

Speakers

Keynote Speaker: Mr. Fong Hong Kee (Education & Medical Technology Marketing Manager, General Electronics Measurements Solutions, Keysight)



Biography

Hong Kee is the Education & Medical Technology Marketing Manager within Keysight Technologies Electronics Industrial Solution Group. His career in Keysight started when it was still Agilent, as the Asia Marketing Development Manager in Hong Kong for the Basic Instruments Division. After 3 years as Asia's MDM, he reported back to Penang and took up roles in Marcom, Application Engineering, Technical Support, Learning Products and Business Segment management.

After graduating, he started his first job in Singapore as an R&D engineer in Thomson Consumer Electronics designing switch mode power supplies. He then joined IBM Singapore as their customer engineer working on IBM S/380, S/390 mainframes, before joining Hewlett Packard as the Technical Marketing Engineer in the HP printers division.

He then transfer to HP Malaysia's Communication Components Division as a Customer Service Engineer handling microwave components. After 2 years in HP Malaysia he moved to Dell Asia Pacific, taking on the role of Operations Manager in Dell's Global Customer Program, supporting Dell's multinational customers and later as the Enterprise Technical Support Manager managing the Enterprise Systems call center for Asia.

Hong Kee holds a Bachelors of Electrical/Electronics & Computer Systems Engineering from Monash University in Australia.

Topic: IoT – Wirelss Connectivity

Plenary Speaker: Mr. Alan Seah (Managing Director, Rohde & Schwarz)



Biography

Alan Seah received his B.Sc. degree in Electrical and Electronics Engineering from St. Cloud State University, United States in 1995. Upon graduation, he worked in various industries ranging from manufacturing to telecommunications.

In 1999, Alan joined Rohde & Schwarz Systems Communications Asia as a Manager – Product Specialist Group focusing on Communications Systems and Technologies. He was responsible for leading a team of Specialist Engineers to support respective sales offices throughout Asia Pacific region. In 2004, Alan was promoted to the role of Deputy Managing Director of Rohde & Schwarz Malaysia Sdn Bhd. He was a Pioneer and Founding Board Member of the Malaysian subsidiary in charge of all activities and operations of the company. In 2009, he was promoted to Managing Director to oversee all business activities of the company with products from Test & Measurements, Broadcast and Media, Secure Communications, Radiomonitoring and Radiolocation, Cybersecurity and Service & Support.

Alan is a Lifetime Member and Volunteer of the Malaysian Red Crescent Society. In his spare time he participates in Extreme 4X4 Offroad Challenges, jungle trekking and camping.

Speaker 1: Dr. Shinohara (Kyoto University, Japan)



Biography:

Naoki Shinohara received the B.E. degree in electronic engineering, the M.E. and Ph.D (Eng.) degrees in electrical engineering from Kyoto University, Japan, in 1991, 1993 and 1996, respectively. He was a research associate in the Radio Atmospheric Science Center, Kyoto University from 1996. He was a research associate of the Radio Science Center for Space and Atmosphere, Kyoto University by recognizing the Radio Atmospheric Science Center from 2000, and there he was an associate professor since 2001. He was an associate professor in Research Institute for Sustainable Humanosphere, Kyoto University by recognizing the Radio Science Center for Space and Atmosphere since 2004. From 2010, he has been a professor in Research Institute for Sustainable Humanosphere, Kyoto University. He has been engaged in research on Solar Power Station/Satellite and Microwave Power Transmission system. He is IEEE MTT-S Technical Committee 26 (Wireless Power Transfer and Conversion) vice chair, IEEE MTT-S Kansai Chapter TPC member, IEEE Wireless Power Transfer Conference advisory committee member, international journal of Wireless Power Transfer (Cambridge Press) executive editor, Radio Science for URSI Japanese committee C member, technical committee on IEICE Wireless Power Transfer, communications society chair, Wireless Power Transfer Consortium for Practical Applications (WiPoT) chair, and Wireless Power Management Consortium (WPMc) chair.

Topic: Wireless Power Transfer via Radiowaves (Wave Series)

Theory, technologies, applications, and current R&D status of the wireless power transfer (WPT) will be presented. The talk will cover both the far-field WPT via radio waves, especially beam-type and ubiquitous-type WPT, and energy harvesting from broadcasting waves. The research of the WPT was started from the far-field WPT via radio waves, in particular the microwaves in 1960s. In recent years this became a hot topic again due to the rapid growth of wireless devices. Theory and technologies of antenna and circuits will be presented in case of beam-type and ubiquitous-type WPT. The industrial applications and current R&D status of the WPT via radio waves will be also presented.

Speaker 2: Dr. Tan Cher Ming (Chang Gung University, Taiwan)



Biography:

Dr. Tan received his Ph.D in Electrical Engineering from the University of Toronto in 1992. He has 10 years of working experiences in reliability in electronic industry (both Singapore and Taiwan) before joining Nanyang Technological University (NTU) as faculty member in 1996 till now. He has published more than 200 International Journal and Conference papers, and holding 8 patents and 1 copyright for reliability software. He has given 2 keynote talks and many invited talks in International Conferences. He has written 3 books and 3 book chapters in the field of reliability. He is also the Series Editor of SpringerBrief in Reliability.

