TECHNICAL PROGRAM

Time	Monday, 28 August 2023	Tuesday, 29 August 2023
8:00 - 8:30	**REG1**: *Registration Day 1*	
8:30 - 9:00	**OP**: *Opening Ceremony & Welcoming Remark*	**REG2**: *Registration Day 2*
9:00 - 10:00	**KN1**: *Keynote : A concise overview of the Semiconductor Industrial Landscape in Malaysia*	**KN3**: *Keynote: Graphene Nanoballs for Performance Improvement of Thermoelectric Energy Harvester*
10:00 - 10:30	**Break**	
10:30 - 11:30	**KN2**: *Keynote: Market and Technology trends of advanced packaging*	**2A**: *Solar Cells, Microelectronics Application in Product Development* **2B**: *VLSI Design and Flexible Electronics*
11:30 - 12:00	**1A**: *Modelling & Simulation*	
12:00 - 13:00	**1B**: *Device Physics & characterization, MEMS/NEMS and Nanoelectronics*	
13:00 - 14:00	**Lunch Break**	
14:00 - 15:00	**1C**: *Reliability and Failure Analysis, Electronics Materials & Device Fabrication*	**CLO**: ***Closing and Award Ceremony***
15:00 - 15:45	**1D**: *Sensor*	
20:00 - 21:30	**IEEE-EDS**: *IEEE Electron Devices Society Young Professionals and Women in Electron Devices Mentoring and Networking Session @RSM2023*	

Monday, 28 August 2023

Monday, August 28 8:00 - 8:30

REG1: Registration Day 1

Room: IN FRONT OF MAIN HALL

Monday, August 28 8:30 - 9:00

OP: Opening Ceremony & Welcoming Remark

Room: MAIN HALL
Chair: Iskandar Yahya (Universiti Kebangsaan Malaysia, Malaysia)

Monday, August 28 9:00 - 10:00

KN1: Keynote : A concise overview of the Semiconductor Industrial Landscape in Malaysia

Prof Dato' Ts. Dr. Zaliman Bin Sauli

Room: MAIN HALL

Chair: P. Susthitha Menon (Universiti Kebangsaan Malaysia & Institute of Microengineering and Nanoelectronics (IMEN), Malaysia)

Microelectronics has been a prominent field for several decades since the introduction of the world's first transistor at Bell Laboratories in 1947. Over the years, significant progress has been made in microelectronics, including the development of the Integrated Circuit (IC), advancements in microfabrication processes, and the utilization of these technologies in the fabrication of semiconductor and other advanced small-scale devices. As the world embraces the era of Industrial Revolution 4.0 (IR 4.0), the importance of the semiconductor supply chain industry in driving this revolutionary transformation becomes increasingly crucial. Malaysia has also been actively striving to keep pace with the everevolving microelectronics and semiconductor industry by fostering collaboration between relevant industries, government, and higher education institutions. This talk aims to explore the semiconductor supply chain within Malaysia and the role of higher institutions in fulfilling the nation's aspiration to produce more sophisticated engineers and technologists.

Monday, August 28 10:30 - 11:30

KN2: Keynote: Market and Technology trends of advanced packaging

Dr. Tan Yik-Yee

Room: MAIN HALL

Chair: Zubaida Yusoff (Multimedia University, Malaysia)

Advanced packaging has been rapidly growing in recent years, driven by the increasing demand in high-performance computing, artificial intelligence, and autonomous driving. It is getting traction from semiconductor industry as more than Moore solution to enhance system performance to enable higher device performance, increase bandwidth, offer lower latency, and lower power consumption. This keynote will give an overview of the market and technology trend in the advanced packaging. Other than that, the presentation will highlight the emerging trend of chiplet and how it drives the advanced packaging to attain heterogeneous integration. Advanced packaging players and their innovation direction and commercial product will be briefly discussed. Last, the presentation will highlight important of IC substrate in advanced packaging supply chain of semiconductor.

