his long time collaborators, Steve DenBaars and Shuji Nakamura, founded Kaai and Soraa to commercialize their work on nonpolar and semipolar nitrides. James's many honours include the Quantum Device Award from the International Symposium on Compound Semiconductors in 2007, the IEEE Photonics Society Aron Kressel Award in 2010, and selection as a Fellow of the National Academy of Inventors in 2016. Credited with more than 800 publications, he received his S.M. and Sc.D. degrees in materials science from the Massachusetts Institute of Technology.



**DR. MATTHIAS SABATHIL**

**Global Head of Product Development General Lighting, OSRAM Opto Semiconductors (Malaysia) Sdn. Bhd**

Dr. Matthias Sabathil is currently the Global Head of Product Development General Lighting in OSRAM Opto Semiconductors (Malaysia) Sdn. Bhd. He has been working in OSRAM for 14 years and 4 months. His journey with OSRAM started in 2004 as a development engineer in OSRAM Regensburg, Germany. After 5 years, he was promoted to become the Senior Manager in Modelling, who was the leader for a team to support projects with multi-physics simulations. In year 2012, Dr. Matthias became the Director for Predevelopment. He was the Head of Advanced Concepts and Engineering Department, heading a department of five groups from epitaxy, chip technology, phosphors to packages and modelling with the mission to create, research and advance novel concepts for future products. Besides, Dr. Matthias was also responsible for new concepts idea creation, scouting and road-mapping. Till then, he continued working in OSRAM Regensburg, Germany for almost 2 years, holding the position of Director for Predevelopment Devices before coming to OSRAM Malaysia in July 2018. As the Head of Predevelopment Devices for automotive, industry and general lighting segments of OSRAM, Dr. Matthias was responsible for the delivery of feasibility and concepts studies to enable performance assessment, promotion of new concepts in multi-stakeholder environment, and special focus on collaboration in multi-national environment. At present, Dr. Matthias is responsible for the product development within the OSRAM segment general lighting.

## PLENARY SPEAKERS



**DR. REZAL KHAIRI AHMAD**

**Chief Executive Officer, NanoMalaysia Berhad**

Dr. Rezal Khairi Ahmad was appointed as the Chief Executive Officer in January 2013 under a secondment from Khazanah Nasional started in June 2012. He is also a Board Member of NanoMalaysia and Nano Commerce Sdn Bhd, Founding Chairman of NanoVerify Sdn Bhd and Founding Director of Nanovation Ventures Sdn Bhd.

Currently, he serves as Chairman of Advanced Materials Investment Advisory Panel Working Group under Malaysian Investment Development Authority, Treasurer for Asia Nano Forum and Chairman of Commercialization Working Group under Asia Nano Forum. In September 2017, he was appointed as International Advisor to China Graphene Industry Alliance (CGIA) linking Malaysia's National Graphene Action Plan 2020 and mutual economic benefits. Formerly attached to College of Engineering, Universiti Tenaga Nasional as an academicien from 1998 to 2007, he was also an engineer at Tenaga Nasional ICT in 2003. In 2000, he co-founded Malaysia-Events Sdn Bhd, a start-up for e-commerce platform. He holds a PhD in Nanotechnology, Electronic/Electrical Engineering from London Centre for Nanotechnology, University College London as the first Khazanah PhD Scholar from 2007 to 2010 with publications in high impact journals. In 2014, he was instrumental in crafting out Malaysia's National Graphene Action Plan 2020 and co-authored chapters pertaining to innovation and commercialization under the 11th Malaysia Plan. His current endeavours include Internet of Nano-Things and Blockchain applications for high technology management.



**PROFESSOR DR. STEVEN P. DENBAARS**

**Professor & Co-Director, Solid State Lighting & Energy Electronics Center, University of California, Santa Barbara, USA**

Dr. Steven P. DenBaars is a Professor of Materials and Co-Director of the Solid-State Lighting and Energy Electronics Center (SSLEEC) at the University of California Santa Barbara. In 2005 he was appointed the Mitsubishi Chemical Chair in Solid State Lighting and Displays. Specific research interests include growth of wide-bandgap semiconductors (GaN based), and their application to Blue LEDs and lasers and high power electronic devices. Prof. DenBaars has been an active in entrepreneurship, having helped co-found 3 start-up companies in the field of optoelectronics and electronics. He received the IEEE Fellow award in 2005, Aron Kressel Award – IEEE Photonics Society, elected member of the National Academy of Engineers 2012, and National Academy of Inventors in 2014. He has authored or co-authored over 980 technical publications, 350 conference presentations, and over 185 patents.



## INVITED SPEAKERS



**ASSOC. PROFESSOR DR. SIDI  
HAMADY**

**LMOPS laboratory, Université de  
Lorraine & Centrale Supélec,  
Metz, France.**

**HECTOR (High EfficienCy Thin  
Films sOlAR cells) Project Leader**



**PROFESSOR DR. SABAH M.  
THAHAB**

**Nanotechnology and Advanced  
Materials Research Unit (NAMRU),  
Faculty of Engineering, University  
of Kufa, Iraq**



**PROFESSOR DR. GHAZALI  
OMAR**

**Manager, Center for Advanced  
Research on Energy (CARE),  
Faculty of Mechanical  
Engineering, Universiti Teknikal  
Malaysia Melaka (UTeM), Malaysia**



**PROFESSOR DR. GIACINTA  
PARISH**

**Associate Dean (Research),  
Faculty of Engineering and  
Mathematical Sciences, The  
University of Western Australia**

## CONFERENCE SCHEDULE

### Pre-Registration Day: 28 April 2019 (Sunday)

Time	Programme
1700 – 2000	Pre-Registration (Main Hotel Lobby) *Oral/Poster/Booth Participants can opt for pre-registration at the main hotel lobby
2000 – 2200	Poster & Booth Set Up (Ground Floor)

### Day 1: 29 April 2019 (Monday)

Time	Programme
0800 – 0930	Registration (Main Hotel Lobby) Poster & Booth Set Up (Ground Floor)
0930 – 1000	<b>Keynote Talk 1 at Flamingo Ballroom</b> “Toward New Generation Power Electronics with Complimentary FETs Composed of Diamond p-FETs and Nitride n-FETs” <b>Prof. Dr. Hiroshi Kawarada</b> Waseda University, JAPAN
<b>OPENING (FLAMINGO BALLROOM)</b>	
1000 – 1015	Arrival of VVIPs
1015 – 1100	National Anthem, Menara Ilmu, USM Transformation Video, Doa Recital Welcoming Speech by <b>YBhg Professor Datuk Dr. Asma Ismail, FASc,</b> Vice-Chancellor, Universiti Sains Malaysia Opening Speech by <b>YB Puan Isnaraissah Munirah Majilis,</b> Deputy Minister, Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC), Malaysia
1100 – 1130	Group Photo Session & Coffee Break
<b>PARALLEL ORAL SESSION 1</b>	
	<b>ORAL SESSION 1A TOPIC A: DEVICES (Flamingo Ballroom)</b>
	<b>ORAL SESSION 1B TOPIC B: OPTICAL and ELECTRONIC MATERIALS (Pink Flamingo)</b>
1130 - 1145	<b>Invited Talk 1: D1</b>
	<b>Invited Talk 2: OE1</b>
1145 – 1300	<b>Oral Presentation: D2 – D6</b>
	<b>Oral Presentation: OE2 – OE6</b>
1300 – 1400	Poster Session & Booth Exhibition <b>LUNCH at Flamingo Café</b>



1400 – 1430	<b>Plenary Talk 1 at Flamingo Ballroom</b> <i>"National Graphene Action Plan 2020"</i> <b>Dr. Rezal Khairi Ahmad</b> NanoMalaysia Berhad, MALAYSIA	
<b>PARALLEL ORAL SESSION 2</b>		
	<b>ORAL SESSION 2A</b> <b>TOPIC C: ORGANIC and POLYMERIC MATERIALS</b> (Flamingo Ballroom)	<b>ORAL SESSION 2B</b> <b>TOPIC D: PACKAGING TECHNOLOGY</b> (Pink Flamingo)
1430 – 1445	<b>Oral Presentation:</b> <b>OP1 – OP5</b>	<b>Invited Talk 3:</b> <b>PT1</b>
1445 – 1545		<b>Oral Presentation:</b> <b>PT2 – PT5</b>
1545 – 1615	Tea Break, Poster Session & Booth Exhibition	
<b>PARALLEL ORAL SESSION 3</b>		
	<b>ORAL SESSION 3A</b> <b>TOPIC B: OPTICAL and ELECTRONIC MATERIALS</b> (Flamingo Ballroom)	<b>ORAL SESSION 3B</b> <b>TOPIC A: DEVICES</b> (Pink Flamingo)
1615 – 1745	<b>Oral Presentation:</b> <b>OE7 – OE12</b>	<b>Oral Presentation:</b> <b>D7 – D12</b>
1800 – 2100	<b>BARBEQUE DINNER</b>	