He is the past chair of IEEE Singapore Section, Senior member of IEEE and ASQ, Distinguish Lecturer of IEEE Electronic Device Society on reliability, Founding Chair of IEEE Nanotechnology Chapter - Singapore Section, Fellow of Institute of Engineers, Singapore, Fellow of Singapore Quality Institute, Executive Council member of Singapore Quality Institute, Director of SIMTech-NTU Reliability Lab, and Senior Scientist in SIMTech. He is also the Founding Chair of IEEE International Conference on Nanoelectronics, General Co-Chair of International Symposium of Integrated Circuits 2007 and 2009. He is also the recipient of IEEE Region 10 Outstanding Volunteer Award in 2011. He is the Associated Editor of International Journal on Computing, and Guest Editor of International J. of Nanotechnology, Nano-research letter and Microelectronic Reliability. He is in the reviewer board of several International Journals such as Thin Solid Film, Microelectronic Reliability, Microelectronics Engineering etc for more than 10 years. He is also current active in providing consultation to multi-national corporations on reliability.

His research interests include reliability and failure physics modeling of electronic components and systems, finite element modeling of materials degradation, statistical modeling of engineering systems, nano-materials and devices reliability, and prognosis & health management of engineering system.

Topics: Electronics circuits and device reliability; interconnect reliability; reliability statistics; failure mechanisms and analysis; reliability modeling; System reliability; Li Ion battery reliability

Speaker 3: Dr. M K Radhakrishnan (India)



Biography:

M.K. Radhakrishnan (M'82-SM'94) received B.Sc from Kerala University, India in 1972, M.Sc in Solid State electronics from Sardar Patel University, India in 1975 and Ph.D degree in Semiconductor Physics from Cochin University of Science and Technology in 1981. He is currently Director of *NanoRel* Technical Consultants Singapore from 2004. He has been with Indian Space Research Organization till 1990. From 1991-1993 he was with ST Microelectronics Singapore. From 1993 to 2001 he was with Institute of Microelectronics Singapore, where he pioneered the setting up of a full-fledged device failure analysis laboratory. From 1994 to 2004 he served as adjunct professor at National University of Singapore. His current research interests include analysis and reliability in nano-electronic devices and interface physics studies. Dr. Radhakrishnan is a fellow of Institution of Electrical and Telecommunication Engineers India, member of Electron Device Failure Analysis Society (EDFAS) USA and ESD Association USA. He served as Editor of Journal of Semiconductor Technology and Science (Korea) during 2001-2003 and is an Editorial board member of Microelectronics Reliability journal (UK). He served as Guest Editor to IEEE Transactions Devices Materials and Reliability and edited or co-edited of 4 conference proceedings. He was Technical Chair IEEE International Symposium on Physical and Failure Analysis of ICs (IPFA) in 1995 and 1997 and General Chair of IPFA in 1999. He was IEEEIEDST General Chair in 2009. He has been in the technical program committees of ESREF, IRPS, EPTC, MIEL, ICEE and EOS/ESD Symposium. Currently he is the Editor-in Chief of IEEE EDS Newsletter and serves as a member of IEEE EDS Technical Committee on Electronic Materials. He is a Distinguished Lecturer of IEEE Electron Devices Society.

Topics: 1. Physical Analysis Challenges and Interface Physics Studies in Silicon Nano Devices 2. Building in Reliability in Devices through Analysis and Study of Failure Mechanisms.

Speaker 4: Dr. Shana Osama (MediaTek, US), To be confirmed



Biography:

Dr. Shana Osama is a Senior Technical Director at Mediatek USA Inc. He received his BSc. degree in electrical engineering with high honor from University of Jordan in 1992, the M.S.EE degree from Portland State University in 1996 and the Ph.D. degree in electrical engineering from Stanford University in 2001. Between 1995-1997 he held various IC design positions at Radio Comm. Corp., Portland OR, National Semiconductor, Santa Clara CA, and later from 1998 and early 2008 he was with Maxim Integrated Products, Sunnyvale CA, where he lead many successful RF wireless designs for PCS, CDMA, WCDMA, WLAN and WiMax. He has been with Mediatek since 2008 as a Sr. Technical Director for analog and RF circuit design, where he is responsible for various CMOS RF SoC developments for both cellular and connectivity. In Fall 2005 he was a visiting professor at the University of California at Berkeley where he taught an advanced circuit design class for wireless communications. Dr. Shanaa is a Fulbright scholar, a member of the Eta Kappa Nu honor society and is a senior IEEE member. He served as an Associate Editor for the IEEE Transactions on Microwave Theory and Techniques, and is currently a member of the Technical Program Committee for the IEEE RFIC Symposium.

Topic: Building SAW-less transceivers for cellular systems; challenges and implementation

The industry has been striving to reduce the number of, or ultimately eliminate, bulky, lossy and expensive SAW filters in RF transceivers. The talk is going to discuss the challenges of removing SAW filters in cellular transceivers. Then we will present real examples of radios where SAW filters were removed and how this impacted the design of corresponding radio circuits.

Speaker 5: Dr. Nathan (Cambridge University, UK)



Biography

Professor Arokia Nathan holds the Chair of Photonic Systems and Displays in the Department of Engineering, Cambridge University. He received his PhD in Electrical Engineering from the University of Alberta. Following post-doctoral years at LSI Logic Corp., USA and ETH Zurich, Switzerland, he joined the University of Waterloo where he held the DALSA/NSERC Industrial Research Chair in sensor technology and subsequently the Canada Research Chair in nano-scale flexible circuits. He was a recipient of the 2001 NSERC E.W.R. Steacie Fellowship. In 2006, he moved to the UK to take up the Sumitomo Chair of Nanotechnology at the London Centre for Nanotechnology, University College London, where he received the Royal Society Wolfson Research Merit Award. He has held Visiting Professor appointments at the Physical Electronics Laboratory, ETH Zürich and the Engineering Department, Cambridge University, UK. He has published over 400 papers in the field of sensor technology and CAD, and thin film transistor electronics, and is a co-author of four books. He has over 50 patents filed/awarded and has founded/co-founded four spin-off companies. He serves on technical committees and editorial boards in various capacities. He is a Chartered Engineer (UK), Fellow of the Institution of Engineering and Technology (UK), Fellow of IEEE (USA), and an IEEE/EDS Distinguished Lecturer.