Monday, August 28 11:30 - 13:00

1A: Modelling & Simulation

Room: MAIN HALL

Chair: Zurita Zulkifli (Universiti Teknologi MARA, Malaysia)

11:30 *Performance Analysis of 14nm SOI-based Trigate Gaussian Channel Junctionless FinFET with Punchthrough Stop Layer*
Mathangi Ramakrishnan, Nurul Ezaila Alias, Michael Loong Peng Tan and Afiq Hamzah (Universiti Teknologi Malaysia, Malaysia); Yasmin Abdul Wahab (Universiti Malaya, Malaysia); Hanim Hussin (Universiti Teknologi MARA, Malaysia)

11:45 *The thermal conductivity of stacked hexagonal Boron Nitride (hBN) and Graphene - A molecular dynamics approach*
Dharma Darren Ram (Universiti Kebangsaan Malaysia, Malaysia); Muhammad Aniq Shazni Mohammad Haniff (Insititute of Microengineering and Nanoelectronics, Universiti Kebangsaan Malaysia, Malaysia); Mohd Ambri Mohamed (Universiti Kebangsaan Malaysia (UKM), Malaysia); Abdul Manaf Hashim (MJIIT, Universiti Teknologi Malaysia, Malaysia)

12:00 *Investigating the Performance of Deep Reinforcement Learning-Based MPPT Algorithm under Partial Shading Condition*
Yew Weng Ho, Chien Fat Chau and Ahmad Wafi Mahmood Zuhdi (Universiti Tenaga Nasional, Malaysia); Wan Syakirah Wan Abdullah (Tenaga Nasional Berhad & TNB, Malaysia); Yew Weng Kean (Heriot Watt University, Malaysia); Nowshad Amin (Universiti Tenaga Nasional, Malaysia)

12:15 *Simulink Model of Noise of Piezoelectric Charge Accelerometer*
Ghulam Ali and Faisal Mohd-Yasin (Griffith University, Australia)

12:30 *Proposal for stochastic resonance in a ferroelectric-graphene transistor*
Madhav Ramesh (Cornell University, USA); Amit Verma (Indian Institute of Technology Kanpur, India); Arvind Ajoy (Indian Institute of Technology Palakkad, India)

12:45 *Simulation of Macro-Compact Model of Graphene-based Three-Branch Nano-Junction*
Alireza Kalantari (MJIIT, Universiti Teknologi Malaysia, Malaysia); Shaharin Fadzli Bin Abd Rahman (Universiti Teknologi Malaysia, Malaysia); Abdul Manaf Hashim (MJIIT, Universiti Teknologi Malaysia, Malaysia)

1B: Device Physics & characterization, MEMS/NEMS and Nanoelectronics

Room: BOARD ROOM

Chair: Maizatul Zolkapli (Universiti Teknologi MARA, Malaysia)

11:30 *Surface Defects Originated Photoresponse Study in hBN-ReS2 FETs*
Mohd Amir Zulkefli (Infineon Technologies (Kulim) Sdn. Bhd., Malaysia); Muhammad Hilmi Johari (Institute of Microengineering and Nanoelectronics (IMEN-UKM), Malaysia)

11:45 *Linear, Efficient and Wideband Emitter Follower Class B Amplifier for Auxiliary Envelope Tracking Supply Modulator*
Zubaida Yusoff and Md Mushfiqur Rahman (Multimedia University, Malaysia); Farid Zubir (Universiti Teknologi Malaysia & Faculty of Electrical Engineering, Malaysia); Jahariah Sampe (Universiti Kebangsaan Malaysia (UKM) & Institute of Microengineering and Nanoelectronics (IMEN), Malaysia)

12:00 *Fabricating SWCNT thin film via Spray coating and Nitric Acid Vapour Treatment*
Arulampalam Kunaraj, Puvaneswaran Chelvanathan, Ahmad Ashrif A. Bakar, Avinash Kumaresan and Iskandar Yahya (Universiti Kebangsaan Malaysia, Malaysia)

12:15 *Equivalent Circuit Model and Simulation of 2D Asymmetrical PMUT for Non-Destructive Testing*
Darven Raj Ponnuthurai (National University of Malaysia, Malaysia)