## Day 2: 30 April 2019 (Tuesday)

Time	Programme	
0830 – 0900	Registration (Main Hotel Lobby)	
0900 – 0930	<b>Keynote Talk 2 at Flamingo Ballroom</b> <i>"Revealing the Inner Working of Advanced GaN-based LEDs"</i> <b>Prof. Dr. James S. Speck</b> University of California Santa Barbara, USA	
0930 – 1000	<b>Keynote Talk 3 at Flamingo Ballroom</b> <i>"Innovations in LED Lighting"</i> <b>Dr. Matthias Sabathil</b> OSRAM Opto Semiconductors (Malaysia) Sdn. Bhd., MALAYSIA	
1000 – 1100	Poster Presentation and Judging Session Coffee Break	
<b>PARALLEL ORAL SESSION 4</b>		
	<b>ORAL SESSION 4A</b> <b>TOPIC B: OPTICAL and ELECTRONIC MATERIALS</b> (Flamingo Ballroom)	<b>ORAL SESSION 4B</b> <b>TOPIC C: ORGANIC and POLYMERIC MATERIALS</b> (Pink Flamingo)
1100 – 1115	<b>Invited Talk 4:</b> <b>OE13</b>	<b>Oral Presentation:</b> <b>OP6 – OP13</b>
1115 – 1300	<b>Oral Presentation:</b> <b>OE14 – OE20</b>	
1300 – 1400	Poster Session & Booth Exhibition <b>LUNCH</b> at Flamingo Café	
1400 – 1430	<b>Plenary Talk 2 at Flamingo Ballroom</b> <i>"Recent Developments of InGaN/GaN Based Laser Diodes for Energy Efficient Solid State Lighting and Displays"</i> <b>Prof. Dr. Steven P. Denbaars</b> University of California Santa Barbara, USA	
<b>PARALLEL ORAL SESSION 5</b>		
	<b>ORAL SESSION 5A</b> <b>TOPIC A: DEVICES</b> (Flamingo Ballroom)	<b>ORAL SESSION 5B</b> <b>TOPIC B: OPTICAL and ELECTRONIC MATERIALS</b> (Pink Flamingo)
1430 – 1545	<b>Oral Presentation:</b> <b>D12 – D15</b>	<b>Oral Presentation:</b> <b>OE18 – OE22</b>
1545 – 1615	Tea Break, Poster Session & Booth Exhibition	



<b>PARALLEL ORAL SESSION 6</b>		
	<b>ORAL SESSION 6A</b> <b>TOPIC B: OPTICAL and ELECTRONIC MATERIALS</b> (Flamingo Ballroom)	<b>ORAL SESSION 6B</b> <b>TOPIC B: OPTICAL and ELECTRONIC MATERIALS</b> (Pink Flamingo)
1615 – 1715	<b>Oral Presentation:</b> <b>OE26 – OE29</b>	<b>Oral Presentation:</b> <b>OE30 – OE33</b>

<b>CLOSING CEREMONY</b> <b>(FLAMINGO BALLROOM)</b>	
1715 – 1720	Best Oral Presentation and Best Poster Awards Ceremony
	Closing Speech by <b>YBrs Professor Dr. Zainuriah Hassan, FASc,</b> Chairman, ICoSeMT 2019
1730	End of Ceremony

## PRESENTATION SCHEDULE

### KEYNOTE SPEAKERS

<b>DAY 1: 29<sup>th</sup> APRIL 2019 (MONDAY)</b> <b>09:30 am – 10:00 am</b> <b>Flamingo Ballroom</b>  Chair: Mr. Mohd Affaddil Izmi Roslan	
<b>9:30 am</b>	<b><i>Professor Dr. Hiroshi Kawarada</i></b> ( <i>Waseda University, JAPAN</i> )  "Toward New Generation Power Electronics with Complimentary FETs Composed of Diamond p-FETs and Nitride n-FETs"
<b>DAY 2: 30<sup>th</sup> APRIL 2019 (TUESDAY)</b> <b>09:00 am – 10:00 am</b> <b>Flamingo Ballroom</b>  Chair: Mr. Mohd Affaddil Izmi Roslan	
<b>09:00 am</b>	<b><i>Professor Dr. James S. Speck</i></b> ( <i>University of California Santa Barbara, USA</i> )  "Revealing the Inner Working of Advanced GaN-based LEDs"
<b>09:30 am</b>	<b><i>Dr. Matthias Sabathil</i></b> ( <i>OSRAM Opto Semiconductors (Malaysia) Sdn. Bhd., MALAYSIA</i> )  "Innovations in LED Lighting"



### PLENARY SPEAKERS

<p><b>DAY 1: 29<sup>th</sup> APRIL 2019 (MONDAY)</b> <b>02:00 pm – 02:30 pm</b> <b>Flamingo Ballroom</b></p> <p>Chair: Mr. Mohd Affaddil Izmi Roslan</p>	
<p><b>02:00 pm</b></p>	<p><b><i>Dr. Rezal Khairi Ahmad</i></b> <i>(NanoMalaysia Berhad, MALAYSIA)</i></p> <p>"National Graphene Action Plan 2020"</p>
<p><b>DAY 2: 30<sup>th</sup> APRIL 2019 (TUESDAY)</b> <b>02:00 pm – 02:30 pm</b> <b>Flamingo Ballroom</b></p> <p>Chair: Mr. Mohd Affaddil Izmi Roslan</p>	
<p><b>02:00 pm</b></p>	<p><b><i>Professor Dr. Steven P. Denbaars</i></b> <i>(University of California Santa Barbara, USA)</i></p> <p>"Recent Developments of InGaN/GaN Based Laser Diodes for Energy Efficient Solid State Lighting and Displays"</p>

## INVITED SPEAKERS

DAY 1: 29 <sup>th</sup> APRIL 2019 (MONDAY)	
11:30 am	<p><b>PARALLEL SESSION 1A</b>  <b>TOPIC A: DEVICES</b>                      (Flamingo Ballroom)</p> <p><b>Associate Professor Dr. Sidi Ould Saad Hamady</b>                      (Université de Lorraine, FRANCE)</p> <p>"Numerical Optimization of Solar Cells: A Review of Standard and Novel Methods"</p>
11:30 am	<p><b>PARALLEL SESSION 1B</b>  <b>TOPIC B: OPTICAL and ELECTRONIC MATERIALS</b>                      (Pink Flamingo)</p> <p><b>Professor Dr. Sabah M. Thahab</b>                      (University of Kufa, IRAQ)</p> <p>"Formation of Fe, Pt and (Pt@Fe) Ultra Fine Metal Nanoparticles in Different Solution Polarity Prepared by Nd-YAG Pulsed Laser"</p>
02:30 pm	<p><b>PARALLEL SESSION 2B</b>  <b>TOPIC D: PACKAGING TECHNOLOGY</b>                      (Pink Flamingo)</p> <p><b>Professor Dr. Ghazali Omar</b>                      (Universiti Teknikal Malaysia Melaka, MALAYSIA)</p> <p>"Surface Interaction of Silver (Ag) Nano Particle in Electrically Conductive Adhesives for Electrical Performance"</p>

DAY 2: 30 <sup>th</sup> APRIL 2019 (TUESDAY)	
11:00 am	<p><b>PARALLEL SESSION 4A</b>  <b>TOPIC B: OPTICAL and ELECTRONIC MATERIALS</b>                      (Flamingo Ballroom)</p> <p><b>Professor Dr. Giacinta Parish</b>                      (The University of Western Australia, AUSTRALIA)</p> <p>"Novel Sensors Based on III-Nitrides and Porous Silicon"</p>



**ORAL SESSION  
 SESSION 1  
 DAY 1: 29<sup>th</sup> APRIL 2019 (MONDAY)**

**PARALLEL SESSION 1A  
 TOPIC A: DEVICES  
 (Flamingo Ballroom)**

Chair: Dr. Mundzir Abdullah

Time	Title/Presenter	ID
11:30 am	Numerical Optimization of Solar Cells: A Review of Standard and Novel Methods <i>INVITED TALK: Nicolas Fressengeas, Sidi Ould Saad Hamady*</i>	D1
11:45 am	Efficient InGaN based Visible Semipolar (11-22) and (20-21) Light-Emitting Diodes (LEDs) on Semipolar GaN/Sapphire Template with Low Dislocation Density <i>Hongjian Li*, Michel Khoury, Matthew Wong, Bastien Bonef, Philippe DeMierry, Shuji Nakamura, James S. Speck, Steven P. DenBaars</i>	D2
12:00 pm	Fabrication of Deep Green Light Emitting Diode on Bulk Gallium Nitride Substrate <i>Shamsul Amir Abdul Rais*, Zainuriah Hassan, Ahmad Shuhaimi Abu Bakar, Muhammad Nazri Abdul Rahman, Yusnizam Yusuf, Muhamad Ikram Md Taib, Abdullah Fadil Sulaiman, Hayatun Najihah Hussin, Nagai Keiji, Mohd Fairus Ahmad, Akimoto Yuka, Shoji Dai</i>	D3
12:15 pm	Fabrication Process of InGaAs-Based Nanodiode Array using Electron-Beam Lithography Technique <i>Shahrir R. Kasjoo*, Arun K. Singh</i>	D4
12:30 pm	Sensitivity of Nickel Oxide Nanoflakes Layer on EGFET Based pH Sensor <i>Dauda Abubakar*, Naser M. Ahmed, Shahrom Mahmud, Fayroz A. Sabah, Abdullahi Hassan Abdullahi</i>	D5
12:45 pm	UV Photodetector Based on P-N Junction of Nickel Oxide Thin Films and n-Type Silicon Prepared by Thermal Oxidation <i>Ahlaam T. Nomaan*, Naif H. Al-Hardan, Naser M. Ahmed, Ng Sha Shiong, Azlan Abdul Aziz</i>	D6

<b>PARALLEL SESSION 1B</b> <b>TOPIC B: OPTICAL and ELECTRONIC MATERIALS</b> (Pink Flamingo)  Chair: Dr. Quah Hock Jin		
Time	Title/Presenter	ID
11:30 am	Formation of Fe, Pt and (Pt@Fe) Ultra Fine Metal Nanoparticles in Different Solution Polarity Prepared by Nd-YAG Pulsed Laser <i>INVITED TALK: Sabah M. Thahab*, Abbas H. Abo Nasria, Saja Hussain</i>	OE1
11:45 am	Structural and Magnetic Properties of Cu-Substituted Ni Ferrite Prepared by Pulsed Laser Depositions <i>Ali A. Ati*</i>	OE2
12:00 pm	Characterization of CuO/n-Si pn Junction Synthesized by Successive Ionic Layer Adsorption and Reaction Method <i>Adel H. Omran Alkhayatt*, Asala H. Ali, Hassan Hadi Ali Al Alak</i>	OE3
12:15 pm	Influence of Platinum Nanoparticles on the Catalytic Activities of Proton Exchange Membrane Fuel Cell <i>Mustapha Isah*, Sib K. Goshal, Aliyu I. Kabiru</i>	OE4
12:30 pm	Photodiode Device Utilizing WS <sub>2</sub> Nanosheet Prepared by Ultrasonic Spray Pyrolysis <i>Nabilah Alias*, Nurul Ain Abd Malek, Akrajas Ali Umar</i>	OE5
12:45 pm	Synthesis and Characterizations of Few Layer WS <sub>2</sub> Nanosheet Using Ultrasonic Pyrolysis <i>Nurul Ain Abd Malek*, Nabilah Alias, Akrajas Ali Umar</i>	OE6