Topic: Large Area Electronics, Transparent Electronics, Displays, Imaging, Nano-Bio-Systems

Speaker 6: Dr. Shanti Pavan (India), **To be confirmed**



Biography

Shanthi Pavan obtained the B.Tech degree in Electronics and Communication Engg from the Indian Institute of Technology, Madras in 1995 and the M.S and Sc.D degrees from Columbia University, New York in 1997 and 1999 respectively. From 1997 to 2000, he was with Texas Instruments in Warren, New Jersey, where he worked on high speed analog filters and data converters. From 2000 to June 2002, he worked on microwave ICs for data communication at Bigbear Networks in Sunnyvale, California. Since July 2002, he has been with the Indian Institute of Technology-Madras, where he is now a Professor of Electrical Engineering. His research interests are in the areas of high speed analog Circuit.

Dr. Pavan is the recipient of the IEEE Circuits and Systems Society Darlington Best Paper Award (2009), the Shanti Swarup Bhatnagar Award and the Swarnajayanthi Fellowship (from the Government of India) , the Young Faculty Recognition Award (from IIT Madras for excellence in teaching), the Technomenter Award from the India Semiconductor Association (2010). He is the Editor-in-Chief of the IEEE Transactions on Circuits and Systems: Part I - Regular Papers. He is a Fellow of the Indian National Academy of Engineering.

Topic: Demystifying Linear Time Varying Systems

An analog/mixed-signal designer encounters time varying circuits everywhere - sample-and-holds, chopper stabilized amplifiers, mixers, switched-capacitor amplifiers and filters, discrete and continuous-time delta sigma modulators, N-path filters. The analysis of signals and noise in these circuits is often associated with messy mathematics and algebra. This talk aims to demystify linear (periodically) time varying circuits. Starting from first principles, intuition behind the equations one commonly encounters in time-varying system theory will be given. This intuition is illustrated with several case studies of practical circuits and systems like switched capacitor track and holds, N-path filters and continuous-time delta sigma converters

Speaker 7: Dr BoYu Zheng (CAD-IT, Singapore)



Biography

Dr Boyu Zheng is currently a Lead Technical Consultant at CAD-IT Consultants and is leading a technical team that support customers in various disciplines and domains. He graduated from NTU with a PhD in Electrical Engineering. His research focus is on antennas, arrays and RF devices, primarily with the aid of ANSYS solutions.

Dr Zheng has fifteen years experience in the research and development of RF components, circuits and antennas, including design and electrical modeling, analysis and optimization, prototype development and testing and more than four years' experience in the design, analysis and development of IC packages and microelectronic systems. He has a strong background and deep knowledge of RF/microwave and wireless, microelectronics and IC packaging.

Topic: System Level Simulation with ANSYS Electromagnetics Tools

Speaker 8: Dr. Wong Peng Wen, Universiti Teknologi PETRONAS, Malaysia



Biography

Wong Peng Wen graduated from University of Leeds in 2005 with BEng (1st Class Hons.) degree in Electrical & Electronic Engineering. He received Switched Reluctance Drive Award in EE Engineering. He received research funding from Ministry of Defence, UK for his PhD study in University of Leeds, UK from 2007-2009. During his PhD, he was involved in UK DTI funded project, developing process design kits for multi layer system-in-package modules. Currently he works as Associate Professor in Universiti Teknologi Petronas and received outstanding researcher award in 2013, publication award in 2014 and Potential Academy Award of the Year in 2015. His research interests include reconfigurable filter, lossy filter design, and passive filter miniaturization techniques. He has secured various research grants from government and industries since 2008 and published more than 60 papers including an article in IEEE microwave magazine. He serves as reviewer for IEEE Transaction on Microwave Theory and Technique, IEEE Wireless & Component Letter, IET Antenna & Propagation and PIERS. He is currently the chair of IEEE ED/MTT/SSC Penang Chapter, founder and organising chair of IEEE International Microwave, Electron Devices and Solid-State Symposium IMESS 2016.

Topic: Multiband Filtering for Future 5G – Design and Synthesis Techniques Based on Hybrid Polynomials

Abstract: Mobile wireless communication has encountered an explosive growth in global scale over the past decades mainly driven by the massive use of smartphones, tablets. In order to meet the increasing demands, the revolutionary 5G networks with unprecedented data speeds are explored. In 5G application the demands of femtocells and picocells augmenting traditional macrocells base station which results in aggregation of non-contiguous of bandwidth across wide frequency range unleashes a great challenge and opportunity for novel multiband filter design. A new type of multi-band filter using hybrid polynomials filtering function is introduced. This is the first multiband low pass prototype network proposed which allows classical ladder synthesis and frequency transformation for the construction of multiband bandpass filter. It is also highly desirable to have a single bandstop filter with multiband rejection in order to address the dense utilization of 5G mobile broadband networks which are very likely suffering from multi-channel interferences. A new dual-band bandstop filter based on lossy reflection mode topology is introduced where the conventional design techniques had concentrated only on single band bandstop response due to the lack of multiband low pass prototype and frequency transformation technique.