12:30 *Effect of biasing under illumination on GaAsBi/GaAs multiple quantum wells for solar cell performance*
Faezah Harun (Universiti Kuala Lumpur British Malaysian Institute, Malaysia)

12:45 *The effects of particle sizes of Neodymium Iron Boron microstructure on the magnetic characteristics*
Siti Aisyah Binti Ishak (Universiti Teknologi Malaysia, Malaysia); Jumril Yunas (Universiti Kebangsaan Malaysia, Malaysia); Abdul Manaf Hashim (MJIIT, Universiti Teknologi Malaysia, Malaysia)

Monday, August 28 14:00 - 15:45

1C: Reliability and Failure Analysis, Electronics Materials & Device Fabrication

Room: MAIN HALL

Chair: Hasnizah Aris (Universiti Malaysia Perlis (UniMAP), Malaysia)

14:00 *Evaluation of Cross-Contamination Risk during CMOS Devices Fabrication in an Industrial Silicon Wafer Processing*
Mohd Amir Zulkefli, Ismail Umar, Vanita Manaoogaran, Wan Hidayatulhusna Wan Mohamad Rani, Guan Kai Oh, Deyline Samail and Izzuddin Iskandar (Infineon Technologies (Kulim) Sdn. Bhd., Malaysia)

14:15 *NBTI Defects Characterization Using Energy Profiling Simulation Technique*
Hanim Hussin (Universiti Teknologi MARA, Malaysia); Sharifah Fatmadiana Wan Muhamad Hatta and Norhayati Soin (University of Malaya, Malaysia); Yasmin Abdul Wahab (Universiti Malaya, Malaysia); Maizan Muhamad (Universiti Teknologi MARA, Malaysia); Nurul Ezaila Alias (Universiti Teknologi Malaysia, Malaysia)

14:30 *Surface Morphology of Fabricated TiO2-Graphene Thin Film by Spin-Coating Potential for Sensing Electrode Application*
Anis Nabilah Mohd Daud, Aina Syakirah Mohd Masri and NurSyahirah Kamarozaman (Universiti Teknologi MARA, Malaysia); Muhammad AlHadi Zulkefle (NANO-ElecTronic Centre (NET), Malaysia); Zurita Zulkifli and Sukreen Hana Herman (Universiti Teknologi MARA, Malaysia)

14:45 *Graphene-Based Hybrid Sensor for the Detection of Cancer Cells Using K-SPR Technology*
P. Susthitha Menon (Universiti Kebangsaan Malaysia & Institute of Microengineering and Nanoelectronics (IMEN), Malaysia); Nur Shahirah Shaari, Vatsala Pithaih and Siti Nasuha Mustaffa (IMEN, UKM, Malaysia); Affa Rozana Abdul Rashid (USIM, Malaysia); Vikneswary Ravi Kumar (Universiti Kebangsaan Malaysia, Malaysia); Nor Haslinda Abd Aziz (Universiti Kebangsaan Malaysia (UKM), Malaysia); Nirmala Kampan (Nirmala, Malaysia)

15:00 *Enhancing Industrial Machine Monitoring with IoT: A Wireless Solution*
Maizatul Zolkapli, Ahmad Sabirin Zoolfakar, Rozina Abdul Rani and Yusof Johan (Universiti Teknologi MARA, Malaysia)

15:15 *Electrochemical EGFET pH Sensing Performance using ZnO-based Composite Thin Films Sensing Electrode*
Zainal Nurbaya (Universiti Teknologi MARA & Integrated Sensors Research Group, Malaysia); NurSyahirah Kamarozaman, Abdur Rahman, Sukreen Hana Herman and Zurita Zulkifli (Universiti Teknologi MARA, Malaysia)

15:30 *Fabrication of TiO2-PANI Nanostructure using Electrospray for the pH Sensing Electrode*
Aina Syakirah Mohd Masri (Universiti Teknologi MARA, Malaysia); Zainal Nurbaya (Universiti Teknologi MARA & Integrated Sensors Research Group, Malaysia); Sukreen Hana Herman, NurSyahirah Kamarozaman and Zurita Zulkifli (Universiti Teknologi MARA, Malaysia)