**ORAL SESSION**  
**SESSION 2**  
**DAY 1: 29<sup>th</sup> APRIL 2019 (MONDAY)**

<b>PARALLEL SESSION 2A</b> <b>TOPIC C: ORGANIC and POLYMERIC MATERIALS</b> (Flamingo Ballroom)  Chair: Assoc. Prof. Dr. Nor Aziyah Bakhari		
Time	Title/Presenter	ID
2:30 pm	Synthesis and Characterization of Polypyrrole-Polyethylenimine Nanocomposite and Its Application of Nickel Ions Removal from Aqueous Solution <i>Abdullahi Haruna Birniwa*, Abdulsalam Salisu Abubakar, Habibun Nabi Muhammad Ekramul Mahmud</i>	OP1



2:45 pm	Development of Novel Synthesis Method for Silver Nanoparticles using Benzene Thiol and Disulfide Derivatives Bearing Triazine Group and Their Catalyst Application <i>Rafia Usman Khan*</i> , Junichi Kurawaki	OP2
3:00 pm	HOMO-LUMO Energy Gap and Vibrational Spectra of Tetracene Molecule <i>Auwalu Baballe*</i> , Bello. Y. Idi	OP3
3:15 pm	An Assessment of The Effect of Structure Modification on Poly (3,4-Ethylenedioxy-Thiophene) Chain by End-Capping and Doping <i>Anang WM Diah*</i> , Clovia I Holdsworth, Joselito P. Quirino, Warwick Belcher	OP4
3:30 pm	Assessment the Impact of Iron Nanoparticles and Dry Yeast Extract on the Corn (Zea Maize L.) <i>Rasmi M. Hamad, Maath. M AL Abdaly, Omar H. Al-Rawi, Mustafa R. Al-Shaheen*</i>	OP5

PARALLEL SESSION 2B TOPIC D: PACKAGING TECHNOLOGY (Pink Flamingo)		
Chair: Dr. Rosfariza Radzali		
Time	Title/Presenter	ID
2:30 pm	Surface Interaction of Silver (Ag) Nano Particle in Electrically Conductive Adhesives for Electrical Performance <i>INVITED TALK: Ghazali Omar*</i>	PT1
2:45 pm	UV Modified Epoxy for LED Encapsulant <i>Lay Boon Cheah*</i> , Prabakaran Poopalan	PT2
3:00 pm	Europium and Dysprosium Ions Co-Doped White Light Luminescence Magnesium Sulfoborate Glasses for White LED <i>S.A. Dalhatu*</i> , Rosli Hussin, Bulus Ibrahim	PT3
3:15 pm	Chromaticity Properties of Curcuminoids Dye Nanofibers Prepared by Electrospinning for White Light Down-Conversion <i>Mahmood Shaikhhan Taeab Said Al Shafouri*</i> , Naser M. Ahmed <sup>1</sup> , Zainuriah Hassan, Munirah Abdullah Almessiere	PT4
3:30 pm	The Effect of Graphene Loading on Natural Rubber Latex/Graphene Stretchable Conductive Material <i>Wern Ming Che*</i> , Pei Leng Teh, Cheow Keat Yeoh	PT5

**ORAL SESSION  
SESSION 3  
DAY 1: 29<sup>th</sup> APRIL 2019 (MONDAY)**

**PARALLEL SESSION 3A  
TOPIC B: OPTICAL and ELECTRONIC MATERIALS  
(Flamingo Ballroom)**

Chair: Dr. Mohd Zaki Mohd Yusoff

Time	Title/Presenter	ID
4:15 pm	Perkin Elmer Lambda Series: UV-VIS Spectrophotometer with Flexible Sampling Accessories for Advanced Optical Characterization <i>Yee Khai Ooi*</i> , <i>Boon Chun Tan</i>	OE7
4:30 pm	The Influence of Synthesis Temperature on the Crystal Structure and Surface Morphology of $\beta$ -Ga <sub>2</sub> O <sub>3</sub> Nanostructures <i>Peeverga Rex Jubu*</i> , <i>Fong Kwong Yam</i>	OE8
4:45 pm	Morphological and Structural Characteristics of Porous GaN Fabricated by UV-Assisted Electrochemical Etching <i>N.S.M. Razali*</i> , <i>A.F.A. Rahim</i> , <i>R. Radzali</i> , <i>A. Mahmood</i> , <i>M.F.B Anuar</i>	OE9
5:00 pm	Role of NH <sub>4</sub> F Concentration in Enhancing the Physical Properties on TiO <sub>2</sub> Nanotube Arrays via Anodization Method <i>Najwa Ezira Ahmed Azhar*</i> , <i>Shafinaz Sobihana Shariffudin</i> , <i>Munirah Safiay</i> , <i>Rozina Abdul Rani</i> , <i>Mohamad Rusop Mahmood</i>	OE10
5:15 pm	Amazing Solution of NEXION 2000, ICPMS in Nanoparticles Analysis <i>Chady Stephan</i> , <i>Catrina Ng*</i>	OE11
5:30 pm	Microstructure Study of Calcium Manganese Oxide (CaMnO <sub>3</sub> ) as Perovskite Materials <i>Siti Nurhaziqah Abd Majid*</i> , <i>Afiqah Qayyum Ishak</i> , <i>Nik Aziz Nik Ali</i> , <i>Muhamad Zalani Daud</i> , <i>Hasiah Salleh</i> , <i>Nurhayati Ishak</i>	OE12

**PARALLEL SESSION 3B  
TOPIC A: DEVICES  
(Pink Flamingo)**

Chair: Dr. Irni Hamiza Hamzah

Time	Title/Presenter	ID
4:15 pm	Enhanced Performance of ZnO Nanowire Field Effect Transistors by AZO and Al Heterojunction Source/Drain Contacts <i>Nor Azlin Ghazali*</i> , <i>Martin Ebert</i> , <i>Maurits de Planque</i> , <i>Harold Chong</i>	D7



4:30 pm	Influence of Sn Dopant on ZnO Thin Film for Formaldehyde Gas Detection <i>Syafiqah Ishak*</i> , Shazlina Johari, Muhammad Mahyiddin Ramli	D8
4:45 pm	Photocatalytic Fuel Cell Based on Zinc Oxide Loaded Carbon Plate Photoanode for Simultaneous Photocatalytic Degradation of AZO Dyes and Electricity Generation <i>Yong Por Ong*</i> , Li Ngee Ho, Soon An Ong, Johar Banjuraizah, Abdul Haqi Ibrahim	D9
5:00 pm	D8 Discover for Semi-Conductor Application <i>George Tang*</i>	D10
5:15 pm	Improved Rectification Performance in Hybrid Structure of Self-Switching Device (SSD) and Planar Barrier Diode (PBD) in Near Terahertz Region <i>N.F. Zakaria*</i> , S.R. Kasjoo, Z. Zailan, M.M. Isa, M.K.M. Arshad, S. Taking	D11
5:30 pm	Effect of Post Heat Treatments on ITO/AgAl/ITO/p-Si Contacts <i>Aliyu Kabiru Isiyaku*</i> , Ahmad Hadi Ali, Nafarizal Nayan	D12

**ORAL SESSION  
SESSION 4  
DAY 2: 30<sup>th</sup> APRIL 2019 (TUESDAY)**

**PARALLEL SESSION 4A  
TOPIC B: OPTICAL and ELECTRONIC MATERIALS  
(Flamingo Ballroom)**

Chair: Dr. Ainorkhilah Mahmood

Time	Title/Presenter	ID
11:00 am	Novel Sensors Based on III-Nitrides and Porous Silicon <i>INVITED TALK: Giacinta Parish*</i> , Brett Nener, Adrian Keating	OE13
11:15 am	Rapid Reduction of Ultrathin Films of Graphene Oxide on Large-Area Silicon Substrate <i>Marianah Masrie*</i> , Siti Aishah Mohamad Badaruddin, Mohd Rofei Mat Hussin, Nik Mohamad Razali Mohd Nor, Jeremy Joe	OE14
11:30 am	Dye-Sensitized Solar Cell Utilizing Silver Doped Reduced Graphene Oxide Films Counter Electrode: Effect of Silver Nitrate Content on Its Performance <i>M.Y.A. Rahman*</i> , N. Mustafa, A.A. Umar	OE15
11:45 am	The Effect of Mn and Fe Substitution in LiCo <sub>0.9</sub> X <sub>0.1</sub> O <sub>2</sub> Cathode Materials <i>Nor Syamilah Syamimi Mohd Abdillih*</i> , Kelimah Elong, Norlida Kamarulzaman, Nurhanna Badar	OE16

12:00 pm	Effect of Li Doped in MgO on Band Gap Energy <b>Nor Fadilah Chayed*</b> , Nurhanna Badar, Kelimah Elong, Norlida Kamarulzaman	OE17
12:15 pm	Impact of Eu Nanoparticles Substitution for Ca Site in Bi(Pb)-2223 Cuprates Superconductor <b>E. S. Nurbaisyatul*</b> , H. Azhan, K. Azman, N. Ibrahim, S. F. Saipuddin	OE18
12:30 pm	Surface Morphology Studies on Laser Irradiated Target and Bi(Pb)SrCaCuO Thin Films <b>A.N. Jannah*</b> , S. A. Halim, H. Abdullah	OE19
12:45 pm	Synthesis of Metal Doped Mesoporous (001) Faceted Anatase Titanium Dioxide Nanoplate and Its Photocatalytic Activity Study <b>Siti Khatijah Md Saad*</b> , Akrajas Ali Umar	OE20