Speaker 9: Dr. Varun Jeoti, Universiti Teknologi PETRONAS, Malaysia



Biography

A committed academician with over 23 years of experience at leading Indian and Malaysian universities teaching students from various social and cultural backgrounds and conducting frontier research for over 30 years in the area of signal processing and wireless communication. He has over 200 publications in journals and conference proceedings and more than 10 patents and copyrights. His research interest stems from his PhD days work in Surface Acoustic Waves (SAW) devices and encompasses device-physics to signal processing and wireless communication for various applications. Today, his spectrum of work includes wireless systems to SAW RFID/sensors/microfluidics/in-situ measurements.

Topic: IOT of Passive Things and SAW RFID System

Abstract:

Internet of Things (IOT) is creating lots of buzz with applications emerging on a daily basis. The pre-requisite for IOT is for 'things' to become intelligent and have the ability to communicate. Thus, by extension, the passive things are out of the scope of IOT.

Let us revisit Surface Acoustic Wave (SAW) based RFID which is an RFID that is passive and can be read from a distance wirelessly. SAW based sensors are also no different. Systems built using them are increasingly becoming popular on their own because of their passive nature and high tolerance to high temperatures and pressure load. They can be interrogated faithfully while being in the presence of considerable multipath and multiple-access interference. However, in this talk, the premise that they can become part of this IOT revolution will be explored.

Speaker 10: Dr. Kuan Yew Cheong, Universiti Sains Malaysia (USM)



Biography

Kuan Yew Cheong was born in Ipoh, Perak (1972) and received the B. Eng (1st Hons.) in Materials Engineering from Universiti Sains Malaysia (USM), Malaysia in 1997. After graduation, he worked for two years as a project engineer and quality assurance engineer in a project management company and a semiconductor-device manufacturing factory in Malaysia. End of 1999, he decided to pursue his postgraduate study (M.Sc.) after being awarded a Fellowship under Academic Staff Training Scheme from USM. After completion his M.Sc. in Materials Engineering (Thin Film Technology) in 2001, he continued his Ph.D and graduated in 2004 from the School of Microelectronic Engineering, Griffith University, Australia that was fully sponsored by Australian Research Council, USM, and Griffith University Postgraduate Research Scholarship. In 2005, he received a Certificate of Teaching and Learning from USM. Since June 2014, he is serving as a full Professor at the School of Materials & Mineral Resources Engineering. He teaches under- and post-graduate courses related to quality control and management, fabrication and characterization of engineering & electronic materials and devices for more than 11 years.

Prof. Cheong's main research area is on semiconductor material and device fabrication, electronic packaging, and characterization. Outcomes of his research have been published in more than 165 high impact-factor journals and 4 book chapters. Due to his expertise in wide-bandgap semiconductor-based device fabrication technology, he has been invited three times as Visiting Scientist to Korea Electrotechnology Research Institute (KERI), Korea. He has also being invited as Keynote and Invited Speaker for International Conference on Electronic Materials 2010 (ICEM 2010) - International Union of Materials Research Societies (IUMRS), Korea, CIE & IEM International Seminar on Electrical, Electronic and Energy Saving 2010, Taiwan, and Infineon Technologies (Kulim) Sdn Bhd (IFKM) Technical Symposium 2010, Malaysia, Surface Engineering 2011 at Bangkok, Thailand, and Collaborative Conference on Crystal Growth 2012 at Orlando, USA, International Conference on Materials and Characterization Techniques, India, 2014, The 8th International Conference in Materials Processing (ICAMP8) 2014, Australia, and materials related international conference organized by Shizouka University, Japan 2015, just to name a few. Prof. Cheong is serving as a reviewer for numerous referred journals and as theses examiner both local and abroad. He reviewed more than 600 manuscripts and now serving as an Editor (March 2015 – Feb 2017) of *Materials Science in Semiconductor Processing* (Elsevier Science B.V.) and Associate Editor of *Physics Express*. Now, he is also editing a book entitled "*Two-dimensional Nanostructures for Energy Related Applications*" that will be published on mid of 2016

by Science Publisher (an imprint of CRC Press/Taylor and Francis Group). He is a Professional Engineer in Material Engineering discipline registered with Board of Engineers, Malaysia. Honoring his excellent contribution in research, Academy of Sciences Malaysia (ASM) has accoladed Prof. Cheong with 'Top Research Scientists Malaysia' (TRSM) 2013.

Outside the university, he is very active in professional and community activities. Prof. Cheong is a member of Materials Research Society (USA). He was the honorary treasurer for Electron Microscopy Society, Malaysia (2005/2006). Since 2005, he has been elected as one of the Ex-comms of the Institute of Electrical, Electronic Engineers (IEEE), Component, Package, and Manufacturing Technology (CPMT) Society and Electron Device Society (EDS), Malaysia Chapter. In addition, he served as the Chairman (2009 – 2011) and Advisor (2011 – 2012) of Electronic Engineering Technical Division under The Institution of Engineers Malaysia (IEM) and a Council Member of IEM (2009 – 2012). For the past years, he organized a number of local and international conferences. Prof. Cheong, a Certified PSMB Trainer registered with Ministry of Human Resource, Malaysia and a Certified Member of Steinbeis Transfer Centre Network (Steinbeis Malaysia Foundation), delivers technical training courses for local and multinational industries and more than 3,500 engineers and researchers have benefited from those courses.

