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## 2010 IEEE INTERNATIONAL MEMORY WORKSHOP (IMW)

THE SECOND IEEE INTERNATIONAL MEMORY WORKSHOP WILL BE HELD AT THE SHILLA HOTEL IN SEOUL, SOUTH KOREA, MAY 16-19



In response to the growing global interest in memory technologies, the previous **NVSMW** – **N**on **V**olatile **S**emiconductor **M**emory **W**orkshop – and **ICMTD** – **I**nternational **C**onference on **M**emory **T**echnology and **D**esign – were merged together in 2008. The workshop is sponsored by the IEEE Electron Devices Society and meets annually in May. While in 2008 the combined 23rd NVSMW & 3rd ICMTD conference was in Europe, the first IMW was held in California this year. In 2010, the IMW will be held in Korea. In 2011, IMW plans to be back in the US and then in Europe in 2012. The convergence of consumer, computer and communication electronic systems is leading to an exponential growth in need, mainly for code, computing and data storage. While in the past we could associate a memory technology to a specific market segment (e.g. RAM to computer, NOR Flash to mobile communication, NAND Flash to consumer DSC), today the new electronic systems stack different NVMs and xRAM memories, and use  $\mu$  Controller to facilitate interfacing and managing the overall memory. The characteristics of this complex memory system in terms of density, performance, power consumption, packaging and interfacing become of greater interest. The capabilities provided by the new memory technologies, new concepts and material proposed today will drive the definition of these memory systems in the future. The IMW wants to answer

(continued on page 7)

### YOUR COMMENTS SOLICITED

Your comments are most welcome. Please write directly to the Editor-in-Chief of the Newsletter at [nstojadinovic@elfak.ni.ac.yu](mailto:nstojadinovic@elfak.ni.ac.yu)

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## CONTRIBUTIONS WELCOME

Readers are encouraged to submit news items concerning the Society and its members. Please send your ideas/articles directly to either the Editor-in-Chief or appropriate Editor. The e-mail addresses of these individuals are listed on this page. Whenever possible, e-mail is the preferred form of submission.

### NEWSLETTER DEADLINES

ISSUE	DUE DATE
January	October 1st
April	January 1st
July	April 1st
October	July 1st

The EDS Newsletter archive can be found on the Society web site at <https://www.ieee.org/portal/pages/society/eds/pubs/newsletters/newsletter.html>. The archive contains issues from July 1994 to the present.

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## CONGRATULATIONS TO THE WINNERS OF THE 2009 NOBEL PRIZE IN PHYSICS

Photo: Richard Epworth



Charles K. Kao



Willard S. Boyle

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George E. Smith

The prestigious 2009 Nobel Prize in Physics was awarded to three former and present members of the IEEE Electron Devices Society. Charles K. Kao is awarded one half the \$1.4 million prize "for groundbreaking achievements concerning the transmission of light in fibers for optical communications." The other

half goes to Willard S. Boyle and George E. Smith "for the invention of an imaging semiconductor circuit – the CCD sensor."

In 1966, Charles Kao of the Standard Telecommunication Laboratories, Harlow, UK and the Chinese University of Hong Kong just one year after obtaining his PhD, made calculations indicating that light could be transmitted over great distances via pure optical glass fibers. His prediction stimulated researchers all over the world to make pure glass fibers and this prediction was proven just four years later, in 1970. Now, optical fibers are the medium of choice for high bandwidth data, video and voice transmission, both for long distance and even locally to the home.

In 1969, Willard Boyle and George Smith of the Bell Telephone Laboratories, Inc. in Murray Hill, New Jersey, invented the CCD, or charge coupled device. Their patent, "Information Storage Devices", stimulated considerable work, including

the resultant invention of the CCD area imaging device by another EDS member, Michael F. Tompsett, also of Bell Laboratories.

George Smith is known to many members of the IEEE Electron Devices Society. He served for many years, 1980–1986, as the first editor of the highly successful, rapid turn-around-time *IEEE Electron Device Letters*. In recognition of his valuable contributions to this journal, his name is on "The George E. Smith Award," which was established in 2002 to recognize the best paper appearing in *IEEE Electron Device Letters*. He served from 1978–1983 as an elected member of EDS AdCom, chaired several EDS conferences and was a member of several IEEE Boards and committees. In addition, he received the 1997 EDS Distinguished Service Award, which was established in 1993 to recognize and honor outstanding service to the Electron Devices Society and its sponsored activities.

The members of the IEEE Electron Devices Society should be proud of the fact that three of our members were recognized for their device contributions with the 2009 Nobel Prize in Physics. In addition, they have been recognized with numerous awards for their achievements. Their impact on modern high bandwidth communications and consumer, medical and astronomical products is impressive.

Alfred U. Mac Rae  
EDS Vice-President of Awards  
Mac Rae Technologies  
Berkeley Heights, NJ, USA

# UPCOMING TECHNICAL MEETINGS

## 2010 IEEE INTERNATIONAL VACUUM ELECTRONICS CONFERENCE (IVEC)

The 11th IEEE International Vacuum Electronics Conference (IVEC 2010) is returning to the picturesque city of Monterey, California, May 18–20, 2010. The meeting will be held at the Monterey Conference Center at the Portola Hotel and Spa under the sponsorship of the IEEE Electron Devices Society (EDS).

The IVEC 2010 conference is organized by a committee made up of representatives of government, industry and university researchers. Members of the 2010 Conference Organizing Committee are listed below.

### Conference Organizing Committee

*General Chairman:* Carol Kory, Teraphysics Corporation

*Technical Program Chair:* William Menninger, L-3 Communications ETI  
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Ralph Nadell, Palisades Conference Management

Dev Palmer, Army Research Office  
Richard True, L-3 Communications EDD

David Whaley, L-3 Communications EDD

Oversight of the conference is provided by the EDS Technical Committee on Vacuum Devices; an international committee chaired by Dr. Baruch Levush of NRL.

IVEC was originally created in 2000 by merging the US Power Tubes Conferences and the European Space Agency TWTA Workshops, and has now expanded to a fully international conference, being held every other year in the US, and in Europe and Asia alternately every fourth year. After Kitakyushu, Japan in 2007, Monterey, California in 2008, and Rome, Italy in 2009, IVEC returns to Monterey in 2010. Monterey is a spectacular coastal community

in northern California with a temperate climate year-round. Visitors from around the world come to Monterey to experience its natural beauty, cultural resources and rich historic past.

Since its inception, IVEC has become the premier international venue for presentations in the field of vacuum electronics. It provides a forum for presentation and discussion of topics on vacuum devices, vacuum microelectronics, applications of vacuum devices, and the theory and technological developments of vacuum electron devices. For systems developers, IVEC provides a unique snapshot into the state of the art in vacuum electron devices. These devices continue to provide power and performance for advanced electromagnetic systems especially at higher frequency. Rapid technological advances in the vacuum electron device area, plus new and improved devices, are making possible systems having reliability and capabilities well beyond any fielded today.

The 2010 IVEC conference will open the first day with a plenary session featuring invited speakers covering several subjects of broad interest to the community. This session will be followed by two and a half days of technical presentations that include both oral and poster sessions. Papers will include presentations on a wide range of classic vacuum devices. The technical subject categories are listed below.

#### 1) Vacuum Electron Devices

- Traveling-wave tubes (all types)
- Crossed-field devices (oscillators and amplifiers)
- Klystrons
- Multiple-beam devices

Monterey Conference Center at the Portola Hotel and Spa





- Inductive output tubes
- Fast-wave devices (gyrotrons, gyro-amplifiers)
- Free electron lasers and masers
- Pulse compression devices
- Plasma filled amplifiers and oscillators
- High power microwave devices/RF directed energy
- Triodes, tetrodes and pentodes
- Power switches

#### 2) *Vacuum Microelectronics/ Nanoelectronics*

- Microwave, millimeter-wave & THz amplifiers and oscillators
- Field emitter arrays
- Flat panel displays
- Sensors and detectors

#### 3) *Systems and Subsystems*

- Microwave and millimeter wave power modules
- Electronic power conditioners, modulators, and supplies
- Linearizers
- Amplifier/antenna coupling
- Device and system integration
- Reliability

#### 4) *Technologies*

- Cathodes and other electron emitters
- Component parts (e.g. guns, circuits, windows, collectors)
- Analysis and computer modeling
- Novel materials (e.g. dielectrics, coatings, magnetic materials)
- Electron emission
- RF breakdown
- Linearity, intermodulation and noise
- Novel measurement techniques
- Miniaturization
- Thermal power management and control

#### 5) *Applications of Vacuum Electron Devices*

- Defense
- Space
- Radar
- Telecommunications
- Medicine
- Particle accelerators
- RF interference
- Instruments and lithography

- Materials Processing
- Television
- Displays
- Electric Propulsion

Extended abstracts of up to two pages in length for IVEC 2010 should be submitted electronically by January 15, 2010. Information on the preparation and submission of the abstracts can be found on the conference web site at <http://ivec2010.org>.

As in past conferences, the technical meeting and social events will provide a unique opportunity to renew friendships with colleagues and friends, interact with customers, and meet students. A highlight of the meeting will be the presentation of the IVEC Award for Excellence in Vacuum Electronics, and a Best Student Paper Award. Complete details about the meeting and these awards can be found on the conference web site at <http://ivec2010.org>.