PARALLEL SESSION 4B TOPIC C: ORGANIC and POLYMERIC MATERIALS (Flamingo Ballroom) Chair: Dr. Azrinawati Mohd Zin		
Time	Title/Presenter	ID
11:00 am	Preparation of Novel Commercial Polyaniline/Shell Composites for Ammonia Detection <b>Muhammad Musa Jusoff Albar, Nurul 'Ain Jamion, Siti Nor Atika Baharin, Kavirajaa Pandian Sambasevam*</b>	OP6
11:15 am	Response of Coleus Blumei Potted Plants to the Shading and Spraying by Coconut Water <b>Haytham. M. M. SAlabdaly, Saad A. Mahmood, Omar H. Muslah Almohammed, Mustafa R. Al-Shaheen*</b>	OP7
11:30 am	Fabrication of Highly Stable Non-Volatile Memory Device Using Plasma-Polymerized Hexamethyldisiloxane Layers with Embedded Graphene Quantum Dots <b>Poh Choon Ooi, Mohd Farhanulhakim Mohd Razip Wee*</b> , Afifuddin Husairi Hussain, Chang Fu Dee, Azrul Azlan Hamzah	OP8
11:45 am	Long Chain Imidazolium Ionic Liquids as Template in the Formation of Mesoporous Silica Nanospheres <b>Eleen Dayana Mohamed Isa*</b> , Haslina Ahmad, Mohd Basyaruddin Abdul Rahman	OP9
12:00 pm	Investigation on Electrical and Structural Properties of Multilayer OLED Structure Fabricated using Spin-Coating Technique <b>Nurul Afiqah Nor Ismail*</b> , Nurjuliana Juhari, Safizan Shaari, Norhayati Sabani, Mohd Fairus Ahmad <sup>1</sup> , Nor Farhani Zakaria	OP10
12:15 pm	Measurement of Mass Attenuation Coefficient of Polyvinyl Alcohol (PVAL) as Breast Tissue Equivalent Material in the Photon Energy Range of 15.77-25.26 keV <b>Franca Oyiwoja Okoh*</b> , Norlaili Ahmad Kabir, Mohd Fahmi Mohd Yusof	OP11



12:30 pm	Excitated State Conformational Relaxation of Space-Through Charge Transfer Thermally-Activated Delayed Fluorescence <b>Kai-Lin Woon*</b> , Chih-Lun Yi, Kuan-Chung Pan, Marc K. Etherington, Chung-Chih Wu, Ken-Tsung Wong, Andrew P. Monkman	OP12
12:45 pm	A Simplest, Cheapest and Most Efficient Technique to Enhance the Performance of Hybrid Solar Cell: Deposition of Purple Seaweed as Photosensitizer Salmah Mohd Ghazali, <b>Hasiah Salleh*</b> , Ahmad Nazri Dagang, Nik Aziz Nik Ali, Nurhayati Ishak, Nurul Huda Kamaruzaman, Mohd Sabri Mohd Ghazali, Mohd Norizam Md Daud, Nora'aini Ali	OP13

**ORAL SESSION  
SESSION 5  
DAY 2: 30<sup>th</sup> APRIL 2019 (TUESDAY)**

**PARALLEL SESSION 5A  
TOPIC A: DEVICES  
(Flamingo Ballroom)**  
  
Chair: Dr. Alhan Farhanah Abd Rahim

Time	Title/Presenter	ID
2:30 pm	Nano-Porous GaN Waveguiding in High Power Blue Edge Emitting Laser Diodes <b>Ryan Anderson*</b> , Dan Cohen, Phillip Chan, Shlomo Mehari, Tal Margalith, Shuji Nakamura, James S. Speck, Steven P. DenBaars	D13
2:45 pm	Ray Tracing of Light Trapping Schemes in Thin Crystalline Silicon for Photovoltaics <b>Mohd Zamir Pakhuruddin*</b>	D14
3:00 pm	Effect of Ultrasonic Agitation and Spinning Speed on the Photovoltaic Properties of Inverted Organic Solar Cell using Solution-Dispered Copper Iodide as Anode Buffer Layer <b>Farah Liyana Khairulaman*</b> , Chi Chin Yap	D15
3:15 pm	Broadband Anti-Reflection in Black Silicon Fabricated by Two-Step Silver-Assisted Wet Chemical Etching for Photovoltaics <b>Auwal Abdulkadir*</b> , Nur Afidah Md. Noor, Azlan Abdul Aziz, Mohd Zamir Pakhuruddin	D16
3:30 pm	Enhance Charge Transfer Resistance in Fibrous CuPt Bimetallic Counter Electrode in DSSCs Devices <b>Muhamad Adam Ramli*</b> , Siti Khatijah Md Saad, Elvy Rahmi Mawarnis, Mohd Yusri Abd Rahman, Akrajas Ali Umar	D17

<b>PARALLEL SESSION 5B</b> <b>TOPIC B: OPTICAL and ELECTRONIC MATERIALS</b> (Pink Flamingo)		
Chair: Dr. Lyly Nyl Ismail		
Time	Title/Presenter	ID
2:30 pm	Spin Coated with Different Additives Value Thin Films: Physical, Structural, Optical and Electrical Characteristics <i>R.A. Rahman*</i> , N.S.M. Kamar, M.A. Zulkefle, Z. Mohamad, S.H. Herman, R.I. Alip	OE21
2:45 pm	Visible Light Photocatalysis Using Nb-Doped TiO <sub>2</sub> Nanoparticles Synthesized via Facile Sol-Gel Method <i>S. Munirah*</i> , R.A. Rani, N.E.A. Azhar, N.A.M. Asib, Z. Khusaimi, F. Hamzah, M. Rusop	OE22
3:00 pm	Electro-Optic Coefficient of Barium Titanate (BaTiO <sub>3</sub> ) <i>N.Amira Razilam*</i> , Prabakaran Poobalan, W.Syaibah W. Ramli	OE23
3:15 pm	Al Doped LiNi <sub>0.6</sub> Co <sub>0.3-x</sub> Ti <sub>0.1</sub> Al <sub>x</sub> O <sub>2</sub> via Combustion Method <i>Wan Aida Hazwani Wan Azizan*</i> , Muhd Firdaus Kasim, Roshidah Rusdi, Kelimah Elong	OE24
3:30 pm	Photometric Detection of Heavy Metals Using Biosynthesized Gold Nanoparticles <i>Adamu Ibrahim Usman*</i> , Azlan Abdul Aziz	OE25

**ORAL SESSION**  
**SESSION 6**  
**DAY 2: 30<sup>th</sup> APRIL 2019 (TUESDAY)**

<b>PARALLEL SESSION 6A</b> <b>TOPIC B: OPTICAL and ELECTRONIC MATERIALS</b> (Flamingo Ballroom)		
Chair: Dr. Mohd Muzafa Jumidali		
Time	Title/Presenter	ID
4:15 pm	Deposition of Calcium Carbonate Thin Film by Chemical Vapour Deposition Method <i>N. H. Sulimai*</i> , Z. Khusaimi, M. J. Salifairus, M. F. Malek, Salman Alokayan, Haseeb Khan, M. Rusop	OE26
4:30 pm	The Effect of Hydrogen Concentration on Chemical Vapour Deposition Synthesis of $\beta$ -Ga <sub>2</sub> O <sub>3</sub> Nanostructures <i>Pevega Rex Jubu*</i> , Fong Kwong Yam	OE27



4:45 pm	Fabrication and Physical Characterization of Electrospun PVA-ZnO Fibers with Different Deposition Distance <i>M.A. Zulkefle*, R.A. Rahman, K.A. Yusof, Z. Zulkifli, S.H. Herman</i>	OE28
5:00 pm	Investigation the Characteristics of ZnO Multilayer Structure for Ionization Radiation Detection <i>Amal Mohamed Ahmed Ali*, Naser M. Ahmed, Norlaili A. Kabir, Sabah M. Mohammad</i>	OE29

<b>PARALLEL SESSION 6B</b> <b>TOPIC B: OPTICAL and ELECTRONIC MATERIALS</b> (Pink Flamingo)  Chair: Dr. Sabah M. Mohammad		
Time	Title/Presenter	ID
4:15 pm	Investigation on the Ohmic Characteristic of Ni/Ti/4H-SiC <i>Muhammad Idzdihar Idris*, Zul Atfyi Fauzan Mohammed Napiah</i>	OE30
4:30 pm	Synthesis of Boron Nitride Doped Polypyrrole Hybrid Nanocomposite for Photocatalytic Degradation of 2-Chlorophenol from Aqueous Solution <i>Faizah Mohammad Yunus, Siti Nor Atika Baharin*</i>	OE31
4:45 pm	Ballistic Performance Evaluation of Aluminium Plate Impact by Fragment Simulating Projectile <i>M.R. Aziz*, M.F. Zainol</i>	OE32
5:00 pm	Effect of Laser Ablation on Light Scattering <i>Hayma Chandran*, Prabakaran Poopalan</i>	OE33