Topic: Aloe Vera as the Material for All-Nature Electronic Devices

Abstract:

The urge to practice sustainable development is opening up new opportunities for bio-organic materials as a promising candidate in various electronic applications. Utilization of bio-organic materials in electronic devices is an environmentally responsible approach that reduces not only over-reliance on materials of non-renewable origins, but also the amount of electronic waste (e-waste) that overwhelmed landfills throughout the world. Bio-organic materials offer unique properties, such as their inherent biodegradability and biocompatibility, which are not easily replicable by other class of materials. Furthermore, the abundance of bio-organic materials in the nature makes them appealing for the realization of low-cost, high-volume, and disposable electronics. These devices would degrade naturally at the end of operational lifespan, leaving minimal footprint on the environment. While several bio-organic materials [1-3] have been used for various electronic applications, the list is still expanding with the ultimate goal of achieving the platform of all-natural electronics for a sustainable future. One such bio-organic material is *Aloe barbadensis* Miller (Aloe vera). Although the traditional applications of Aloe vera for various medicinal, cosmetic, and nutritional purposes are well established, its application as an electronic material remains largely unexplored. Aloe vera can be a promising candidate for electronic applications, as suggested by the responses of the living plants towards external electrical stimulation [4,5]. In this work, Aloe vera gel is extracted, formulated, and processed into thin films for sustainable electronics development. The dielectric properties of a commercial Aloe vera gel is investigated [6] and its application as the passive layer in an organic field-effect transistor (OFET) is demonstrated [7]. In addition, the bistable switching effects have also been demonstrated for the first time in a metal-insulator-metal (MIM) device, with thin films based on the commercial [8] and naturally extracted [9] Aloe vera gel being the middle insulating layer. The bistable switching effects in the natural Aloe vera-based thin film are attributed to space-charge-limited conduction (SCLC) as a result of charge trapping and detrapping in the natural Aloe vera thin film [9]. Possible sources of charge trapping

centers in the Aloe vera thin film have also been suggested [9]. By using various metals as top electrode of the MIM device and by varying the sequence of voltage sweeps, the charge conduction mechanism governing the bistable switching in natural Aloe vera-based thin film can be manipulated [10]. These demonstrations indicate that natural Aloe vera possesses tremendous potential not only as a passive dielectric layer, but also an active bistable switching layer for sustainable electronic applications.

Speaker 11: Mr. Fong Hong Kee (Education & Medical Technology Marketing Manager, General Electronics Measurements Solutions, Keysight)



Biography

Hong Kee is the Education & Medical Technology Marketing Manager within Keysight Technologies Electronics Industrial Solution Group. His career in Keysight started when it was still Agilent, as the Asia Marketing Development Manager in Hong Kong for the Basic Instruments Division. After 3 years as Asia's MDM, he reported back to Penang and took up roles in Marcom, Application Engineering, Technical Support, Learning Products and Business Segment management.

After graduating, he started his first job in Singapore as an R&D engineer in Thomson Consumer Electronics designing switch mode power supplies. He then joined IBM Singapore as their customer engineer working on IBM S/380, S/390 mainframes, before joining Hewlett Packard as the Technical Marketing Engineer in the HP printers division.

He then transfer to HP Malaysia's Communication Components Division as a Customer Service Engineer handling microwave components. After 2 years in HP Malaysia he moved to Dell Asia Pacific, taking on the role of Operations Manager in Dell's Global Customer Program, supporting Dell's multinational customers and later as the Enterprise Technical Support Manager managing the Enterprise Systems call center for Asia.

Hong Kee holds a Bachelors of Electrical/Electronics & Computer Systems Engineering from Monash University in Australia.

Topic: IoT Solution for a Successful Wireless Devices

Speaker 12: Mr. Sivaraman Rukunmangatha Rajah (Senior Manager at Microchip/Atmel Malaysia)



Biography

Mr. Sivaraman Rukunmangatha Rajah is senior manager at Microchip/Atmel Malaysia since 2008. He is senior member of IEEE and committee member of electronics engineering technical division (eETD), The Institution of Engineers, Malaysia (IEM). He received the B.Eng. (honours) in computer and communication system and M.Sc. in telecommunication and network engineering from Universiti Putra Malaysia (UPM) in 2000 and 2004 respectively. He then completed M.B.A. in general management from Universiti Sains Malaysia (USM) in year 2012 and Project Management Professional (PMP) program in 2014. His primary charter at Atmel is to develop regional new product introduction (NPI) test development team which leads and drives NPI, test development, gross margin improvement, and implementation of cost effective test solution for high volume manufacturing. Prior to joining Atmel, he worked at Freescale & Motorola where he held various functional responsibilities and managerial roles in test engineering and product engineering. A number of technical excellence awards were presented to him in recognition of his superior technical accomplishment and outstanding contribution to Freescale and Motorola. Mr. Sivaraman conducted research on software defined radio (SDR) for base station and successfully modelled the modem recognition algorithm for SDR, as a result, he received bronze award at UPM Invention Expo. Apart from his engineering profession, he has been active in university and industry collaboration programs where he delivered lectures on digital and mixed signal test technology for experienced engineers at Selangor Human Resource Development Centre (SHRDC) and electronics subjects for engineering undergraduate at Monash University Malaysia Campus. His area of interests are microelectronic, nanotechnology, design for test, test technology and radio frequency testing.