*Carol L. Kory  
2010 IVEC General Chair  
Teraphysics Corporation  
Cleveland, OH, USA*

## 2010 IEEE INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM (IRPS)

The 48th IEEE International Reliability Physics Symposium (IRPS) will be held at the Hyatt Regency Orange County, Anaheim, California, May 2–6, 2010. For nearly 50 years IRPS has been the leading conference in the area of microelectronics reliability. This comprehensive meeting is an ideal opportunity for scientists and engineers to present their latest results and also to stay current with recent developments in the reliability community.

IRPS was started in the 1960s by the military and aerospace communities, and is now jointly sponsored by the IEEE Electron Devices Society and the IEEE Reliability Society. The meeting has consistently drawn at-

tendees from North America, Europe, Asia, and other parts of the world. This year, to reflect the trend towards increased activities in alternative energy sectors, IRPS is introducing a new technical topic on "Reliability of Alternative Energy Technologies" covering unique IC-based reliability phenomena and failure mechanisms in alternative energy technologies including solar, wind, transportation and power storage. Tutorials and papers which address the technical challenges in this area will be part of the program.

The highlight of the conference consists of three days of parallel technical sessions in which scientists and engineers working in the area of

microelectronics reliability present their original research. The presentations focus on areas such as identification of new failure mechanisms in emerging technologies, improvement in understanding of known failure mechanisms, and demonstration of new techniques for reliability evaluation. Technologies addressed include silicon-based integrated circuits, compound semiconductor devices, and emerging devices such as organic electronics and nanoelectronics. Specific topical areas to be addressed at IRPS 2010 are:

- Device Dielectrics
- Transistor Degradation
- Non-Volatile Memory
- Soft Error Effects



*The 2010 IRPS will be held in Anaheim, California*

- Assembly and Packaging
- Failure Analysis
- MEMS
- Solar cells
- Device and Process
- Interconnects and BEOL dielectrics
- ESD and Latch-Up

In addition to the technical platform presentations, presenters submit papers that discuss their work in more depth. Electronic copies of all conference papers will be provided to each attendee.

Other opportunities at the conference include:

**Tutorial Program:** Two days of tutorials (May 2–3) will be presented covering various areas of microelectronics reliability. Examples of tutorial topics are areas such as Photovoltaic cell and electronics degradation, high-k stack reliability, BEOL reliability, and fundamentals of reliability wear-out mechanisms. For each tutorial, a recognized expert collects and presents key information, offering a comprehensive overview of the topic to the attendees. This provides people new to the field with a thorough introduction to the topic, and also affords experienced researchers an opportunity to review and discuss with their colleagues important reliability issues and challenges that are currently

faced in the industry. Copies of the presenters' slides will be provided to attendees.

**Reliability Year-In-Review:** At the year-in-review, a summary of the most significant new developments in the reliability community over the past year is given. This serves as a convenient, single source of information for attendees to keep current with the recent reliability literature. A copy of the year-in-review slides will be provided to attendees.

**Evening Workshops:** The evening workshops provide attendees with an opportunity to discuss key areas of concern in an informal setting under the guidance of a moderator experienced in the field. Many of the workshops are directly coupled to the technical program, thereby providing a venue for in-depth discussion of the topic.

**Evening Poster Session:** The poster session provides an additional opportunity for authors to present their original research. The setting is informal and allows for easy discussion between authors and other attendees. More than seventy posters will be presented this year on broad-range of reliability topics.

**Equipment Demonstrations:** Held in parallel with the tutorial and techni-

cal sessions, the equipment demonstrations provide a forum for manufacturers of state-of-the-art laboratory equipment to present their products. Attendees are encouraged to visit the manufacturers' booths for information and demonstrations.

Best paper, best poster, and best student paper awards will be given. To qualify for the best student paper award, the IRPS presenter must be a student and also be the first author of the paper.

IRPS 2010 will be held in Anaheim, a fabulous city in Southern California home to Disney Land, beautiful beaches and a wide range of attractions for visitors. The IRPS committee will be putting together tour programs for spouses to visit local attractions. Come be a part of the excitement and join us at IRPS 2010!

For registration and other information, visit the IRPS website, [www.irps.org](http://www.irps.org). You may also contact the 2010 IRPS General Chair, Tom Moore by e-mail at [moore@omniprobe.com](mailto:moore@omniprobe.com). We look forward to seeing you in Anaheim!

*Prasad Chaparala  
2010 IRPS Publicity Chair  
National Semiconductor Corp.  
Santa Clara, CA, USA*

## 2010 IEEE INTERNATIONAL MEMORY WORKSHOP (IMW)

(continued from page 1)

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this need, extending the scope from non-volatile memory, which had been successfully discussed in more than 30 years of NVSMW's history, to large memory technologies and design, which were the focus of IC-MTD, in the view of systems.

Innovation is our tradition: IMW widened its focus while maintaining the positive characteristics of a workshop. IMW is a unique forum for both specialists in all aspects of microelectronic memory and novices wanting to gain a broader understanding of the field. The workshop is usually attended by a wide international community from North America, Europe, Japan and Asian countries. Attendees include industry leaders, researchers in academia and industry as well as end users of

memory products. Principal topics for discussion are: device physics, silicon processing, product testing, new technologies including new structures and novel approaches, programmable logic, memory cell design, integrated circuits, solid state disks and memory cards, reliability and new applications.

An important goal of IMW is to provide an informal environment to encourage discussions among participants and lively interactions. There will be morning and afternoon technical sessions, along with a lively evening panel discussion on a hot topic in memory field. Technical interaction among presenters and attendees is encouraged through question and answer sessions and allotting ample time after formal paper presentations

for further in-depth discussions. Organized breaks, including snacks and the conference dinner and lunch are provided as opportunities to meet and exchange ideas with colleagues. The morning and afternoon technical sessions are organized in a manner of providing ample time for the informal exchange and to enjoy the beauty of the Seoul area. The hotel is conveniently situated in Seoul for sight-seeing. Please visit the conference web site and register, <http://www.ewh.ieee.org/soc/eds/imw/>.

*Jungdal Choi  
2010 IMW Finance Chair  
Samsung Electronics  
Gyeonggi-Do, Korea*

# SOCIETY NEWS

## EDS ORGANIC ELECTRONICS COMMITTEE REPORT



Hagen Klauk

The past chair of the EDS Organic Electronics Committee, Ananth Dodabalapur, the former and current Organic Electronics Committee members, and the editors currently covering organic devices for *IEEE Electron Device Letters* and *IEEE Transactions on Electron Devices*, Arokia Nathan and Jerzy Kanicki, have worked very hard over the past years to increase the visibility of organic electronics in the electron devices community. After the number of contributions on organic devices at the IEDM had been quite low for three years in a row, IEDM 2009 once again featured a full session with a total of six high-quality presentations on organic electronic devices and circuits. In addition, the Organic Microelectronics & Optoelectronics Workshop, held annually in San Francisco in early July and co-sponsored by the American Chemical Society (ACS), the Materials Research Society (MRS), and the IEEE, has

grown into one of the most popular gatherings for those working in the areas of organic displays, organic lighting, organic solar cells, and organic transistors.

Meanwhile, there have been a number of exciting and encouraging developments in the area of organic electronics during the past 12 months. Several electronics companies have successfully launched mobile phones and media players sporting full-color active-matrix organic LED (AMOLED) displays with Wide-VGA (WVGA) resolution and screen size between 2.8 and 3.7 inch. Compared with the liquid-crystal displays they are replacing, OLED displays offer enhanced viewing experience and lower power consumption. At least one company has recently started shipping samples of large-area organic LED lighting panels, while several companies are preparing for mass production. Organic LED lighting is expected to become a serious competitor to incandescent and fluorescent indoor lighting in the near future. Flexible organic solar cells that can be used to charge electronic accessories on

the go have also become available from at least one company, while another company has recently pushed the world record for organic solar cell efficiency past 7%. The first electronic readers (eReaders) that feature thin, lightweight and shatterproof plastic displays enabled by organic field-effect transistors are expected to become available within a year or two.

The present committee members are:

Ana Claudia Arias (PARC)

Oana Jurchescu (Wake Forest University)

Bernard Kippelen (Georgia Institute of Technology)

Hagen Klauk (Max Planck Institute for Solid State Research, Stuttgart)

Takao Someya (University of Tokyo)

Jana Zaumseil (University Erlangen-Nuremberg)

*Hagen Klauk  
EDS Organic Electronics  
Committee Chair  
Max Planck Institute for  
Solid-State Research  
Stuttgart, Germany*

## EDS VACUUM DEVICES TECHNICAL COMMITTEE REPORT



Richard Carter  
Winner IVEC 2009  
Award for Excellence  
in Vacuum Electronics

The EDS Vacuum Devices Technical Committee would like to announce that Professor Richard Carter was presented with the IVEC 2009 Award for Excellence in Vacuum Electronics on 28 April at the Tenth Inter-

national Vacuum Electronics Conference in Rome.