<b>POSTER SESSION</b>		
<b>DAY 1 and 2: 29<sup>th</sup> APRIL 2019 (MONDAY) and 30<sup>th</sup> APRIL 2019 (TUESDAY)</b> (Foyer of Flamingo Ballroom)		
	<b>Title/Presenter</b>	<b>ID</b>
1	The Effect of Ni and Cu Catalysts on the Growth of Graphene Under Different Ethanol Flow Rates Using Atmospheric Pressure Chemical Vapor Deposition  <i>Raed Abdalrheem*</i> , F.K. Yam, Abdul Razak Ibrahim, H.S. Lim, K.P. Beh, Ammar A. Oglat <sup>1</sup> , Khaled M Chahrour, Sabah M. Mohammad, M.Z. Mat Jafri	P01
2	Fabrication of SiNWs-FET Nanostructure via Atomic Force Microscopy Lithography  <i>Nurain Najihah Alias*</i> , Khatijah Aisha Yaacob, Cheong Kuan Yew	P02
3	Dependence of V <sub>2</sub> O <sub>5</sub> Nanorods Properties on Substrate Type Prepared by Simple Hydrothermal Method  <i>N.M. Abd-Alghafour*</i> , Ghassan Adnan Naeem, Sabah M. Mohammad	P03
4	Effect of Post-Annealing in Oxygen Environment on ITO Thin Films Deposited Using RF Magnetron Sputtering  <i>N.A. Hamzah*</i> , R.I.M. Asri, M.A. Ahmad, Mohd Ann Amirul Zulfiqal Md Sahar, Z. Hassan	P04
5	Optimization of Titanium Dioxide Layer Fabrication Using Doctor Blade Method in Improving Efficiency of Hybrid Solar Cells  <i>Nurul Huda Kamarulzaman*</i> , Hasiah Salleh, Ahmad Nazri Dagang, Mohd Sabri Mohd Ghazali, Nurhayati Ishak, Zakiyah Ahmad	P05
6	Application of Conjugated Chlorophyll From Natural Dye ( <i>Imperata Cylindrica</i> ) In Hybrid Dye Sensitized Solar Cell for Third Generation Solar Energy  <i>Nurhayati Ishak*</i> , Hasiah Salleh, Salisa Abdul Rahman, Ahmad Nazri Dagang, Nurul Huda Kamarulzaman, Zakiyah Ahmad, Siti Nurhaziqah Abd Majid	P06
7	Synthesis and Characterization of Silica Aerogel from Rice Husk with Ambient Pressure Drying Method  <i>Nor Fadilah Mohamad, Noor Hidayu Adcul Rani, Omar Syah Jehan Elham*</i> , Siti Hajar Anaziah Muhamad, Siti Afifah Muda	P07
8	Effect of Varying Thermal Annealing Temperature on the Characteristics of Lower and Higher Mg-Doped GaN  <i>A.M. Hanafiah*</i> , Z. Hassan, W.F. Lim, N. Ibrahim, E.A. Alias, M.A. Ahmad, N.A. Hamzah, R.I.M. Asri	P08
9	Cytotoxicity Effect of Zinc Oxide Nanoparticles with Different Particle Sizes on Human Endothelial EA.hy926 Cell Line  <i>Abdulsalam Abuelsamen*</i> , Shahrom Mahmud, Noor Haida Mohd Kaus, Nur Mariam Kamaruddin, Omar F. Farhat, Fouad Saleih R. Al-Suede, Amin Malik Shah Abdul Majid	P09
10	Synthesize of Anodic TiO <sub>2</sub> Nanotube Arrays Annealed at 700°C for UV Photodetection  <i>Khaled M. Chahrour*</i> , F. K. Yam, Raed Abdalrheem	P10

	<b>Title/Presenter</b>	<b>ID</b>
11	Comparative Studies between Porous Silicon and Porous P-Type Gallium Nitride Prepared Using Alternating Current Photo-Assisted Electrochemical Etching Technique <i>S.N. Sohimee*</i> , Z. Hassan, Naser M. Ahmed, R. Radzali, H.J. Quah, W.F. Lim	P11
12	Electrode-Less Photo-Assisted Etching of p-type and n-type GaN <i>N. Ibrahim*</i> , M. Ikram Md Taib, S.N. Waheeda, E.A. Alias, N. Zainal	P12
13	Effects of Different Amounts of Surfactant on Characteristics of Sol-Gel Dip Coated Gallium Nitride Thin Films <i>Maizatul Akmam Ab Hamid*</i> , Ng Sha Shiong	P13
14	UV-Blue Light Conversion Using Dyes Polymeric Materials <i>Alaa Falih Ismael*</i>	P14
15	Effect of GaN Nucleation Layer Temperature on Structural and Morphological Properties of UD-GaN Template Grown on PSS <i>M.A. Ahmad*</i> , N.A. Hamzah, R.I.M. Asri, N. Zainal, Z. Hassan	P15
16	Photocatalytic Performance of ZnO and Mn Doped ZnO Nanomaterials via Sol-Gel Method <i>Muhd Firdaus Kasim*</i> , Ahmad Khairul Azfar Bin Darman, Hartini Ahmad Rafea	P16
17	Band Gap Narrowing of Mg <sub>1-x</sub> Cu <sub>x</sub> O Nanostructured Materials <i>Nurhanna Badar*</i> , Norlida Kamarulzaman, Ri Hanum Yahaya Subban, Nor Fadilah Chayed, Kelimah Elong	P17
18	Morphological and Structural Properties of Sol-Gel Derived ZnO Thin Films Spin-Coated on Different Substrates <i>Nabihah Kasim*</i> , Zainuriah Hassan, Way Foong Lim, Sabah M. Mohammad, Hock Jin Quah	P18
19	Morphological and Particle Size Studies of LiCo <sub>0.3</sub> Ni <sub>0.3</sub> Mn <sub>0.3</sub> Ti <sub>0.1-x</sub> Sn <sub>x</sub> O <sub>2</sub> Cathode Materials <i>Kelimah Elong*</i> , Norlida Kamarulzaman, Nor Fadilah Chayed, Nurhanna Badar, Nor Syamilah Syamimi Mohd Abdillih	P19
20	Reaction Temperature Effect on Pullulan Mediated Zinc Oxide Synthesis and Its Photocatalytic Activity <i>Eleen Dayana Mohamed Isa*</i> , Nurfatehah Wahyuni Che Jusoh, Roshasnorlyza Hazan, Kamyar Shameli	P20
21	The Growth of AlN Single Layer on Sapphire at Low Pressure Using Metalorganic Chemical Vapor Deposition (MOCVD) <i>Mohd Ann Amirul Zulfiquil Md Sahar*</i> , Zainuriah Hassan, Way Foong Lim, M.E.A. Samsudin, A.M. Hanafiah, Yusnizam Yusuf, M.A. Ahmad, Nur Atiqah Hamzah, Rahil Izzati Mohd Asri	P21
22	Synthesis and Characterization of Fe <sub>3</sub> O <sub>4</sub> @Citric Acid Nanoparticles <i>Mohammed Ali Dheyab*</i> , Azlan Abdul Aziz, Mahmood S Jameel	P22
23	Effect of Thickness and Doping Concentration of Aluminium to the Fabrication of Al-Doped ZnO <i>Mohd Hanapiah Abdullah, Mohd Muzafa Jumidali*</i> , Nur Yasmin binti Yuseri, Syarifah Adilah Mohamed Yusoff	P23

	<b>Title/Presenter</b>	<b>ID</b>
24	Characteristics of Cu-Doped ZnO Films Prepared Using Magnetron Co-Sputtering <b>A.S. Yusof*</b> , Z. Hassan	P24
25	Porosification Analysis on the Effect of Resistivity Dependence on n-Type Pulsed Porous Silicon Nurul Hanida Abd Wahab, Alhan Farhanah Abd Rahim, Ainorkhilah Mahmood, <b>Noorezal Atfyinna Mohammed Napiah*</b> , Rosfariza Radzali, YushamdanYusof	P25
26	Effects of Post-Deposition Annealing Time in Forming Gas Ambient on Y <sub>2</sub> O <sub>3</sub> Films Deposited on Silicon Substrate <b>Hock Jin Quah*</b> , Kuan Yew Cheong, Zainuriah Hassan, Way Foong Lim	P26
27	Anti Microbial Activity of Silver Nanoparticles Using Mariposa Christia Vespertilionis Leaves as Reducing Agent Mohamed Syazwan Osman, Yusfariza Atiqa Mustapha, Mohd Azahar Mohd Ariff, <b>Muhammad Firdaus Othman*</b> , Zakaria Ismail, Junaidah Jai	P27
28	High-k LaCeO for Passivation of Si Substrate <b>Way Foong Lim*</b> , Kuan Yew Cheong, Zainovia Lockman, Zainuriah Hassan, Hock Jin Quah	P28
29	Influence of the Silicon Doping Towards Porous Structure Formation Nurul Hanida Abd Wahab, Alhan Farhanah Abd Rahim, Ainorkhilah Mahmood, <b>Siti Hajar Mohmad Salleh*</b> , Rosfariza Radzali, YushamdanYusof	P29
30	Reactive Sputtering Growth of Indium Nitride Thin Films on Flexible Substrate Under Different Substrate Temperatures S.A. Osman, <b>S.S. Ng*</b> , Z. Hassan	P30
31	Biogenic Silver Nanoparticles From Microwave Assisted Extraction Graptophyllum Pictum Leaves Mohamed Syazwan Osman, Muhammad Ismail, Khairunnisa Khairuddin, <b>Nurul Nazwa Mohammad*</b> , Norfezah Md Nor*, Junaidah Jai	P31
32	Role of RF Magnetron Sputtering Power on Optical and Electrical Properties of ITO Films on Soda-Lime Glass Substrates <b>R.I.M.Asri*</b> , N.A. Hamzah, M.A. Ahmad, M. Ikram Md Taib, S.M.S. Sahil, Z. Hassan	P32
33	A Review of Concrete Based Shielding Material for Gamma Ray <b>Nur Maizatul Azra Mukhtar*</b>	P33
34	Third Order Optical Nonlinearity of Linear Fused Ring Dichloro-Substituent Chalcone Isomers <b>Mundzir Abdullah*</b> , Dian Alwani, Zainuri, Suhana, Ibrahim Abdul Razak, Sabah M. Mohammad	P34
35	Corrosive and Mechanical Properties of Polyester Primer Coatings Reinforced Graphene on Carbon Steel Plate via Ultrasonication Method <b>Hasniraaiman Abdul Hamid*</b> , Zuliahani Ahmad, Mohd Azlan Mohd Ishak, Ahmad Faiza Mohd, Azniwati Abd Aziz	P35