Topic: Test Technology Challenges for Integrated Circuit - High Volume Testing Perspectives

Test Technology is vital part of integrated circuit (IC) testing to ensure the fabricated IC's is functioning and meet the design specification before it is shipped to customer or use at application. Rapid advancement of IC technology into deep submicron geometries, increases of functionality that drives high pin count's, higher data rate (speed of execution) and transistor count doubling every two years per Moore's law poses a greater challenges to test technology. One of the prominent test technology

challenges is to enable cost effective test solution that will offer capacity scalability as when production demand increases, optimized coverage to ensure guaranteed quality level is achieved, test data management, increase throughput, lower cost of test, and gross margin improvement. This presentation will share techniques to manage and mitigate the stated test technology challenges from high volume testing perspectives.

Speaker 13: Dr. Chuah Joon Huang (UM)



Biography

Ir. Dr. Chuah Joon Huang received the B.Eng.(Hons.) degree from the Universiti Teknologi Malaysia, the M.Eng. degree from the National University of Singapore, and the M.Phil. and Ph.D. degrees from the University of Cambridge. He joined Intel as an IC Design Engineer, contributing to the creation of next generation of network processors. He was with Freescale Semiconductor as a Senior Product Development Engineer and Senior Test Engineer, overseeing the product development and project execution of high-performance automotive microcontrollers. He is currently a Senior Lecturer with the Department of Electrical Engineering, Faculty of Engineering, University of Malaya. He assumes the positions of Head of Programme for M.Eng. (Mechatronics) and Head of VLSI and Image Processing (VIP) Research Group. He is a Chartered Engineer registered under the Engineering Council, U.K., and also a Professional Engineer registered under the Board of Engineers, Malaysia. He serves in a number of editorial boards, i.e. Journal of Nanoelectronics and Optoelectronics, ASEAN Engineering Journal, etc. His main research interests include image processing, computational intelligence, IC design and scanning electron microscopy.

Topic: Design, Test and System Integration of a Multi-pixel CMOS Photon Detector

The talk is about the design of a novel multi-pixel CMOS photon detector (codenamed MPPD) for generation of secondary electron (SE) images in the scanning electron microscope (SEM). The fabricated microchip offers distinct advantages such as smaller dimensions, lower voltage and power requirements, better integration, pixel-selection configurability and better cost-effectiveness compared to the existing solutions. The integrated circuit consists of main sub-circuits, i.e. photodiode, transimpedance amplifier (TIA), selector-combiner (SC) circuit and post-amplifier (PA). The design has successfully demonstrated an architecture that improves the scalability of the photon detector. The bandwidth targeted and achieved was 10MHz. The microchip was realised in an optically-enhanced Austriamicrosystems (AMS) 0.35 μ m CMOS process and encapsulated in glass-lid quad flat no leads (QFN) packages. After system integration, micrographs were successfully generated with the photon detector and comparisons of images taken with an existing detector were conducted.

Speaker 14: Mr. Ho Eng Ling (Intel PSG)



Biography

Eng Ling graduated with a BSEE and MBA from Universiti Sains Malaysia. He holds position of Managing Architect and the DfX domain lead responsible for advocating current and future DfX solutions for INTEL PSG. His responsibilities include 14nm and 10nm flagship FPGA, 2.5D and FW DfX architecture definition and development. He currently holds 4 US patents (with 4 patent applications pending).

Topic: DfX for SOC

Abstract:

The widespread revolution of electronic products has led to significant increase in complexity of system-on-chip (SoC) devices. Today's SoC incorporates broad mixtures of hard embedded cores such as digital signal processors, memories, busses, processors and many other intellectual property building blocks. This expansion in turn results in increasing scope and challenges on Design-for-Excellence (DfX) initiatives which encompasses various aspects of product enablement including Design-for-Cost (DFc), Design-for-Test (DFt), Design-for-Manufacturing (DFm) and etc. This sharing therefore aims to provide contemporary overview on DfX for SoC based on some key challenges outlined in International Technology Roadmap for Semiconductors (ITRS) namely productivity, power, and manufacturability concerns. This sharing also discusses some of INTEL PSG's DfX approaches to address these challenges.

Speaker 15: Dr. Sudhanshu Shekhar Jamuar



Biography

S.S. Jamuar received his M. Tech and Ph. D. in Electrical Engineering from Indian Institute of Technology, Kanpur, India in 1970 and 1977 respectively. He worked as Research Assistant, Senior Research Fellow and Senior Research Assistant from 1969 to 1975 at IIT Kanpur. During 1975-76, he was with Hindustan Aeronautics Ltd., Lucknow. Subsequently he joined the Lasers and Spectroscopy Group in the Physics Department at IIT Kanpur, where he was involved in the design of various types of Laser Systems. He joined as Lecturer Electrical Engineering Department at Indian Institute of Technology Delhi in 1977, where he became Assistant Professor in 1980. He was attached to Bath College of Further Education, Bath (UK), Aalborg University, Aalborg (Denmark) during 1987 and 2000. He was a Professor in the Department of Electrical Engineering at IIT Delhi from 1991 to 2003. He was Consultant to UNESCO during 1996 in Lagos State University, Lagos (Nigeria). He was with University Putra Malaysia during 1996 – 97 and 2001 - 2009 in the Faculty of Engineering and Faculty of Engineering, University of Malaya (Malaysia) 2009-2013. Presently he is Professor in the School of Microelectronics Engineering at University Malaysia Perlis since November 2013.