This prestigious award was made, "For a life-long commitment to education in vacuum electronics and visionary leadership in academia and technical research in the field." It recognizes the international impact of Professor Carter's work over a period of thirty years. His insight and comprehension of the complex mechanisms of vacuum electronics, togeth-

er with a rare aptitude for synthesis and explanation, have resulted in a widely recognized influence on the way many former students, researchers and people who have attended his lectures think about the theory and modeling of microwave tubes. His lectures, delivered in eight countries, three continents, and in video recordings, have been an invaluable source of knowledge within the international vacuum electronics and



particle accelerator communities. Nearly fifty people have worked with him as research fellows, research assistants and research students over his career. Several of these people now hold leading positions: two are laboratory directors and three head major research groups in the USA, China and India.

Professor Carter's breadth of expertise is demonstrated by innovative contributions on: modeling of helix, coupled-cavity, folded waveguide and other slow-wave structures for traveling-wave tubes (TWTs) with particular emphasis on equivalent circuit definition, performance improvements and large signal aspects; design and simulation of strapped magnetron anodes; beam-wave interaction in klystrons and multi-beam klystrons; and development of methods of cold-test measurement for components used in microwave tubes. He was responsible for developing or overseeing the development of computer codes for large-signal modeling of TWTs and klystrons in the UK. His contributions have been embodied in computer codes that are used in UK, European, and Indian companies and research laboratories for computer-aided design of microwave tubes.

Appointed to the staff of the Engineering Department of Lancaster University in 1972, Richard Carter was promoted to a Chair in 1996. He was influential in the formation of the Faraday Partnership in High Power Radio-Frequency Engineering

in 2001 and the Cockcroft Institute of Accelerator Science and Technology in 2004. He is an IEEE Electron Devices Society Distinguished Lecturer and has been a member of the Technical Committee on Vacuum Electronics since its formation in 1998.

The International Vacuum Electronics Conference IVEC 2009 was held in Rome, Italy, 28–30 April 2009. The meeting, attended by more than 250 delegates, took place at the Angelicum, Pontifical University of Saint Thomas Aquinas and was sponsored by the European Space Agency with the technical co-sponsorship of the IEEE Electron Devices Society (EDS) and the support of the University of Rome Tor Vergata. IVEC was originally created in 2000 by merging the US Power Tubes Conferences and the European Space Agency TWTA Workshops, and has now expanded to a fully international conference, being held every other year in the US, and in Europe and Asia alternately every fourth year. After Kitakyushu, Japan in 2007 and Monterey, USA in 2008, IVEC 2009 returned to Europe for the celebration of its tenth anniversary in the magnificent city of Rome. For information on IVEC 2010, please visit the conference web site, <http://www.ivec2010.org/>.

The IVEC Award for Excellence in Vacuum Electronics was established in 2002 to recognize outstanding contributions to the field. Anyone or any group of persons working in the field of vacuum electronics is

eligible for this award, which will be presented each year during the IVEC conference. Anyone in the field may place a colleague in nomination. Selection of the winner will be made by a vote of the members of the Technical Committee. Members of the Technical Committee who are nominees may not vote. Only living persons are eligible for the award. The winner will receive a commemorative plaque and an award of \$2,000. If a group nomination is selected for the award they will each receive a plaque and share the \$2,000.

Previous recipients of the IVEC Award for Excellence in Vacuum Electronics:

2002 – Armand Staprans, Communication and Power Industries, USA  
2003 – George Caryotakis, Stanford Linear Accelerator, USA  
2004 – Georges Fleury, Thales Electron Devices, France  
2005 – Joe Saloom, Technical Consultant, USA  
2006 – Jim Dayton Jr., Genvac Aerospace Corp., USA  
2007 – Baruch Levush, Naval Research Laboratory, USA  
2008 – Manfred Thumm, University of Karlsruhe, Germany  
2009 – Richard Carter, Lancaster University, UK

*Dan M. Goebel  
EDS Vacuum Devices Technical  
Committee Chair  
Jet Propulsion Laboratory  
Pasadena, CA, USA*

## 2011 IEEE CALL FOR FELLOW NOMINATIONS

Nominate a Colleague

If you are considering nominating a colleague from industry, government, or academia for elevation to IEEE Fellow grade, the opportunity to do so is here. This prestigious group now numbers over 6000 out of IEEE's total of nearly 380,000

members. These Fellows are the visionaries, the pioneers, and technology leaders in their field as well influential members in the international community. IEEE Senior members or Life Senior members in good standing, who have completed five

years of service in any grade of IEEE Membership and who have made an outstanding contribution to the electronic or electrical engineering profession may be nominated in one of four categories: application engineer/practitioner, educator, research

engineer/scientist, or technical leader. The IEEE Fellow web site, <http://www.ieee.org/fellows>, has all the information you will need including the requirements for nominee eligibility as well as nomination instructions and all the forms. The nomination period is presently open and will continue through 01 March 2010 for the Class of 2011.

We encourage you to use the Online Application process which is quick and easy. Once you have started the application, it can be held in Draft status until you have completed the entire form and are ready to send the information to us. Once you have submitted the application, the electronic process will automatically send emails to your referenc-

es and endorsers and provide the means for you to track their status.

The IEEE Fellow Staff is working to make your nomination process as trouble free as possible and they are ready to assist with all phases of the application process. Should you have any question during the completion process you can email [fellows@ieee.org](mailto:fellows@ieee.org).

## 2009 EDS PH.D. STUDENT FELLOWSHIP WINNERS



Paul K.L. Yu



Agis A. Iliadis

The Electron Devices Society Ph.D. Student Fellowship Program was designed to promote, recognize, and support Ph.D. level study and research within the Electron Devices Society's field of interest: The field of interest for EDS is all aspects of engineering, physics, theory, experiment and simulation of electron and ion devices involving insulators, metals, organic materials, plasmas, semiconductors, quantum-effect materials, vacuum, and emerging materials. Specific applications of these devices include bioelectronics, biomedical, computation, communications, displays, electro and micro mechanics, imaging, micro actuators, optical, photovoltaics, power, sensors and signal processing.

The Society is concerned with research, development, design and manufacture related to materials, processing, technology, and applications of such devices, and scientific, technical, educational and other activities that contribute to the advancement of this field.

EDS proudly announces four 2009 EDS Ph.D. Student Fellowship winners. Brief biographies of the 2009 recipients appear below. Detailed articles about each Ph.D. Student Fellowship winner and their work will appear in forthcoming issues of the EDS Newsletter.



**Pierre-Yves Delaunay** received his B.Sc. degree in Engineering from Ecole Polytechnique, Palaiseau, France, in 2004. Majoring in Applied Physics and Solid State Engineering, he obtained the M.Sc. degree in Electrical Engineering in 2005. Pierre-Yves is working toward a Ph.D. degree at Northwestern University, USA, under the supervision of Professor Manijeh Razeghi. His research focuses on the fabrication and testing of infrared cameras based on Type-II InAs/GaSb superlattices.

Over the past 4 years, he authored or co-authored over 25 papers in peer-reviewed journals such as *Applied Physics Letters*, *Journal of Applied Physics* and *IEEE Journal of Quantum Electronics*. One of them was selected for the cover of the May-June 2008 issue of the *IEEE Journal of Quantum Electronics*. Pierre-Yves also serves as an active reviewer for the *Journal of Electronic Materials*.



**Faisal Amir** received the B.Eng degree in electrical engineering from PNEC/NED University, Pakistan. He joined the University of

Manchester, UK, in 2006, enrolling for an MSc leading to Ph.D. program under a NUST scholarship. He completed the MSc course with distinction in 2007 and continued for a Ph.D. under the supervision of Professor M. Missous, on high power Terahertz sources and in particular advanced graded gap Gunn diodes physical model development. Great potential is seen in his novel research work, which will make significant contribution to future THz systems and in particular in security imaging systems. Mr. Faisal Amir is an IEEE and IET student member.



**Ximeng Guan** is currently working towards his Ph.D. degree at the Institute of Microelectronics, Tsinghua University. His research

interests are in the modeling of nanoscale electronic devices. In the last four years he has authored or co-authored 16 scientific papers, including 3 first-author papers at IEDM.

Topics of the papers include quantum transport simulation, bandstructure calculation, channel strain modeling, III-V device performance prediction, carbon-based resistive memory simulation and nanoscale interface study. From January–August 2008, he was a visiting researcher at Stanford Nanoelectronics Group. Ximeng Guan served as the Vice-Chair of the IEEE Student Branch in Tsinghua from 2006–2007 and as the Vice-Chair of the ED Tsinghua Student Chapter from 2007–2008.

**Rinus Tek Po Lee** (S'06) received the Bachelor and Master degrees in Electrical Engineering and Applied Physics, respectively from



the National University of Singapore (NUS), Singapore. He is currently working towards his Doctoral degree in Electrical Engineering with the research focus of parasitic resistance scaling in multiple-gate transistors at NUS with Professor Yeo Yee Chia and Dr. Chi Dong Zhi.

He was with the Agency of Science Technology and Research, Institute of Materials Research and Engineering, Singapore, where he worked on the development of advanced process technologies for

contact metallization. Since 2005, he has been with the Silicon Nano Device Laboratory at NUS. His current research interests include device physics and process technologies for the multiple-gate transistor architecture.