	Title/Presenter	ID
36	Performance Study of Watermelon Rind as Natural Coagulant for the Wastewater Treatment <b>Arbanah Muhammad*</b> , Meor Muhammad Hafiz Shah Buddin, Ahmad Ramli Rashid i, Azmi Roslan, Salmi Nur Ain Sanusi, Siti Hajar Anaziah Muhamad	P36
37	Improvement of Hydrophobicity and Properties of Jackfruit Rind Based Cellulose Reinforced Gelatine Biodegradable Film Nur Syazwani Anuar, <b>Wahida Abdul Rahman*</b> , Noor Aishatun Majid	P37
38	The Effect of Needle Diameter on Optical Properties and Morphological Structure of La <sub>2</sub> O <sub>3</sub> -PVA Phosphor Nanofibers Using Electrospinning Method <b>Hasma A. Wahab*</b> , Z. Hassan, Naser M. Ahmed	P38
39	Fiber Orientation on Flexural Properties of Glass Fiber Reinforced Epoxy Composite Laminates <b>Haslan Fadli Ahmad Marzuki*</b> , Engku Ahmadhilmil Engku Ubaidillah, Sivakumar A/I Sivarasa, Mohd Syamsul, Mariatti Jaafar	P39
40	The Influence of Alkanolamine in the Formation of Pt Nano-and Microstructure Mahayatun Dayana Johan Ooi, Azlan Abdul Aziz, Ainorkhilah Mahmood, <b>Nor Aziyah Bakhari*</b>	P40
41	Luminescence Characteristics of Hybridized Polyfluorene <b>Farah Hayati Ahmad*</b> , Zainuriah Hassan, Naser Mahmoud Ahmed, Hock Jin Quah, Way Foong Lim	P41
42	Facile Fabrication of Wearable Polymeric Silver Nanowires Based Antenna Mohamed Syazwan Osman, Nurul Haffiza Abd Halim, Tarmizi Ali, <b>Mohd Zaki Mohd Yusoff*</b> , Ahmad Rashidy Razali, Aslina Abu Bakar	P42
43	The Effect of Different Type of Anti-Reflective Coating on the Properties of Solar Cell <b>Rosfariza Radzali*</b> , Noor Syazwana Mohamed Zulkhairi, Alhan Farhanah Abd Rahim, Ainorkhilah Mahmood, Aslina Abu Bakar	P43
44	Wearable Heart Rate and Body Temperature Monitoring for Healthcare <b>Aslina Abu Bakar*</b> , Sarminadira Shaikh A. Rahim, Ahmad Rashidy Razali, Emilia Noorsal, Rosfariza Radzali, Alhan Farhanah Abd Rahim	P44
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46	A Plantar Pressure Sensor Development in Distinguishing Diabetic Neuropathy Individuals – A Pilot Study <b>Nor Salwa Damanhuri*</b> , Nor Azlan Othman, Wan Fatimah Azzahra Wan Zaidi, Samihah Abdullah	P46
47	Investigation of Arabic Gum Optical Properties as UV-Blue Light Down Conversion for Light Emitting Diode Application <b>Hayder Salah Naeem*</b> , Naser M. Ahmed, Sabah M. Mohammad, M. Al Shafouri	P47

	<b>Title/Presenter</b>	<b>ID</b>
48	Internet of Things (IOT) Based Smart Shop (S-Shop) System with RFID Technique <b>Samihah Abdullah*</b> , Amerrudin Daud, Nor Shahanim Mohamad Hadis, Shabinar Abd Hamid, Solahuddin Yusuf Fadhlullah, Nor Salwa Damanhuri	P48
49	IOT Based Patient Monitoring System using Sensors to Detect, Analyse and Monitor Three Primary Vital Signs <b>Nor Shahanim Mohamad Hadis*</b> , Muhammad Nazri Amirmazarullah, Muhammad Mahdi Jafri, Samihah Abdullah	P49
50	On the Investigations of Chip-on-Board Ultra-Violet Sensor by Screen Printing of GaN Powder <b>Khi Poay Beh*</b> , Raed Abdalrheem, Fong Kwong Yam, Zainuriah Hassan	P50
51	Transfer Matrix Mathematical Method for Evaluation the DBR Mirror for Light Emitting Diode and Laser <b>Alaa Abdulwahid Sharhan*</b>	P51
52	Efficiency Droop of InGaN/GaN LED with Different Indium Composition <b>M.E.A. Samsudin*</b> , E.A. Alias, M. Iza, J.S. Speck, S.P. Denbaars, S. Nakamura, N. Zainal	P52
53	Tensile Properties of Hybrid Pomegranate/Moringa Peel Reinforced Polyester Composites <b>Ahmad Ramli Bin Rashidi*</b> , Meor Muhammad Hafiz Shah Buddin	P53
54	Automated Asian Fruit Grading System Using Stereo Vision System <b>Anith Nuraini Abd Rashid*</b> , Faizal Amir, Siti Azura Ramlan, Nur Athiqah Harron, Aini Hafizah Mohd Saod	P54
55	An Investigation on FR4 as a Based Material for Ti/Au and Cu/Au Evaporated Fabrication for DNA Biosensor Application <b>Irni Hamiza Hamzah*</b> , Alhan Farhanah Abd Rahim, Aida Zulia Zulhanip, Azman Ab Malik	P55
56	Mechanical Agitation Effect on Synthesize Polystyrene Nanosphere Properties for Ammonia Detection <b>Mohd Nashaain Nordin*</b> , Ahmad Aswad Mahaidin, Mohd Syamsul	P56
57	Investigation of Light Trapping Mechanism of Silicon Solar Cell Performance Utilizing Silvaco TCAD <b>A.F.A. Rahim*</b> , M. Shamlan, N.S.M. Razali, R. Radzali, A. Mahmood, I.H. Hamzah	P57
58	Characteristics of InGaN Based Red LED Epiwafer <b>N. Zainal*</b> , Abdullah I. Alhassan, S. Nakamura, S.P. Denbaars, J.S. Speck	P58
59	Enhancing Performance of Porous Si-Doped GaN Based MSM Photodetector Using 50 Hz ACPEC <b>Ainorkhilah Mahmood*</b> , Zainuriah Hassan, Alhan Farhanah Abd Rahim, Rosfariza Radzali, Mahayatun Dayana Johan Ooi, Naser M. Ahmed	P59



	<b>Title/Presenter</b>	<b>ID</b>
60	Agarose-Chitosan Based Hydrogel Waveguide Matrix: Comparison Synthesis and Performance for Optical Leaky Waveguide (OLW) Biosensor  <i>Siti Rabizah Makhsin*</i> , Peter Gardner, Patricia J. Scully	P60
61	Voice Commands Intelligent System (VCIS) for Smart Home Applications Using Mel-Frequency Cepstral Coefficient and Linear Prediction Coefficients  <i>Yusnita Mohd Ali*</i> , Nor Fadzilah Mokhtar, Emilia Noorsal, Aida Zulia Zulhanip, Asmalia Zanal, Siti Zubaidah Md Saad, Nur Aliza Abdul Samad	P61
62	Simulation of AIN Heterostructure Photodetector Device by Using Silvaco TCAD Software  <i>Mohd Hanapiah Abdullah, Mohd Bukhari Md Yunus*</i> , Muhammad Amirul Aiman Mohd Noor, Mohd Zaki Mohd Yusoff, Syarifah Adilah Mohamed Yusoff	P62
63	Fabrication and Characterization of Light Emitting Diode Based on n-ZnO Nanorods Grown via A Low-Temperature Method on p-GaN  <i>Sabah M. Mohammad*</i> , Nabee M. Abd-Alghafour, Zainuriah Hassan, Naser M. Ahmed, Amal Mohamed Ahmed Ali, Raed Abdalrheem, Mundzir Abdullah	P63
64	Effect of Annealing Time to the Electrical Properties of MIS (Al/PMMA:TiO <sub>2</sub> /P3HT) Devices  <i>Lyly Nyl Ismail*</i> , Nur Hakimah Md Mazlan, Norsabrina Sihab	P64
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66	Study of the Effect of Injection Currents on White Light Emission of Ce-Doped YAG Phosphor Powder Prepared by Microwave Combustion  <i>Husnen R. Abd*</i> , Z. Hassan, Naser M. Ahmed	P66
67	Comparison Between Vertical-Stand Packaging and Planar-Mounted Packaging for GaN on GaN LED  <i>E.A. Alias*</i> , M.E.A. Samsudin, N. Zainal, M. Iza, Abdullah I. Hassan, S.P. Denbaars, J.S. Speck, S. Nakamura	P67
68	Investigation of Different Fuel Sources Used in Microwave Induced Combustion Synthesis on the Luminescence Property of YAG Phosphor  <i>Khai Shenn Lau*</i> , Zainuriah Hassan, Way Foong Lim, Hock Jin Quah, Naser M. Ahmed, Husnen R. Abd	P68

**BOOTH PARTICIPANT**

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4.	PERKIN ELMER SDN BHD	4
5.	RAITH NANOFABRICATION	5
6.	ASEPTEC SDN BHD	6
7.	CREST ANALYTIC SDN BHD	7
8.	DKSH TECHNOLOGY SDN BHD	8
9.	GAIA SCIENCE (M) SDN BHD	9
10.	LAB SCIENCE SOLUTION SDN BHD	10
11.	LEADER TECHNOLOGY SCIENTIFIC (M) SDN BHD	11
12.	NEXUS ANALYTICS SDN BHD	12
13.	RGS CORPORATION SDN BHD	13
14.	ULTECH CO. LTD.	14
15.	ULVAC MALAYSIA SDN BHD	15
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# ADVERTISEMENTS



## TOTAL INNOVATIVE LABORATORY SOLUTIONS



### XRD D8 DISCOVER



### Thin Film Analysis for:



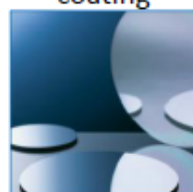
Patterned  
wafer



Antireflection  
coating



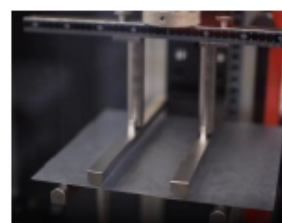
LED epitaxial  
multilayers



Multilayers  
Nanostructure

## Zwick / Roell

### zwickiLine Materials Testing Machines



4-point flexure test  
on solar modules

## INNOLAB ENGINEERING SDN BHD

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thermoscientific

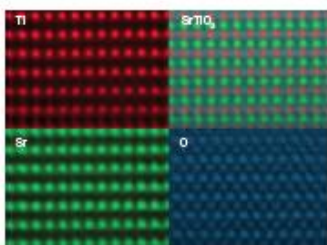
# Themis Z S/TEM

The ultimate in optical performance, reproducibility and flexibility

In order for scientists to advance their understanding of complex materials and develop innovative new materials, they must be able to correlate form and function, resolve in space, time and frequency and investigate with robust, precise instrumentation. The Thermo Scientific™ Themis Z™ S/TEM is a next-generation, ultra-high resolution, aberration corrected, scanning transmission electron microscope delivering the ultimate optical performance and flexibility with unprecedented reproducibility.