1D: Sensor

Room: BOARD ROOM

Chair: Haslina Jaafar (Universiti Putra Malaysia, Malaysia)

14:00 *Determination of the Aptamer Probe Density by Double Layer and Redox Capacitance of CNT-Based Electrochemical DNA-Aptasensors*
Yasmin Abdul Wahab, Mohammad Al Mamun, Mohd Rafie Johan, M. A. Motalib Hossain and Abu Hashem (Universiti Malaya, Malaysia); Nurul Ezaila Alias (Universiti Teknologi Malaysia, Malaysia); Hanim Hussin and Maizan Muhamad (Universiti Teknologi MARA, Malaysia)

14:15 *Enhancing Sensitivity of Thermal Biosensors through Vanadium Dioxide (VO2) Thin Films*
Abdelkader Hassein-Bey (LPCMIA, Algeria & University of Blida1, Algeria); Leila Sabeha Asmaa Hassein-Bey (University of Blida 1, Algeria); Slimane Lafane and Samira Abdelli-Messaci (Centre de Développement des Technologies Avancées (CDTA), Algeria); Burhanuddin Yeop Majlis (Universiti Kebangsaan Malaysia, Malaysia)

14:30 *Fabrication of Flexible and Printable Organic Thin-Film Transistor-based Sensor*
Fazliyatul Azwa Md Rezali (Universiti Malaya, Malaysia); Norhayati Soin (University of Malaya, Malaysia); Siti Nabila Aidit (Universiti Malaya, Malaysia); Sharifah Fatmadiana Wan Muhamad Hatta (University of Malaya, Malaysia)

14:45 *Smoothing Sensor Data in a Controlled IoT Framework with Moving Averages*
Akmal Mustaffa Zulhakim (Universiti Teknologi MARA, Malaysia); Wan Fazlida Hanim Abdullah (College of Enginering UiTM, Malaysia); Ili Shairah Abdul Halim (Universiti Teknologi MARA, Malaysia & College of Engineering, Malaysia); Robaiah Mamat (Universiti Teknologi Mara, Malaysia); Muhammad Izzat Alif Muslan (Universiti Teknologi MARA, Malaysia); Ahmad Zaki Abu Bakar (MIMOS Berhad, Malaysia)

15:00 *Morphology and Electrical Properties of Pristine and Composite rice husk ash Nano/ Microparticles thick films for Gas Sensing Applications*
Jamila Lamido Sumaila (Yusuf Maitama Sule University Kano & Bayero University Kano, Nigeria); Dahiru Sani Shu'aibu (Bayero University, Kano Nigeria & PMB 3011, Nigeria); Mohd Nizar Hamidon (Universiti Putra Malaysia, Malaysia); Zainab Yunusa and Nuradden Magaji (Bayero University Kano, Nigeria); Azlinda Abu Bakar (Universiti Putra Malaysia, Malaysia & Institute of Nanoscience and Nanotechnology, Universiti Putra Malaysia, Malaysia); Suleiman Babani (Bayero University Kano, Kano State, Nigeria)

15:15 *Effect Of Electrodeposition Cycle Toward The Detection Of Glucose*
Muhammad Haziq Bin Ilias (Universiti Teknologi MARA, Malaysia); Norhazlin Khairudin (College of Engineering, Malaysia & UITM, Malaysia); Ahmad Sabirin Zoolfakar, Maizatul Zolkapli and Rozina Abdul Rani (Universiti Teknologi MARA, Malaysia); Azrif Manut (Universiti Teknologi MARA Shah Alam, Malaysia); Zainiharyati Mohd Zain (Universiti Teknologi MARA, Malaysia); Noor Fitrah Abu Bakar (Universiti Teknologi MARA Malaysia & Department of Process and Food Engineering, Faculty of EngineeringUniversiti Putra Malaysia, Malaysia)

15:30 *Characterization and Optimization of Ion-Sensitive Field Effect Transistor (ISFET) with Different Gate Dielectric and Thickness*
Suhana Mohamed Sultan (S. M. Sultan, Malaysia); Jason Kai Seng Kong (Universiti of Teknologi Malaysia, Malaysia)