*Paul K.L. Yu*  
EDS Vice-President of  
Educational Activities  
University of California at San Diego  
La Jolla, CA, USA

*Agis A. Iliadis*  
EDS Ph.D. & Masters Student  
Fellowship Chair  
University of Maryland  
College Park, MD, USA

## CALL FOR NOMINATIONS 2010 EDS PH.D. STUDENT FELLOWSHIP

**Description:** One year fellowships awarded to promote, recognize, and support Ph.D. level study and research within the Electron Devices Society's field of interest: The field of interest for EDS is all aspects of engineering, physics, theory, experiment and simulation of electron and ion devices involving insulators, metals, organic materials, plasmas, semiconductors, quantum-effect materials, vacuum, and emerging materials. Specific applications of these devices include bioelectronics, biomedical, computation, communications, displays, electro and micro mechanics, imaging, micro actuators, optical, photovoltaics, power, sensors and signal processing.

It is expected that three fellowships will be awarded, with the intention of at least one fellowship being given to eligible students in each of the following geographical regions every year: Americas, Europe/Middle East/Africa, and Asia & Pacific. Only one candidate can win per educational institution.

**Prize:** US\$5,000 to the student; and if necessary, funds are also available to assist in covering travel and accommodation costs for each recipient to attend the IEDM for presentation of an award plaque. The EDS Newsletter will feature articles about the EDS Ph.D. Fellows ship winners and their work over the course of the next year.

**Eligibility:** Candidate must: be an IEEE EDS student member at the time of nomination; be pursuing a doctorate degree within the EDS field of interest on a full-time basis; and continue his/her studies at the current institution with the same faculty advisor for twelve months after receipt of award. Sponsor must be an IEEE EDS member. Previous award winners are ineligible.

**Basis for Judging:** Demonstration of his/her significant ability to perform independent research in the fields of electron devices and a proven history of academic excellence.

### Nomination Package:

- Nominating letter by an EDS member
- Two-page (maximum) statement by the student describing his or her education and research interests, accomplishments and graduation date
- One-page biographical sketch of the student (including student's mailing address and email address)
- One copy of the student's under-graduate and graduate transcripts/grades. Please provide an explanation of the grading system if different from the A-F format.
- Two letters of recommendation from individuals familiar with the student's research and educational credentials. Letters of recommendation can not be from the nominator.

### Timetable:

- Nomination packages are due at the EDS Executive Office no later than May 15, 2010

- Recipients will be notified by July 15, 2010
- Monetary awards will be given by August 15, 2010
- Formal presentation of the awards will take place at the IEDM Awards Ceremony in December 2010.
- Nomination packages can be submitted by mail, fax or e-mail, but a hard copy must be received at the EDS Office.

**Send completed package to:**  
IEEE Operations Center  
EDS Executive Office

EDS Ph.D Student Fellowship Program  
445 Hoes Lane, Piscataway, NJ  
08854 USA

**For more information contact:**  
edsfellowship@ieee.org or visit:

<http://www.ieee.org/society/eds/education/fellowship.xml>

## 2010 EDS MASTERS STUDENT FELLOWSHIP FINAL CALL FOR NOMINATIONS

**Description:** One-year fellowships awarded to promote, recognize, and support graduate Masters level study and research within the Electron Devices Society's field of interest: all aspects of engineering, physics, theory, experiment and simulation of electron and ion devices involving insulators, metals, organic materials, plasmas, semiconductors, quantum-effect materials, vacuum, and emerging materials. Specific applications of these devices include bioelectronics, biomedical, computation, communications, displays, electro and micro mechanics, imaging, micro actuators, optical, photovoltaics, power, sensors and signal processing. Five fellowships will be awarded, with the intention of at least one fellowship being given to eligible students in each of the following geographical regions every year: Americas, Europe/Mid-East/Africa, Asia & Pacific. Only one candidate can win per educational institution.

**Prize:** US\$2,000 and a certificate to the student, to be presented by the Dean or Department head of the student's enrolled graduate program.

**Eligibility:** Candidate must: be an IEEE EDS student member at the time of nomination; be accepted into a graduate program or within the

first year of study in a graduate program in an EDS field of interest on a full-time basis; and continue his/her studies at a graduate education institution. Nominator must be an IEEE EDS member and preferably be serving as the candidate's mentor or faculty advisor. Previous award winners are ineligible.

**Basis for Judging:** Demonstration of his/her significant ability to perform research in the fields of electron devices and proven history of academic excellence in engineering and/or physics as well as involved in undergraduate research and/or supervised project.

### **Nomination Package:**

- Nominating letter by an EDS member who served as candidate's mentor or faculty advisor.
- Two-page (maximum) statement by the student describing his or her education and research interests and Accomplishments. This can include undergraduate, graduate and summer internship research work.
- One-page biographical sketch of the student (including student's mailing address and e-mail address)
- One copy of the student's transcripts/grades

- A letter of recommendation from an individual familiar with the student's research and educational credentials. Letters of recommendation cannot be from the nominator.

### **Timetable:**

- Nomination packages are due at the EDS Executive Office no later than March 15, 2010
- Recipients will be notified by May 15, 2010
- Monetary awards will be presented by the Dean or Department Chair of the recipient's graduate program at the beginning of the next academic term.
- Nomination packages can be submitted by mail, fax or e-mail, but a hard copy must be received at the EDS Office.

**Send completed package to:**  
IEEE Operations Center  
EDS Executive Office  
EDS Masters Student Fellowship Program  
445 Hoes Lane, Piscataway, NJ  
08854 USA

**For more information contact:**  
edsfellowship@ieee.org or visit:

<http://www.ieee.org/society/eds/education/fellowship.xml>



# CALL FOR NOMINATIONS

## 2008-2009 IEEE ELECTRON DEVICES SOCIETY

### REGION 9 BIENNIAL OUTSTANDING STUDENT PAPER AWARD

**Description:** Awarded to promote, recognize, and support meritorious research achievement on the part of Region 9 (Latin America and the Caribbean) students, and their advisors, through the public recognition of their published work, within the Electron Devices Society's field of interest: All aspects of the physics, engineering, theory and phenomena of electron and ion devices such as elemental and compound semiconductor devices, organic and other emerging materials based devices, quantum effect devices, optical devices, displays and imaging devices, photovoltaics, solid-state sensors and actuators, solid-state power devices, high frequency devices, micro-mechanics, tubes and other vacuum devices. The society is concerned with research, development, design, and manufacture related to the materials, processing, technology, and applications of such devices, and the scientific, technical and other activities that contribute to the advancement of this field.

**Prize:** A distinction will be conferred in the form of an Award certificate bestowed upon the most outstanding Student Paper nominated for the two-year period. The prize will be presented at the 2010 Symposium on Microelectronics Technology and Devices (SBMicro). In addition to the recognition certificate, the recipient will receive a subsidy of up to \$1,500 to attend the symposium. There will be a formal announcement of the winner in a future issue of the EDS Newsletter.

**Eligibility:** Nominee must be an IEEE EDS student member at the time of nomination, be enrolled at a higher education institution located in Region 9. In the case of a co-authored paper, only eligible co-authors may be nominated. Papers should be written in English on an electron devices related topic. Papers should have been published, in full-feature form, during 2008–2009 in an internationally recognized IEEE sponsored journal or conference in the field of electron devices related topics. Statements by the student and by the faculty advisor should accompany the nomination. Nominator must be an IEEE EDS member. Previous winners of this award are ineligible.

**Basis for Judging:** Demonstration of Nominee's significant ability to perform outstanding research and report its results in the field of electron devices. Papers will be judged on: technical content merit, originality, structure, clarity of composition, writing skills, overall presentation. These criteria will be weighted by the assessment of the nominee's personal contribution and the linkage of the nominated work to the nominee's career plans.

#### **Nomination Package:**

- Nominating letter by an EDS member (it may be the faculty advisor)
- A brief one-page (maximum) biographical sketch of the student
- 1000 words (maximum) statement by the nominated student

describing the significance and repercussion of the nominated work within the wider scope of the nominee's career plans

- 400 words (maximum) statement by the faculty advisor under whose guidance the nominated work was carried out. It should unmistakably state the faculty advisor's support of the nomination, and clearly explain the extent of the nominated student's contribution, as well as its relevance for the overall success of the reported work.
- A copy of the published paper

#### **Timetable:**

- Nomination packages are due at the EDS Executive Office no later than **15 February 2010**.
- Nomination packages can be submitted by mail, fax or e-mail, but a hard copy must be received at the EDS Office
- Winners will be notified by 15 March 2010.
- Presentation will take place at the SBMicro 2010, September 6–9, 2010 in Sao Paulo, Brazil

#### **Send completed package to:**

IEEE Operations Center  
EDS Executive Office  
EDS R9 Outstanding Student  
Paper Award  
445 Hoes Lane, Piscataway, NJ  
08854 USA

#### **For more information contact:**

Laura Riello, EDS Executive Office  
l.riello@ieee.org or 732-562-3927

## 2009 EDS REGION 9 CHAPTERS MEETING

The 2009 Electron Devices Society Region 9 biennial Chapters Meeting was held in Buenos Aires, Argentina, Sunday, November 1, 2009. EDS Region 9 Subcommittee for Regions and Chapters Chair, Magali Estrada, acted as meeting moderator. Officers and representatives from all Latin American Chapters, as well as EDS President, Cor Claey's, EDS Executive Director, Christopher Jannuzzi, Vice-President for Educational Activities, Paul K.L. Yu, and SRC R9 Vice-Chairs, Francisco García-Sánchez and Jacobus Swart, actively participated in the discussions. The opening welcome was delivered by Cor Claey's, who presented an overview of EDS' activities and future plans, and commented on the remarkable growth of the number of chapters in Region 9.