He has been teaching and conducting research in the areas of Electronic Circuit Design, Instrumentation and Communication Systems. He has about 75 papers in the International Journals and has attended several International Conferences and presented papers. He recently received Taiwan Patent on “A Simulation Circuit Layout Design for Low Voltage, Low Power and High Performance Type II Current Conveyor”. He is recipient of Meghnad Saha Memorial Award 1976 from IETE, Distinguished Alumni Award from BIT Sindri in 1999, Best paper award in IETE journal of Education 2004 from IETE. He is Fellow of IET (UK), Senior member of IEEE and Fellow of Institution of Electronics and Telecommunications Engineering (India). He is also IET International Professional Registration Advisor till 2018. He was DLP speaker for IEEE CAS for the year 2008-2009. He is on the Editorial Board of Wireless Personnel Communication Journal. He was the Chapter Chair for IEEE CAS Chapter from 2002 to 2007 in Malaysia.

Topic: LED LIGHTING - PAST, PRESENT AND FUTURE TECHNOLOGY

Abstract:

The current global LED-map has Malaysia as number 3/4/5 in LED production but not in lamps or drivers. This needs to be addressed in order to compete with major player in the LED driver manufacturing and give boost to LED driver electronic design industries. It is more so desirable because Malaysia like other developed countries in the world is moving rapidly towards a complete LED lighting within the next couple of years. Malaysia's energy roadmap, under KeTTHA also subscribes to the lower power consumption as well as NKEA's for LED and LED drivers.

There are many LED drivers in the open market, isolated or off-line, made by specialist IC design manufacturers or by specific requirements. However, none cater fully for a variety of lamp optical designs, high electrical efficiency or good thermal behaviour. Furthermore, the LED, being optically more efficient than other forms of light sources, generates heat under continuous current drive. Hence due to poorly designed lamp housing, both LED and drive electronics' components fail quite often. Hence, a good thermal design must take into account both heat output from LED and drive electronics.

This talk will give an insight of present scenario in LED drive technology, lamp housing and thermal design. Some new development in these areas will be discussed followed by futuristic design in LED driving to reduce the power consumption. Since the power consumption will reduce, the thermal design and housing will also become simpler.

Speaker 16: Mr. Kaw Kiam Leong (National Instrument)



Biography

Kaw Kiam Leong graduated from Multimedia University (Cyberjaya) Malaysia with a degree in Electronics majoring in Computer. He has been in the field for more than 10 years working directly with customers in different industries, manufacturing organizations as well as academic institutions. Over the years, Kiam Leong has developed a close relationship with the industries and universities. He contributes to the early set-up of many research labs in various academic institutions by sharing his knowledge and expertise in the Test & Measurement field. Kiam Leong focuses on design, validation, and product testing in manufacturing environment; addressing various technical challenges using common NI platform technologies. In addition, Kiam Leong guides his customers in defining and deploying their Automated Test Equipment (ATE) architecture to decrease test time, increase throughput and lower test cost. Based in Penang, Malaysia, Kiam Leong offers free technical consultations and conduct technical seminars regularly.

Topic: 5G – From Theory to Practice

Abstract:

5G is an exciting research area paving the way for faster, more responsive mobile access networks with increased capacity. Among the new and innovative approaches to solve these challenges include mmWave frequencies, densification, new mobile access technologies/waveforms and Massive MIMO. To expedite the transition of these new technologies from concept to commercialization and adoption requires a platform approach. This presentation gives an overview on some of the latest candidate 5G technologies, their progress and their potential to address the 5G needs

Speaker 17: Alan Chang (Richardson Electronic/Anokiwave)



Biography

Asia Pacific Sales Director

Topic: Phased Array System

Abstract:

Speaker 18: Dr. Subhash Chander Rustagi (Silterra)



Biography

Subhash C. Rustagi (SM'03) received his Ph.D. degree from Kurukshetra University, Kurukshetra, India, for his work on the transit-time analysis of bipolar transistors in 1980. He is heading Design Technology Department at Silterra since 2009. Before joining Silterra, he was with the A- Star Institute of Microelectronics, Singapore, and with Centre for Applied Research in Electronics, IIT, Delhi, India. In his career spanning over more than 30 years, he has consulted with many companies and has authored/co-authored more than 90 papers in reputed International Journals and refereed Conferences. Subhash was recipient of the George Smith award for best paper in IEEE Electron Device Letters for the year 2007. He is credited with two patents from USPTO. His current responsibilities include characterization and model extraction/development for whole spectrum of devices in CMOS Technology, TCAD, and support for Process Design Kit development. Subhash is a Senior Member of IEEE.

Topic: TCAD – Solid-State Design in Silicon Technology

Abstract:

TCAD is a powerful regime of computer-aids for designing solid state devices, more particularly the devices in all important silicon technology. In this talk, after defining the arena of TCAD, a brief glimpse into the history of TCAD will be taken. Some of the physical models typically used in TCAD tools will be described to bring out the challenges involved in TCAD simulations. An attempt will be made to bring out the necessity of calibration of TCAD models locally at the point of use. This is needed in addition to the efforts of the tool developers/vendors who continue to provide calibrated model parameters based on rich literature which draws on extensive physical and electrical measurements. The talk will conclude with a summary of the presentation.

Speaker 19: Dr. Arjun Kumar (Silterra)



Biography

Arjun is the VP of Technology Development. He has been with Silterra since 2001 and has been instrumental in setting up various technologies at Silterra.

He has a total experience of 22 years in Semiconductor Foundry and through out his career has been working in Technology Development and Process Integration.