Monday, August 28 20:00 - 21:30

IEEE-EDS: IEEE Electron Devices Society Young Professionals and Women in Electron Devices Mentoring and Networking Session @RSM2023

Room: MAIN HALL

Chair: P. Susthitha Menon (Universiti Kebangsaan Malaysia & Institute of Microengineering and Nanoelectronics (IMEN), Malaysia)

Tuesday, 29 August 2023

Tuesday, August 29 8:30 - 9:00

REG2: Registration Day 2

Room: IN FRONT OF MAIN HALL

Tuesday, August 29 9:00 - 10:00

KN3: Keynote: Graphene Nanoballs for Performance Improvement of Thermoelectric Energy Harvester

Prof. Dr. Azrul Azlan Hamzah

Room: MAIN HALL

Chair: Norhayati Soin (University of Malaya, Malaysia)

Renewable energy has been the center of attention in sustainable energy research for the past decade, as it is in line with the Sustainable Development Goals (SDG) of the United Nations. It supports SDG 7: affordable and clean energy, SDG 11: sustainable cities and communities, and SDG 13: climate action. Among the renewable energy sources, thermoelectric energy (TE) harvester stands out as a clean and environmental friendly energy source as it directly converts waste heat into electrical energy. Upon successful implementation, TE harvester would greatly reduce world's dependency on fossil fuel, promotes clean energy conversion and supply for domestic and industrial use, while reducing global carbon footprint and greenhouse effect. In this context, our prototype increases the thermoelectric conversion efficiency of a TE harvester by infusing graphene nanoballs into bismuth telluride (Bi2Te3) thermoelectric generator (TEG). The graphene nanoballs increase the total ZT value of the Bi2Te3/graphene nanoballs composite, resulting in a better performance TEG. In our laboratory prototype, the ZT value increased by 22.7%, which plausibly increases TEG efficiency from the typical 8% to 11%, thus pushing this Bi2Te3/graphene nanoballs TEG into a commercially viable product.

Tuesday, August 29 10:30 - 12:00

2A: VLSI Design and Flexible Electronics

Room: BOARD ROOM

Chair: Nafarizal Nayan (Universiti Tun Hussein Onn Malaysia & Microelectronic and Nanotechnology - Shamsuddin Research Centre (MiNT-SRC), Malaysia)

10:30 *Trade-offs and Optimization: Low Power Approaches for Area, Power Consumption, and Performance in Microprocessor Design*
Maizan Muhamad, Hanim Hussin and Abdul Karimi Halim (Universiti Teknologi MARA, Malaysia); Yasmin Abdul Wahab (Universiti Malaya, Malaysia); Nur Mahirah Sallehuddin (Universiti Teknologi MARA, Malaysia)

10:45 *Design and Implementation of 32 bit SDRAM Memory Controller with Optimized Dynamic Power using ASIC*
Toy Zheng Hong, Nurul Ezaila Alias and Michael Loong Peng Tan (Universiti Teknologi Malaysia, Malaysia); Yasmin Abdul Wahab (Universiti Malaya, Malaysia)

11:00 *A Study of the Optimum Input Matching Simulation Networks for Integrated Differential Amplifiers*
Moh'd Khier Abdallah Alshamaileh, Lutfi Albasha and Nasir Quadir (American University of Sharjah, United Arab Emirates)

11:15 *Study of Error Amplifiers for Low Power Capacitorless Low Dropout Voltage Regulator using 110 nm CMOS Technology*
Julie Roslita Rusli (Universiti Kuala Lumpur British Malaysia Institute, Malaysia)

11:30 *Chitosan as Natural Binder for Eco-Friendly Printable Conductive Ink*
Nur Iffah Irdina Maizal Hairi, Aliza Aini Md Ralib, Anis Nurashikin Nordin and Rosminazuin Ab Rahim (International Islamic University Malaysia, Malaysia); Lai Ming Lim (Jabil Circuit Inc, Malaysia); Muhammad Farhan Affendi Mohamad Yunos (International Islamic University Malaysia, Malaysia)