During the morning session there were presentations reporting on the activities of the last two years and future plans by the professional chapter representatives from Brasilia, Recife, Rio de Janeiro, South Brazil, Mexico, Puebla, Colombia, Lima and Venezuela, as well as by student branch chapters from Unicamp, CINESTAV-IPN, Cristóbal Colón University, Universidad del Sol, and Universidad Veracruzana. The newly created Colombia and Lima Chapters also reported their initial activities. Sergio Baron, who has been working on the formation of a Buenos Aires

Chapter, gave details on the status of the process and informed about the imminent official creation of this new chapter. Sergio, with the support of Chris Jannuzzi, was also responsible for locally arranging the Region 9 Buenos Aires meeting.

The meeting reconvened after a lively lunch for an open discussion of several issues of general interest to EDS and in particular to its Region 9 chapters. A recommendation was issued to the Chapters' officers to actively encourage all Region 9 EDS members, eligible to become senior IEEE members, to apply for status elevation. Likewise, Region 9 chapter officers were asked to place a greater emphasis on, and committing time to, supporting the elevation of deserving Region 9 members to IEEE Fellow status. Venezuela's Chapter Chair, Adelmo Ortiz-Conde, proposed a motion to recommend that the EDS Publications Committee and AdCom consider granting article reviewers free access to download IEEE Xplore articles for one month during the period of their reviewing work, as is already commonly done by other organizations. This motion was approved unanimously. Another initiative approved at the Meeting was to begin actions towards stimulating EDS activities in the Caribbean area, including Central America and Puerto Rico, and to look into the

potential for reviving chapter activities in Cuba. In that regard, EDS Executive Director, Chris Jannuzzi will review and inform Region 9 SRC Officers about the present status and policies of IEEE activities in that country. It was also approved to submit for consideration to the EDS Education Committee and AdCom, the possibility of creating a competitive scholarship fund for two Region 9 students to attend the two week device fabrication seminar that is periodically offered by Universidade Estadual de Campinas, Brazil. SRC Region 9 Vice-Chair, Jacobus Swart and AdCom member, Fernando Guarín, were appointed to prepare a proposal to that effect. Finally, it was resolved that the next Region 9 Chapters Meeting will be held on the first Quarter of 2011 in the Dominican Republic, in conjunction with the 8th International Caribbean Conference on Devices, Circuits and Systems.

The formal meeting was adjourned at the end of the afternoon and its participants gathered again in the evening for a dinner and tango dancing show at the Puerto Madero docks of Buenos Aires.

*Francisco J. García-Sánchez  
EDS Latin America SRC Vice-Chair  
University Simon Bolívar  
Caracas, Venezuela*



*2009 EDS Region 9 Chapters Meeting participants*



*M. Contaldo and Magali Estrada with the petition to form a new chapter in Argentina*

## EDS DISTINGUISHED LECTURER VISITS UNIVERSITIES IN MEXICO

In February, 2009, EDS Distinguished Lecturer, Jacobus Swart from CTI – Brazil, visited two Mexican technical chapters. On February 25, Prof. Swart visited the ED Mexico Chapter in CINVESTAV, Electrical Engineering Department, Solid-State Electronics with the lecture “Design, fabrication and applications of microsensors.” According to information from Rodolfo Quintero (ED Mexico Chapter Chair), 30 persons, students and researchers, attended the lecture. Professor Swart also presented his talk at the 19th International Conference on Electronics Communications and Computers – CONIELECOMP 2009, which was held at the Universidad de las Americas in Puebla. His lecture presented an interesting review of microsensors followed by a more in depth discussion about the design, fabrication processes and applications of three specific devices: a gas sensor based on carbon nanotube resistors, a resistive microbolometer, and a lab on a chip based on surface acoustic wave devices and microfluidics. The number of participants numbered about 100, including researchers and students.



*EDS Distinguished Lecturer, Jacobus Swart and Rodolfo Quintero at the ED Mexico Chapter*

Prof. Enrique Miranda from the Universitat Autònoma de Barcelona, Spain, gave a Distinguished Lecture on April 4, 2009 at the National Institute for Astrophysics, Optics and Electronics. The title of the lecture was “The life after death of a gate oxide” where he explained to the audience that the gate oxide of a MOS device is subjected to electrical stress, where traps or defects are progressively generated

within the material, a process that eventually leads to its dielectric breakdown, affecting the normal behavior of the device.

This interesting lecture was attended by 80 people.

*Claudia Reyes-Betanzo  
ED Puebla Chapter Chair  
Puebla, Mexico*



*Distinguished Lecturer, Enrique Miranda, at the ED Puebla Chapter*



## QUESTEDS AVAILABLE ON SOCIETY WEBSITE

QuestEDS is an EDS member benefit service where EDS members can submit questions online concerning the EDS field of interest and can view online the answers provided by experts in the field.

Questions and answers are posted online in QuestEDS Questions and Answers within two weeks.

As an EDS member, simply by logging on to the web-site, you can ask questions on any technical matter within the Field of Interest of EDS. The methodology to process these requests is parallel to the way we handle the submission of a manuscript to our publications. The questions will be handled by an editor with the authority of outright rejection if in the judgment of the editor the question is outside the Field of Interest of EDS, is a request for evaluation of competing commercial products, or help on a take-home exam or the like. Experts within and outside IEEE will be consulted. Our goal is to provide a timely response in TWO WEEKS. The response will be posted on the QuestEDS webpage accessible to EDS members, but without explicit reference to either the source of the question or the answer. So far, the posted questions have covered the following technical areas:

**Semiconductor Physics; Device Physics; Device Characterization; Compact Modeling; Process Technology; Quantum Electronics; Educational Activities.**

We would like to hear from you, whether you are pleased with this new service or have suggestions on how to enhance it further. Please click the feedback button to send your valued input.

*Samar Saha  
EDS Vice-President of Publications  
SilTerra USA, Inc.  
San Jose, CA, USA*

Please visit the EDS website at: [www.ieee.org/go/questedsto](http://www.ieee.org/go/questedsto) to take advantage of this new tool.

## CONGRATULATIONS TO THE EDS MEMBERS RECENTLY ELECTED TO IEEE SENIOR MEMBER GRADE!

Vahid Admadi  
Martin G. Buehler  
Jin Cai  
David Dyke  
Lucia M. Feng\*  
Niti Goel  
Rex K. Hales  
Harlan Harris  
Mark Hersam  
Karl D. Hirschman

Werner Juengling  
Ming Liu  
Zengtao Liu  
Sreelal Pillai  
Teryl Pratt  
James Rantschler  
Bryce Richards  
Carlos Rivera  
John Robertson  
Edmund Seebauer

Luca Selmi  
Purushothaman Srinivasan\*  
Mark Sturza  
Jie Sun  
Thomas Toifl  
David Viveiros  
Ken C. Weng  
Chien-Hung Wu  
Jie Xue  
Zhaochuan Zhang

\* = Individual designated EDS as nominating entity

If you have been in professional practice for 10 years, you may be eligible for Senior Membership, the highest grade of membership for which an individual can apply. New senior members receive a wood and bronze plaque and a credit certificate for up to US \$25 for a new IEEE society membership. Upon request a letter will be sent to employers, recognizing this new status. For more information on senior member status, visit <http://www.ieee.org/web/membership/senior-members/status.html>

To apply for senior member status, fill out an application at <http://www.ieee.org/organizations/rab/md/smelev.htm>



## REPORT ON THE IEEE EDS MINI-COLLOQUIA HELD IN SOUTH INDIA



*Distinguished Lecturers at IIT Madras,  
Chennai, on November 3, 2009*

In early November 2009, an IEEE delegation visited South East India to promote IEEE and EDS activities by contributing with EDS Distinguished Lectures (DL) to the mini-colloquium. On November 3, Professors Hiroshi Iwai and Shunri Oda gave EDS DLs at IIT Madras, Chennai, Tamil Nadu, on the topics of Silicon nano wire and nano dots. About 40 students and professors attended the lectures and active discussions took place for the future of Silicon nano wire and dots.

On November 4th and 5th, The International Workshop & EDS Mini-Colloquium on 'Past and Future Trends of Integrated Technologies' was held at S. K. P. Engineering College (SKPEC), in Tiruvannamalai, Tamil Nadu, India. More than 200 scientists, engineers and students gathered from all over India to attend the workshop and hot discussions took place on the future of integrated circuits technologies.