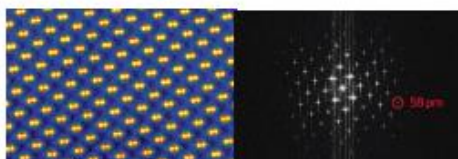
A schematic of the Super-X™ geometry including 4 SDD detectors arranged symmetrically around the sample and the objective lens pole pieces. This schematic is not to scale.



Atomic resolution EDS Mapping of [110] oriented SrTiO<sub>3</sub> at 200kV using the Thermo Fisher Scientific Dual-X detector configuration.



HAADF STEM image of a graphene lattice imaged at 80kV.



Raw HAADF STEM image of [211] oriented GaN at 800kV.



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Find out more at [thermofisher.com/EM-Sales](http://thermofisher.com/EM-Sales)

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 Optical Table   Motion Control	 Light Analysis   Opto Mechanics	 Oscilloscope   Oscilloscope	
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 Patchcord	 Adapter	 Cleaner	<p><b>KUMPULAN ABEX SDN BHD</b></p> <p><b>SHAH ALAM (HQ)</b>                  Lot 2-6, Jalan SU/6A,                  Lion Industrial Park,                  Section 26,                  40400 Shah Alam,                  Selangor, Malaysia                  ☎ 603 5192 2898                  ☎ 603 5192 2633                  ✉ sales@kabex.com.my</p> <p><b>PENANG BRANCH</b>                  Office 307                  73-3-1, IDeal@The One                  Jalan Mahsuri,                  Bayan Lepas,                  11950 Penang.                  ☎ +6(04) 648 5573 /                  5574 / 5575</p>







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- TGA
- EA
- DMA
- TMA



STA 8000



DSC 8000/8500



TGA 8000™



DMA 8000

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- TG-MS
- TG-GC/MS
- TG-IR-GC/MS



TG-IR



TG-MS



TG-GC/MS



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<u>Automation Productivity</u>						
<u>Nano-engineering</u>						
<u>Imaging Inspection</u>						
<u>Metrology Navigation</u>						

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NANOTECHNOLOGY
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**NETZSCH**



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TG 209 F1 Libra

TMA 402 F1 Hyperion

DIL 402 Expedis

DMA 242 E Artemis

LFA 467



STA 449 F1 Jupiter

**Contact Us**

Tel: 03-7845 1111 | Hp: 012- 407 1055 (Ms. Shanley Ang)  
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## Rigaku

Thermal Analysis

Thermo plus EVO2



### SERON TECHNOLOGIES

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 E-Mail : [info@rgscnet.com](mailto:info@rgscnet.com)  
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 Fax : +603- 8943 9637

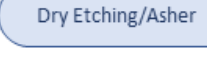
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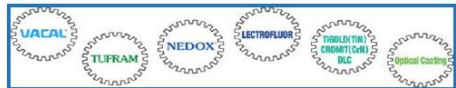
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- ✓ Optical Film
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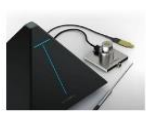
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>Shahrizal Shabri  
 +6012-601 7157  
 shahrizal\_shabri@ulvac.com

>Takao Nakamura  
 +6011-2512 7157  
 takao\_nakamura@ulvac.com



Materials Test System



Thermal Conductivity Analyser



Glove Box



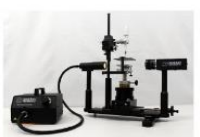
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WinTech Nano is a world leading independent analytical services laboratory equipped with world-class analytical instruments and team of experts. Our 24/7 services lab ensure fast turn around time and provide reliable results.

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- 2) Decapsulation / Deprocessing layer by layer
- 3) Fault Localization - Thermal/ OBIRCH / PEM
- 4) Ion Milling cross-section Polisher (CP)
- 5) Field Emission Scanning Electron Microscope (FESEM)
- 6) Focus Ion Beam (FIB)

#### Physical Failure Analysis

- 1) Focus Ion Beam (FIB)
- 2) Transmission Electron Microscope (TEM)

#### Surface & Chemical Analysis Division

- 1) Atomic Force Microscope (AFM)
- 2) Fourier Transform Infrared (FTIR)
- 3) X-ray Photoelectron Spectroscopy (XPS)
- 4) Auger Electron Spectroscopy (AES)
- 5) Time of Flight ion mass spectrometry (TOF-SIMS)
- 6) Dynamic SIMS (D-SIMS)

XPS (PHI Quantera II)



TEM (FEI Tecnai F20)



TEM (Thermo Fisher Talos)



VP-FESEM (Hitachi SU5000)



FIB (Zeiss Crossbeam 550)



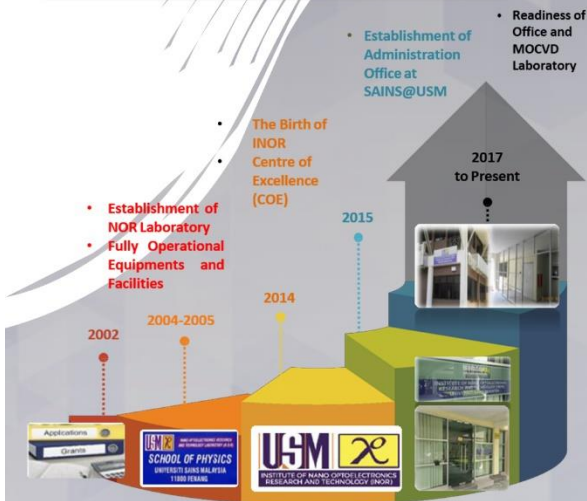
TOF-SIMS (Ion TOF - ToF SIMS 5)







**TIMELINE FOR ESTABLISHMENT OF INOR**



As a Centre of Excellence (CoE) in Research, Institute of Nano Optoelectronics Research and Technology (INOR) offers research, services, and academic programs in the field of nanotechnology and optoelectronics.

**NICHE RESEARCH AREAS**

- Nano and Advanced Materials
- Light Emitting Diode/ LASER
- Sensor
- Solar Cell
- Power Devices

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2. Equipment for Surface Morphology Analysis
3. Equipments for Structural and Optical Analysis
5. Equipment for Electrical & Thermal Analysis
6. Durability Testing Equipment
7. Equipment for Sample Preparation & Treatment
8. Semiconductor Fabrication Facilities & Equipment

**SERVICES**

Services offered include processing, characterization, calibration, testing, training, and consultation related to optical and electronic materials and devices.

**ACADEMIC PROGRAMME OFFERED**

I. Doctor of Philosophy and Master of Science (Optoelectronics) Research Mode in:

- a. Nano Materials Fabrication & Characterization
- b. Nano Materials & Devices
- c. Nano Devices & Packaging
- d. Modelling & Simulation of Nano Optoelectronic Devices
- e. Nano Integrated Systems
- f. Solid State Lighting Solutions
- g. Nano Optics

II. Master of Science (Nano-Optoelectronics) Mixed Mode

The programme encompasses two areas, namely Nanotechnology and Optoelectronics.

1. Mixed Mode [70% Research + 30% Coursework]

Programme Type	Minimum	Maximum
Full time	1 year	2 years
Part time	1.5 years	3 years

2. Courses:

Core Courses	Elective Courses
Physics and Technology of Nanomaterials	Advanced Growth Technology
Growth and Fabrication of Optoelectronic Devices	Advanced Optoelectronics
Dissertation I	
Dissertation II	

**NATIONAL PROJECT: GaN ON GaN PROGRAMME**

A five-year (2015-2020) light-emitting diodes (LEDs) technology transfer programme from United States of America to Malaysia through the collaborative research with 2014 Nobel Laureate in Physics, Prof. Dr. Shuji Nakamura University of California, Santa Barbara (UCSB). The goal of this program is to produce High Efficiency and High Lumen White LEDs based on the GaN on GaN technology. Under this program, Malaysia will be at the forefront of new technology, i.e. GaN on GaN LED technology, which will revolutionize the current technology based on GaN on sapphire.