11:45 *Structural and Mechanical Properties of AlN Thin Film Prepared by HiPIMS Technique at Low Temperature*
Zulkifli Azman (Universiti Tun Hussein Onn Malaysia & Microelectronics and Nanotechnology-Shamsuddin Research Centre (MiNT-SRC), Malaysia); Nafarizal Nayan (Universiti Tun Hussein Onn Malaysia & Microelectronic and Nanotechnology - Shamsuddin Research Centre (MiNT-SRC), Malaysia); Chin Fhong Soon (Universiti Tun Hussein Onn Malaysia & Microelectronic and Nanotechnology-Shasmsuddin Research Center, Malaysia); Ahmad Shuhaimi (University of Malaya, Malaysia); Norain Sahari (Faculty of Engineering Technology, Universiti Tun Hussein Onn Malaysia, Malaysia); Yusmar Palapa Wijaya (Politeknik Caltex Riau, Indonesia & Universiti Tun Hussein Onn Malaysia (UTHM), Malaysia); Ahmad Nasrull Mohamed (Universiti Tun Hussein Onn Malaysia, Malaysia); Muhammad Yazid Ahmad (Nanorian Technologies Sdn Bhd, 40 & 40, 1, Jln Kajang Perdana 3/2, Malaysia)

2B: Solar Cells, Microelectronics Application in Product Development

Room: MAIN HALL

Chair: Ir. Hazian Bin Mamat (Mimos Berhad, Malaysia)

10:30 *FDTD Simulation for Optical Characteristics Study of Inverted Micro-pyramidal Surface Structure of Black Silicon*
Md. Yasir Arafat and Yasmin Abdul Wahab (Universiti Malaya, Malaysia); Mohammad Aminul Islam (Universiti Kebangsaan Malaysia, Malaysia); Sharifah Fatmadiana Wan Muhamad Hatta (University of Malaya, Malaysia); Nurul Ezaila Alias (Universiti Teknologi Malaysia, Malaysia)

10:45 *Investigation The Performance Impact of Active Layer Parameter Variations on Inverted Perovskite Solar Cells Using GPVDM*
Ahmad Muhajer Abdul Aziz (Universiti Teknikal Malaysia Melaka, Malaysia); Muhammad Idzdihar Bin Idris (FKEKK, Universiti Teknikal Malaysia Melaka, Malaysia); Zul Atfyi Fauzan Mohammed Napiah (Universiti Teknikal Malaysia Melaka (UTeM) & Centre for Telecommunication Research & Innovation (CeTRI), Malaysia); Zarina Baharudin Zamani and Nurbahirah Norddin (Universiti Teknikal Malaysia Melaka, Malaysia); Marzaini Rashid (School of Physics, Malaysia); Subathra Muniandy (University of Technical Malaysia Melaka, Malaysia)

11:00 *Advanced Solar-Powered Seed Sowing Machine with Precision Seeding and Smart Control Features*
Sadiq Ur Rehman and A. Zaidi Asad (Hamdard University, Karachi, Pakistan); Yasmin Abdul Wahab and Md. Yasir Arafat (Universiti Malaya, Malaysia); Sharifah Fatmadiana Wan Muhamad Hatta (University of Malaya, Malaysia)

11:15 *Finite Element Simulation of Single Zinc Oxide Nanorod for Piezoelectric Nanogenerator*
Muhammad Adhwa Fathullah bin Nor Asmadi, Aliza Aini Md Ralib, Anis Nurashikin Nordin and Norazlina Saidin (International Islamic University Malaysia, Malaysia)

11:30 *Acoustic Streaming in Microchannel as Micro-mixing*
Anjam Waheed (Universiti Kebangsaan Malaysia & Institute of Microengineering and Nanoelectronics, Malaysia); Farhanulhakim Mohd razip wee (IMEN, Malaysia); Muhamad Ramdzan Buyong (UKM, Malaysia)

Tuesday, August 29 14:00 - 15:00

CLO: Closing and Award Ceremony

Room: MAIN HALL

Chair: Iskandar Yahya (Universiti Kebangsaan Malaysia, Malaysia)