The workshop program began with a prayer sung by the college female chorale, followed by the delegates participating in a lighting ceremony of the Kuthvilakku (Indian traditional oil lamp) and the welcome address by the principal,

Dr. C. Kumar, and Prof. N. Mohan Kumar, both from SKPEC, respectively. The SKPEC Chairman, K. Karunanithi, honored the delegates and presented them with mementos of the visit. The presidential address, felicitation, and chief guest addresses were given by the Chairman, K. Karuannithi, Professors C.K. Sarkar (Jadavpur University and ED Calcutta Chapter Chair) and H. Iwai (Tokyo Institute of Technology), respectively. Invited lectures were given by Profs. H. Iwai (TIT), S. Oda (TIT) S. Karmalkar (IIT-Madras), Dr. M.K. Radkrishnan (Nanorel) and Prof. Parthamalik (VIT Vellore). The evening cultural program featured traditional dance and music. The occasion was graced by Dr. M. Madheswaran, Principal, Muthayammal Engineering College, ED India Chapter Chair and the judiciary technical committee head for the student paper presentation.

The program for the second day of the Workshop began with invited lectures given by Dr. A.D. Gupta, IIT-M, followed by a student presentation headed by Dr. Madheswaran and Dr. Partha Mallick and poster presentations given by students in the afternoon. Finally, the valedictory and closing were given by Professors Salivahanan, Principal, SSN Engineering College, and S. Oda, TIT, respectively and concluded with the National Anthem of India.

The EDS Mini Colloquium on 'Past and Future Trends of Integrated Technologies' was held November 9th at the Government Engineering College,

A & N Islands, Port Blair, with approximately 50 students and professors attending to learn about Si nano-devices. There were active interactions between lecturers and audience, with questions ranging from leading edge technologies to inquiries about the IEEE. Lectures for Si nano-device were given by Professors H. Iwai, S. Oda, and Dr. M.K. Radhakrishnan. An introduction and explanation of IEEE and EDS was given by Prof. K.K. Mallik, (Jadavpur University and the Chair of IEEE Calcutta Section) and Prof. C.K. Sarkar.

It was a very successful IEEE delegation to the outreach regions of India. There are already enough IEEE EDS members in Tiruvannamalai to form a chapter, as well as a student chapter. They intend to submit their petition to IEEE very soon. Efforts for form an ED and SSC joint chapter in IIT-M Chennai is in the works. The special secretary of IT, A & N Island Administration, Utpal Sharma, attended the mini-colloquium and discussed this possibility with us. The Govt. Eng. College is also very interested in forming an IEEE student branch and will keep in touch with the IEEE Calcutta Section and the ED Calcutta Chapter.

*Hiroshi Iwai  
EDS Sr. Past President  
Tokyo Institute of Technology  
Yokohama, Japan*

*Chandan Sarkar  
ED Calcutta Chapter Chair  
Jadavpur University  
Kolkata, India*



*Mini-colloquium held at S.K.P. Engineering College,  
Tiruvannamalai, Tamil Nadu, November 4-5, 2009*



*Mini-colloquium held at Government Engineering College, A & N Islands, Port Blair, November 9, 2009*

## EDS MINI-COLLOQUIUM HELD IN BUENOS AIRES, ARGENTINA

An EDS Mini-Colloquium was held on Saturday, October 31, 2009, at the Crillón Hotel in Buenos Aires, Argentina. This mini-colloquium was organized in conjunction with the 2009 EDS Region 9 (Latin America and the Caribbean) Chapters Meeting. The event started with welcome and opening remarks by Jacobus Swart, EDS SRC Vice-Chair for Region 9.

Six talks were presented by the following EDS Distinguished Lecturers: "Challenges and Potential of Silicon and Germanium for Future CMOS Devices," by Cor Claeys of IMEC and KU Leuven, Belgium; "Recent Applications of the Lambert Function in Device Modeling," by Adelmo Ortiz-Conde of Simón Bolívar University, Venezuela; "Design, fabrication and applications of MEMS," by Jacobus Swart of Centro de Tecnologia da Informação Renato Archer and Universidade Estadual de Campinas, Brazil; "Design and micro-fabrication of smart sensors for



*A lively audience at the Argentina mini-colloquium*

niche applications," by Edval Santos of Universidade Federal de Pernambuco, Recife, Brazil; "Post-breakdown conduction in high-K dielectric films," by Enrique Miranda of Escola Tècnica Superior d'Enginyeria, Universitat Autònoma de Barcelona, Barcelona, Spain; and "Semiconductor Wafer Bonding Technology for Device Integration," by Paul Yu of the University of California, San Diego, California, USA.

Attendance was mainly Region 9 chapters meeting participants and local students, faculty and professionals. The event included a coffee break and a luncheon, and concluded with ample and fruitful discussions.

*Francisco J. García Sánchez  
EDS SRC-LA Vice-Chair  
Simón Bolívar University  
Caracas, Venezuela*



*A group of Distinguished Lecturers and some of the participants at the Mini-Colloquium*

## REPORT ON THE 2009 EDS MINI-COLLOQUIUM ON LARGE AREA ELECTRONICS AT THE UNIVERSITY OF WATERLOO

The IEEE EDS Mini-Colloquium on "Large Area Electronics" was held Friday, November 6, 2009, at the University of Waterloo in Ontario, Canada. Around 50 people attended the full day event which started with breakfast at 7:30 a.m. and concluded with a lab tour of the Giga-to-Nano (G2N) facility at 5:30 p.m. Attendance comprised of participants from local companies such as DALSA, RIM, Christie Digital and also many faculty members and graduate students from the Faculty of Engineering at the University of Waterloo.

There were seven seminars in total, each lasting about an hour including discussion. The speakers consisted of four Distinguished Lecturers: Dr. Yue Kuo (Texas A&M University), Dr. Durga Misra (New Jersey Institute of Technology), Dr. Lu Kasprzak (Siemens) and Dr. Ashraf Alam (Purdue University) and three invited speakers: Dr. Ian Cunningham (University of Western Ontario), Dr. Safa Kasap (University of Saskatchewan) and Dr. Aldo Badano (US Food & Drug Administration).

This EDS mini-colloquium was the first event of its type in Region 7 (Canada). The event was organized by Prof. Karim S. Karim and members of the Silicon Thin-film Applied Research (STAR) digital imaging group (<http://star.uwaterloo.ca>) with considerable financial and logistical support from IEEE EDS Society's Mini-Colloquium program,



*Mini-colloquium organizers (left to right): Karim S. Karim, Amir Goldan, Mohammad Yazdandoost, Feng Chen, Shiva Abbaszadeh, Nader Safavian, Kai Wang, Nicholas Allec, Kyung-Wook Shin, and Yuan Fang*



*Mini-colloquium speakers (left to right): Karim S. Karim, John Rowlands, Durga Misra, Ashraf Alam, Lu Kasprzak, Aldo Badano, Yue Kuo, Ian Cunningham, and Safa Kasap*

IEEE K-W Section, IEEE K-W EDS Chapter and the University of Waterloo's Department of Electrical and Computer Engineering, (<http://ece.uwaterloo.ca>).

*Karim S. Karim  
EDS SRC-NAE Vice-Chair  
University of Waterloo  
Waterloo, Ontario,  
Canada*



## REPORT ON THE EDS MINI-COLLOQUIUM HELD IN TOKYO, JAPAN

The "G-COE PICE International Symposium on Silicon Nano Devices in 2030: Prospects by World's Leading Scientists," was held at Kuramae-Kaikan, Tokyo Institute of Technology, Japan, October 13–14, 2009. This event was sponsored by the Tokyo Institute of Technology (TIT) and co-sponsored by the ED Japan Chapter, in cooperation with the Silicon Technology Division of the Japan Society for Applied Physics, New Energy and Industrial Technology Development Organization (NEDO), and the Japan Science and Technology Agency (JST). The symposium was very successful with 273 scientists, engineers and students from the US, Europe and Asia, coming together to discuss the topic of silicon nano devices. Welcome remarks by Prof. K. Iga, President of TIT, Japan and Dr. S. Kimura, ED Japan Chapter Vice-Chair (Hitachi Ltd, Japan) were addressed to all in attendance. The first guest, Prof. T. Sugano, Professor Emeritus, University of Tokyo, Japan, delivered a special lecture entitled, "Silicon

Nano-Devices; Physics and Usefulness," followed by the highlight of the symposium, "My years at Bell Laboratories (1963–1989)," given by Prof. S. M. Sze, Bell Labs, U.S.A. & National Chao Tung Univ., Taiwan.

There were many other invited speakers: Professors, G. Baccarani (Univ. Bologna, Italy), K. Shiraishi (Tsukuba Univ., Japan), A. Oshiyama (Univ. Tokyo, Japan), N. Sano (Tsukuba Univ., Japan), K. Natori (TIT, Japan), K. Yamada (Waseda Univ., Japan), T. Hiramoto (Univ. Tokyo, Japan) and H. Iwai (TIT, Japan); and Drs. S. Deleonibus (LETI, France) and Dim-Lee Kwong (IME, Singapore) for Si-nanowire; Prof. K. Uchida (TIT, Japan) for SOI; Dr. C. Claeys (IMEC, Belgium) for Heterojunction Tunnel FET; Professors. S. Takagi (Univ. Tokyo, Japan) and Y. Miyamoto (TIT, Japan), for Ge/III-V channel MOSFETs, Professors. T. Ando, W. Milne, (Cambridge Univ. U.K.), K. Banerjee, (Univ. Of California at Santa Barbara, U.S.A.) for Carbon nanoelectronic devices; Professors. S. Oda (TIT, Japan), N. Koshida

(Tokyo Univ. Agri. & Tech., Japan), Dr. D. Williams, (Hitachi Cambridge Lab., U.K.), for Si nanodot, and Professor S. Sugawara (TIT, Japan) for spintronics.