**USM-INDUSTRY COLLABORATION**

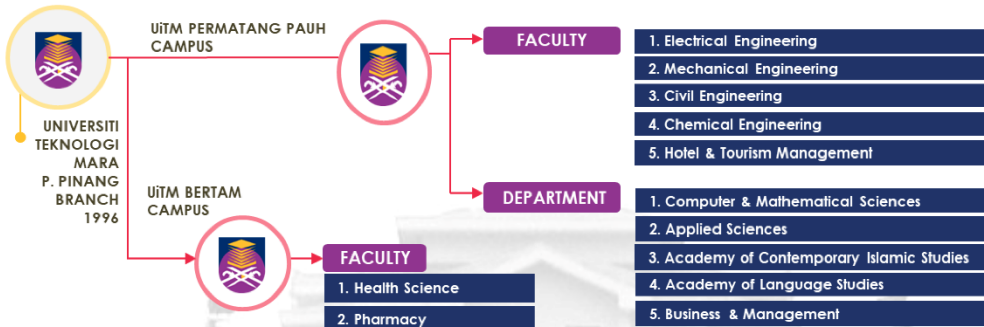


**CONTACT US:**  
 Institute of Nano Optoelectronics Research and Technology (INOR), Universiti Sains Malaysia (USM), 11800 USM, Penang, Malaysia.  
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## UNIVERSITI TEKNOLOGI MARA PULAU PINANG BRANCH

UiTM Pulau Pinang branch is the 11th campus of UiTM and started the operation in June 1996. The vision of UiTM is to establish UiTM as a premier university of outstanding scholarship and academic excellence capable of providing leadership to Bumiputeras' dynamic involvement in all professional fields of world-class standards in order to produce globally competitive graduates of sound ethical standing.



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	DIPLOMA IN ELECTRICAL ENGINEERING (ELECTRONIC)		DIPLOMA IN TOURISM MANAGEMENT
	DIPLOMA IN ELECTRICAL ENGINEERING (POWER)		DIPLOMA IN FOODSERVICE MANAGEMENT
	BACHELOR OF ENGINEERING (HONS) ELECTRICAL & ELECTRONIC ENGINEERING		DIPLOMA IN CULINARY ARTS
	MSc & PhD IN ELECTRICAL ENGINEERING BY RESEARCH		DIPLOMA IN PASTRY
CIVIL ENGINEERING	DIPLOMA IN CIVIL ENGINEERING	HEALTH SCIENCE	DIPLOMA IN MEDICAL TECHNOLOGY
	BACHELOR OF ENGINEERING (HONS) CIVIL (INFRASTRUCTURE)		DIPLOMA IN ENVIRONMENTAL HEALTH
	MSc & PhD IN CIVIL ENGINEERING BY RESEARCH		DIPLOMA IN WORK REHABILITATION
MECHANICAL ENGINEERING	DIPLOMA IN MECHANICAL ENGINEERING	PHARMACY	DIPLOMA IN PHARMACY
	BACHELOR OF ENGINEERING (HONS) MECHANICAL (MANUFACTURING)		BUSINESS & MANAGEMENT
	MSc & PhD IN MECHANICAL ENGINEERING BY RESEARCH	PRE DIPLOMA	
CHEMICAL ENGINEERING	BACHELOR OF ENGINEERING (HONS) CHEMICAL (ENVIRONMENT)		PRE DIPLOMA (SCIENCE) (MDAB)
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#### Contact us:

Universiti Teknologi MARA (UiTM)  
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Kampus Permatang Pauh  
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<https://penang.uitm.edu.my/main/>  
Tel : +604-3822888

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# CREST R&D GRANT CYCLE 2'2019

OPEN 1<sup>st</sup> July 2019

&

CLOSING DATE 31<sup>st</sup> Aug 2019

The CREST R&D Grant supports collaborative research activities between industry and academia in various science and engineering disciplines relevant to Electrical & Electronic sector. The grant is intended to drive new technology development and innovation of products and solutions for the intended market.

CREST offers the fund via the packages below, each with different incentives.

## Focus Clusters & Domain Areas for Industry-Academia Collaborative

Cluster	1. Opto-electronics, LED and Solid State Lighting	2. Embedded System & Internet of Things	3. IC Design, Test & Validation	4. Advance Materials & Packaging	5. World-Class Electronics Manufacturing	6. Drones, Driverless & Autonomous Vehicle
Domain Area	Compound semiconductor engineering (III-V)	Data Analytics, Big Data Science, Security	Advanced testing (IC/Board/SW) - Probe cards, JTAG	Semiconductor device packaging - Multi-chip packaging (TUV, TSV)	Industrial Automation & Robotic	Autonomous aerial vehicle technology
	Thermal materials	Advanced wireless communication	IC Design automation	Cheaper Epoxy/Materials for Mass-Market Optoelectronics	Low Volume, High Mix (adaptable mfg)	Gyroscopic stabilisation system
	Advanced Polymers (and Packaging)	Sensors & Sensing	Advanced Logic Emulation	Compound semiconductor engineering (III-V)	Smart factory, IoT in manufacturing	Closed-loop digital control system
	High Power Electronics Interconnect	Energy systems - harvesting, storage, management	UI/UX-specific SoC/IC/FPGA design	Nano-materials and structures for interconnects, circuitry, thermal management	Additive Manufacturing & 3D Printing Technology	GPS and ge-fencing technology
	Optical Inspection of semi-transparent surface	Organic, Printable electronic		Materials for 3D printing, inkjet printing, flexible electronics	Integrated Design to Manufacturing, Supplier in Design	Navigation and guidance
	Smart, Autonomous Lighting System	Wearables			Connected Supply Chain	Lightweight materials
	Visible Light Communication	Markets – healthcare, transportation, manufacturing, retail, smart city, agriculture			Computer Integrated Mfg; Efficient Mfg Scheduling System	Energy efficient drives

### Open R&D Grant

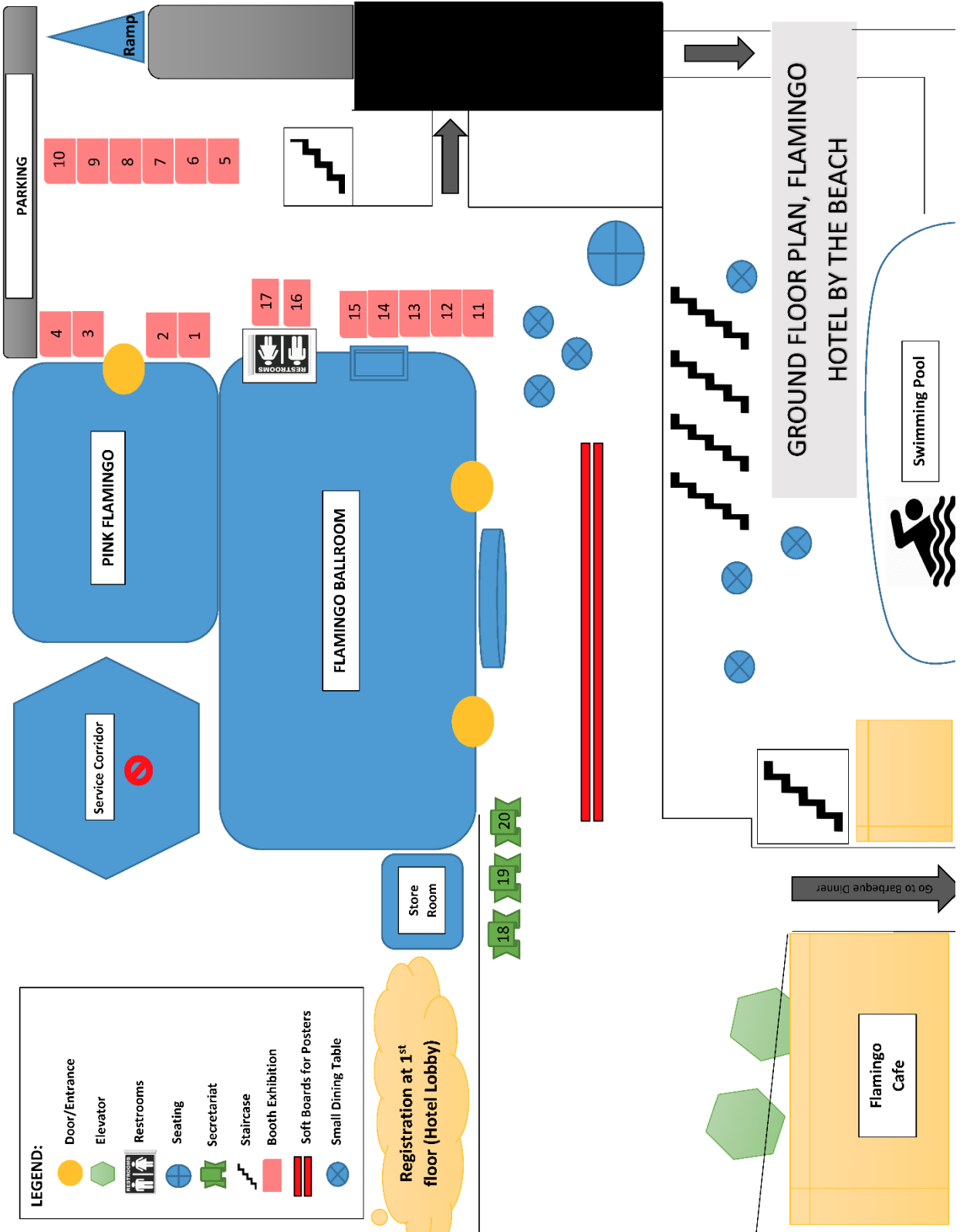
- Since June 2012
- Main aim to promote industry- driven research collaboration in areas relevant to E&E sector

### Targeted R&D Grant

- Since Sept 2014
- Main aim to develop IP in specific domain for benefit of larger ecosystem
- Cluster focused

Visit our website [www.crest.my](http://www.crest.my) for R&D Grant details

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- Door/Entrance
- Elevator
- Restrooms
- Seating
- Secretariat
- Staircase
- Booth Exhibition
- Soft Boards for Posters
- Small Dining Table



## ACKNOWLEDGEMENT

The organising committee is very grateful for the support and generosity of the following contributions towards the success of this inaugural event of ICoSeMT2019.

- Ministry of Energy, Science, Technology, Environment and Climate Change (MESTECC).
- Penang Global Tourism, Penang, Malaysia
- Inno Lab Engineering Sdn. Bhd.
- Histocenter (M) Sdn. Bhd.
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