He has experience in leading various teams to develop technologies from the start and take them through various phases (such as feasibility, prototyping, qualification, risk release and full production ramp). He has exposure in setting up capabilities such as Design technology (Test structure and IP development, PDK development, SPICE modeling and Simulation) and Process qualification/reliability.

He has worked on various technology nodes starting from 0.6um through 80nm covering HV, Logic, RF, Mixed Signal, BCD, Flash, MEMS and others.

Arjun holds a Master's degree in Microelectronics from Texas A&M University, USA and a Bachelor's degree in Electrical and Electronics from Sri Venkateswara University, India.

He has been granted 5 US patents and authored various technical publications.

Topic: RF MEMS

Abstract:

Speaker 20: Bob Ng Shiong Nien (Rohde & Schwarz, Malaysia)



Biography

Bob Ng received his B.E. degree in Electronics Engineering from Multimedia University in 2004. After that he worked as RF Product Engineer for Agilent Technologies where he was involved in manufacturing and quality of high performance spectrum analyzers up to millimeter wave. He further expanded his breadth in test and measurement (from RF to digital to LF) in 2008 as a pioneer Application Engineer and then Solutions Consultant Manager for a local startup company representing Agilent Technologies. Since 2012, he has joined Rohde & Schwarz as the Systems and Application Engineering Manager. He has special interest in multi-disciplinary applications, whereby traditional test and measurement concepts are applied in other disciplines such as chemical, biology etc. He is also passionate about innovation culture and how technology can make a positive impact in society.

Topic: IOT/5G

Abstract:

Speaker 21: Dr. Milton (Chun-Hsien) Lien (NI, AWR)



Biography

Dr. Milton (Chun-Hsien) Lien is currently a regional technical manager for AWR Group, NI. Before joining AWR, he was a technical applications manager with Advanced Communication Engineering Solution Co. Ltd, Hsinchu, Taiwan. He received the B.S. degree in communication engineering from National Chiao Tung University, Hsinchu, Taiwan, in 1998, and a Ph.D. degree in communication engineering from National Taiwan University, Taipei, Taiwan, in 2009. His research interests include the design and analysis of RF, microwave and MMW circuits, Signal Integrity, EMI and computational electromagnetic.

Topic: Si design flow using AWR – A Ka-Band SiGe Receiver

Abstract:

The frequency range 25-45 GHz contains point-to-point bands at 28, 32, 38 and 42 GHz, potential implementation of 5G at 28 and 39 GHz and various military applications. SiGe HBT technology may offer lower cost solutions for systems that can tolerate lower performance. This presentation presents the design and measurements of a broadband SiGe receiver with a noise figure of 6 ± 1 dB over the entire 25 to 45 GHz bandwidth. The measured gain is sufficiently linear to support 1024 QAM in the 35 to 45 GHz range. The receiver is developed using the highly integrated AWR software platform. AWR's Analog Office (AO) for Silicon design is used to design the circuit which is coupled with AXIEM for electromagnetic simulation of the structures and Visual System Simulator (VSS) is used for system performance evaluation.

Speaker 22: Dr. Nor Azmi ALIAS (Crest)



Biography

Senior Vice President Research Management

Topic: Driving innovation at the intersection of social mobility, health and technology

Abstract:

Speaker 23: Mr. Kalai Selvan Subramaniam (USAINS Infotec General Manager)



Biography

Kalai is the General Manager for USains InfoTech Sdn. Bhd. (UISB), which is a subsidiary of USains Holding (Commercial Arm of University Sains Malaysia) and the manager & operator of the Center of Excellence for E&E for Northern Corridor of Malaysia.

Kalai has more than 25 years of experience in the electronics/semiconductor industry with experience in high performance SOC (Systems on Chip) R&D environment from start-up to MNCs. He is passionate in setting up teams from ground up and building efficient functional engineering organization. He holds BEE (Hons) and MEng from UTM.

He is a Senior Member of IEEE and active contributor to IEEE Malaysia section and chapters. He has held a number of portfolios in local IEEE section and chapter. He is the current Chair of the Malaysia IC Design Association (MICDA) and actively participates in the National Electronics industry development forums/committees especially with regards to uplifting the Semiconductors and IC Design areas.

He started his career in Motorola Semiconductors and spent a total of 12 years in Motorola Semiconductor/Freescale Semiconductor with experience in Product & Test Development, IC/SOC Design and NPI management. He spent 2 years in Austin, Texas working on Motorola's advanced MCU design, and Singapore for 4 years leading Micro Controller & DSP SOC Design.

Kalai joined budding Start-up Company in CyberJaya; My-MS as the pioneer team. Here he was involved in heading and setting-up the IC Design capability from the ground up to develop Embedded & Security Memory SOCs. He architected and implemented mixed mode design methodology and led team to Design & Develop Embedded crypto SOC with Non-Volatile Memory using industry's advanced process technology.

Kalai also worked at Intel Corp. for over 8 years as Site Silicon Validation Manager and Design Engineering Manager for Low Power Embedded SOC Design & Development. He was instrumental in setting up a functional engineering team in Intel Penang supporting multiple projects and implemented capabilities for pre-silicon validation using emulation platform and post silicon validation activities for Communication and Networking product group.

Topic: Overview of Semiconductor and IC Design Industry in Malaysia

Abstract:

The presentation will cover the evolution of Semiconductor industry and its components in Malaysia. Malaysia is one of the pioneer countries involved in the Semiconductor industry with many of the MNCs setup their first offshore manufacturing in this country over 40 years ago. Special focus will be given to VLSI IC Design and its eco-system from Malaysian perspective.