In addition, there were 56 poster presentations and panel discussions on "Si nanodevices in 2030" after the speaker presentations. It was concluded that Si nanowire FET is the most promising nano device in 2030, but that the research of other devices is also important. Finally, Professor H. Ishiwara gave the closing remarks and presented the 3 best poster paper awards to Messrs. K. Wakabayashi, and H. Arai., TIT, Japan and Prof. J. Iwata of Tsukuba Univ, Japan. Every participant learned much about the most recent progress on the front edge of nanoelectronic device research, and was satisfied with the symposium.

*Hiroshi Iwai  
EDS Sr. Past President  
Tokyo Institute of Technology  
Kanagawa, Japan*



*The participants*



*Invited speakers and committee members*



## EDS AND THE IEEE TECHNOLOGY MANAGEMENT COUNCIL

The EDS is a founding Member Society (one of fourteen) of the Technology Management Council (TMC) and Jeff Welser is currently the EDS voting representative on its Board of Governors. The TMC provides a critical opportunity to network with leaders from the other Member Societies in their common pursuit of the mission and goals of the TMC, and to explore additional ways for the Member Societies to interact with each other.

The TMC's mission is to assist "technology professionals pursuing excellence in management of innovation, business, and entrepreneurship." It was formed by IEEE in 2008 to replace the existing Engineering Management Society (EMS), which had been active for many decades. The primary difference between an IEEE Council and Society is that individuals join and pay dues to Societies, while Councils are actually supported by their member Societies. So the TMC was formed with the logic that there is broad interest across many different IEEE Societies in technology management, so a Council could serve them all more effectively.

Note that all EDS members can now automatically benefit from TMC, and if they are interested in technology management, they can get involved in their local TMC

Chapters. There are several dozen TMC Chapters across the US – these were formed from the previous EMS Chapters, so many of them are already very active and all are now open to any EDS member. Just as being active in the local EDS Chapter offers opportunities for networking and enhancing technical knowledge in the EDS field of interest, becoming active in a local TMC Chapter offers opportunities for enhancing knowledge and skills in the area of technology management, while networking with other management professionals.

The TMC sponsors an annual conference, the ITMC, as well as co-sponsoring numerous regional conferences, workshops and events on technology and innovation management. Schedules and details on all of these can be found on the TMC website shown below. In addition, TMC is also becoming more active in sponsoring management special sessions and tutorials within Member Society technical conferences, with content that is targeted to be useful specifically to managers in that society's technical field of interest. For example, TMC organized an evening panel session entitled "Managing Innovation: An Oxymoron?" at the IEDM 2010 in Baltimore. The TMC would welcome the opportunity to work with any of the other EDS confer-

ences to organize similar sessions or management tracks within the conference – or even to consider having a full-day management-focused workshop or tutorial session connected with the main conference.

Finally, EDS members may want to consider, when rejoining IEEE for 2010, getting a subscription to the TMC publications. The *Transactions on Engineering Management* is more research-oriented, and the very popular *Engineering Management Review (EMR)* is a compilation of papers reprinted from the most respected Engineering and Technology Management journals in the world, as selected by its editorial board. The EMR is targeted more for the practicing professional, and should be of interest to anyone with interest in the management of technology, management principles in general, or who is a technical professional responsible for technology management or striving to become a manager.

More information about the TMC can be found at <http://www.ieeetmc.org/> or contact Jeff Welser at [welser@us.ibm.com](mailto:welser@us.ibm.com)

Jeffrey L. Welser  
EDS Representative  
TMC Board of Governors  
IBM Almaden Research Center  
San Jose, CA, USA

## REGIONAL AND CHAPTER NEWS

### USA, CANADA & LATIN AMERICA (REGIONS 1-6, 7 & 9)

#### 2010 Device Research Conference

- by Patrick Fay

Each year the Device Research Conference brings together leading scientists, researchers, and graduate students from varied disciplines in academia and industry to share their latest research and discoveries in the field of electron devices. The 2010 conference will be held June 21–23 at the University of Notre Dame, South Bend, Indiana. The university setting of the conference encourages frank and open technical discussion on recent breakthroughs and advances in device research, and provides a great atmosphere for social events. The technical program is comprised of invited, oral, and poster presentations. The conference will hold three evening rump sessions aimed at engaging the audience in a vigorous and charged discussion on the future directions of competing device technologies. Additionally, the Device Research Conference has a tradition of strong graduate student participation. To encourage student submission the conference offers reduced registration and travel support for students, and a Best Student Paper Award. Additional information can be found at <http://www.device-researchconference.org>.

The Device Research Conference is coordinated with the Electronic Materials Conference which will be held during the same week, June 23–25, 2010. This coordination recognizes the close relationship between device

and electronic materials research and provides for fruitful exchange of information between attendees of both conferences.

~ Ibrahim M. Abdel-Motaleb, Editor

#### ED/MTT Orange County

- by Héctor J. De Los Santos

The ED/MTT Orange County Chapter and the Antennas and Propagation Society Coastal Los Angeles (APS) Chapter were honored on November 5, 2009, with a visit by Dr. Werner Wiesbeck, APS and GRSS Distinguished Lecturer. Dr. Wiesbeck presented his talk "UWB Antennas and Channel Characteristics."

Werner Wiesbeck received the Dipl.-Ing. (MSEE) and the Dr.-Ing. (PhDEE) degrees from the Technical University Munich in 1969 and 1972, respectively. From 1972 to 1983 he held various positions at AEG-Telefunken, including head of R&D of the Microwave Division in Flensburg, as well as the marketing director of the Receiver and Direction Finder Division, Ulm.

Since 1983, he has been the Director of the Institut für Höchstfrequenztechnik und Elektronik at the University of Karlsruhe, as the dean of the faculty of electrical engineering. His research topics include radar, remote sensing, wireless communication and antennas.

In 1989 and 1994, respectively, Dr. Wiesbeck spent a six-month sabbatical at the Jet Propulsion Laboratory in Pasadena, California, USA. He has held numerous positions within the IEEE, including, President IEEE GRS-S (2000–2001), Associate Editor IEEE-AP Transactions (1996–1999), member of the IEEE Fellow Committee (2009–) and member of several IEEE Field Awards committees. He has served as the general chair for many conferences, including the 1988 Heinrich Hertz Centennial Symposium.

Dr. Wiesbeck is a member of an advisory committee of the EU – Joint Research Centre (Ispra, Italy) and advisor to the German Research Council (DFG), the Federal German Ministry for Research (BMBF), and to industry in Germany.

He is the recipient of a number of awards, including the IEEE Millennium Award, the IEEE GRS Distinguished Achievement Award, an Honorary Doctorate (Dr. h.c.) from the University Budapest, Hungary, and an Honorary Doctorate (Dr.-Ing. E.h.), from the University Duisburg, Germany. He is a Fellow of IEEE, an Honorary Life Member of IEEE GRS-S, a member of the Heidelberger Academy of Sciences and a member of the German Academy of Engineering and Technology (acatech).

His talk dealt with the motivation and both fundamental and advanced characteristics of Ultra Wide Band (UWB) Antennas. In particular, insights into some unexpected phenomena manifested exclusively during antenna operation over large bandwidths were elucidated and vividly illustrated via colorful movies. The talk concluded with a useful mapping relating the numerous UWB antenna candidates to their most appropriate applications.

Dr. Wiesbeck also recently presented a keynote lecture to a distinguished audience in Stockholm on November 9, on the occasion of the 100th Anniversary of the Nobel Prize presented to Ferdinand Braun and Guglielmo Marconi. Both had based their success in establishing wireless links on Heinrich Hertz' discovery of electromagnetic waves, which took place while Hertz was a Professor at Karlsruhe, where Ferdinand Braun, also the inventor of the cathode ray tube and the discoverer of the semiconductor-metal contact rectification effect, was the predecessor of Heinrich Hertz.

For additional information contact Dr. Héctor J. De Los Santos at [hector.delossantos@ieee.org](mailto:hector.delossantos@ieee.org).

## ED Santa Clara Valley

- by *Prasad Chaparala*

Jayasimha Prasad, IEEE Fellow and EDS Distinguished Lecturer, gave a very interesting talk on "Low Frequency and High Frequency Noise in Bipolar Transistors" at the ED Santa Clara Valley Chapter, October 13, 2009. This was a timely topic for many of the companies in the Silicon Valley that are involved in Analog and Mixed Signal ICs.

Prasad first talked about low frequency noise, covering popcorn noise, flicker noise, shot noise and thermal noise in bipolar devices. He then discussed the mechanisms of popcorn noise and flicker noise and how they vary with bias and device area. This was followed by methods of measuring popcorn and flicker noise and then the various process techniques to reduce popcorn and  $1/f$  noise. At this point, Prasad began to discuss the high frequency noise behavior by explaining noise figure and how it varies with the source impedance, mentioning that at optimum source impedance  $Z_{opt}$ , the noise figure goes to a minimum,  $F_{min}$ . Also, as the collector current is varied,  $F_{min}$  goes to a low value,  $F_{opt}$  at a collector current of  $I_{c,opt}$ . This is very useful for designing low noise amplifiers. Detailed information followed on the four noise parameters  $F_{min}$ , noise resistance  $R_n$ , optimum source conductance ( $G_{s,opt}$ ) and optimal susceptance ( $B_{s,opt}$ ) that completely characterize the noise behavior of the device and how  $R_b$  and  $R_e$  affect the noise figure. The method of measuring noise figure was discussed next, showing the match between measured noise figure and modeled noise figure. This was followed by a description on how the  $1/f$  noise up-converts into phase noise in oscillators. The relationship between phase noise and jitter in digital

systems was illuminated by several practical examples.

Dr. Prasad talk was well received and he encouraged many of the 28 attendees in the audience to join the society when they renew their IEEE membership.

The ED Santa Clara Valley Chapter held two meetings during the last quarter. The first on July 14, 2009, featured Dr. Sywert H. Brongersma from IMEC, Belgium, who gave a seminar on "Wireless Autonomous Transducer Solutions for Healthcare Applications." The second featured a seminar given by Prof. Nobuhiko Kobayashi, University of California, Santa Cruz, September 8, 2009, on "Combining Dissimilar Materials at Nanometer-scale for Energy Harvesting." Both seminars were well attended with more than 50 attendees.



*Sywert H.  
Brongersma*

ablation at the Philips NatLab in Eindhoven and obtained his Ph.D. at the Free University of Amsterdam in the field of superconductivity. At present, he is principal researcher for IMEC's wireless autonomous transducer solutions program and managing the sensors & actuators activity.

Wireless sensor and actuator systems monitor physical or environmental conditions and are able to initiate an appropriate response to external stimuli if so required. They are indispensable for a wide range of commercial and industrial applications that would be difficult or more expensive to realize using wired systems. Their unique characteristics include small-scale, limited power consumption ( $<100$  mW) and complex algorithms that are implemented in the sensor nodes. In contrast,

existing systems typically make use of bulky macro sensors and actuators that consume several 100 mW of power.



*Nobuhiko P.  
Kobayashi*

**Nobuhiko P. Kobayashi** is a professor at the University of California Santa Cruz (UCSC). Current research projects include synthesis and characterization of

nanometer-scale materials and devices with emphasis on solid-state energy conversion and future computing systems. Prior to joining UCSC, Prof. Kobayashi was involved in developing electronic materials for ultra-high density electrical switches to build memories and logics required for future computing systems at Hewlett-Packard Laboratories. He was also involved in semiconductor nanowire photonics for optical interconnect necessary for advanced computing systems. Prior to Hewlett-Packard Laboratories, Prof. Kobayashi worked at Lawrence Livermore National Laboratory, developing semiconductor materials for both ultra-high speed diagnosis systems for the National Ignition Facility funded by the U.S. Department of Energy and the optical code division multiple access (optical-CDMA) funded by the Defense Advanced Research Project Agency.

Development of next-generation energy resources that are reliable and economically/environmentally acceptable is a key to harnessing and providing the resources essential for the life of mankind. Our research focuses on the development of novel semiconductor platforms that would significantly benefit energy harvesting, in particular, from light and heat. In these critical application fields, traditional semiconductor solid-state devices, such as photovoltaic (PV) and thermoelectric (TE) devices based on a stack of single-crystal semiconductor thin

films or single-crystal bulk semiconductor have several drawbacks, for instance; Scalability-limits when ultra-large-scale implementation is envisioned for PV devices and Performance-limits for TE devices in which the interplay of both electronic and phonon systems is important. In our research, various types of nanometer-scale semiconductor structures (e.g., nanowires and nanoparticles) coupled to or embedded within a micrometer-scale semiconductor structure (i.e., semiconductor nano-micrometer hybrid platforms) are explored to build a variety of non-conventional PV and TE devices. Two core projects are to develop semiconductor nano-micrometer hybrid platforms based on (1) semiconductor nanowires electrically connected to an array of micrometer-scale semiconductor pillars or thin films and (2) metallic nanoparticles embedded within a micrometer-scale semiconductor thick film. The semiconductor nano-micrometer hybrid platforms are studied within the context of their basic electronic, optical, thermal properties, and their dependence on chemical interactions with environment, which will be further assessed and validated by comparison with theoretical approaches to draw comprehensive pictures of physicochemical properties of these semiconductor platforms.

Further details are posted on the chapter website at <http://www.ewh.ieee.org/r6/scv/eds/>

## ED Central Texas

- by *Dina Triyoso*

Dr. Al-Ahmad, a Research Scientist from Erik Jonsson School of Engineering and Computer Science of UT Dallas, was the invited speaker for the Electron Devices August technical meeting. He gave a presentation titled "Modeling and Characterization of Smart LSMO Ferromagnetic Thin-Film Tunable Resistance." Dr. Al-Ahmad addressed the potential use of LSMO ( $\text{La}_{0.67}\text{Sr}_{0.33}\text{MnO}_3$ ) in novel microwave devices due to its

high tunability. His presentation detailed the deposition process of LSMO (using chemical solution deposition), physical characterization (X-ray diffraction and resistivity of the material), device fabrication as well as electrical characterization (DC, high and low frequency measurements) of LSMO devices. Finally, he compared LSMO with other ferromagnetic material such as BST as well as semiconductor material showing that LSMO has much higher tunability (45:1) than BST (7:1) and semiconductor (10:1). Dr. Al-Ahmad's work on LSMO was recently published in the April 2009 issue of *IEEE Transactions on Electron Devices*, pages 665–671. For more information on Electron Devices and the schedule of technical meetings, please visit the chapter website: [http://ewh.ieee.org/r5/central\\_texas/eds/](http://ewh.ieee.org/r5/central_texas/eds/)

~ **Adam Conway, Editor**

## SBMicro Conference

- by *Jacobus W. Swart, Davies William de Lima Monteiro and Marcelo A. Pavanello*

The 24th Symposium on Microelectronics Technology and Devices, SBMicro 2009, was held in Natal, Brazil, August 31 to September 3, 2009. This symposium was orga-

nized by two Brazilian scientific societies: SBMicro (Sociedade Brasileira de Microeletrônica) and SBC (Sociedade Brasileira de Computação) and technically co-sponsored by the IEEE Electron Devices Society and the Electrochemical Society. The SB-Micro symposium is a forum held annually in Brazil and dedicated to fabrication and modeling of microsystems, integrated circuits and devices. The goal of the symposium is to bring together researchers in the fields of processing, materials, characterization, modeling and TCAD of integrated circuits, optoelectronics and MEMS. In conjunction with SBMicro 2009, an additional symposium is held at the same place and time, namely the 21st Symposium on Integrated Circuits and Systems Design. This symposium is also organized by the same two local societies. The two symposia have been held together since the year 2000, with a total attendance of more than 300 participants and over 100 presentations of regular papers, in addition to invited and tutorial lectures. The two symposia together are given a fantasy name that changes in accordance to its location. This year it has been named: "Chip on the Dunes," due to the typical landscape



SBMicro2009 Program Chairmen, Prof. Olivier Bonnaud (left) and Prof. Davies William de Lima Monteiro (right), congratulate the first flash presenter, Ms. Juliana Lopes Cardoso



of the region. Since the year 2002, the proceedings of the SBMicro Symposium are published by The Electrochemical Society. In SBMicro 2009, a new session comprising flash oral presentations has successfully preceded the poster session.

The 2010 symposia will take place in Sao Paulo, the largest city as well as the industrial, commercial and cultural center of Brazil, September 6–9. Topics of interest include, but are not limited to: semiconductor processing, IC, optoelectronics and MEMS fabrication; novel materials and devices; reliability; technology CAD; displays; thermal effects and models; nanoelectronics; device characterization and modeling; microsystem networks, sensors and actuators; package and technology roadmaps; packaging; photovoltaic technology, plasma technology and engineering education. Important deadlines are as follows: Submission: March 19, 2010; Notification of Acceptance: May 10, 2010; Camera-ready: May 17, 2010. For more information, please see <http://www.sbmicro.org.br/sbmicro> and/or contact the program co-chairs: Marcelo Pavanello ([pavanello@fei.edu.br](mailto:pavanello@fei.edu.br)) and Cor Claeys ([claeys@imec.be](mailto:claeys@imec.be)).

~ **Francisco J. Garcia Sanchez,**  
**Editor**

## EUROPE, MIDDLE EAST & AFRICA (REGION 8)

### ESREF 2010

- by *Giovanni Busatto*

The 21st European Symposium on Reliability of Electron Devices (ESREF 2010) will take place in Gaeta, Italy, October 4–8, 2010. This international symposium continues to focus on recent developments and future directions in Quality and Reliability Management of materials, devices and circuits for micro, nano, and optoelectronics. It provides an International forum for developing

all aspects of reliability management and innovative analysis techniques for present and future electronic applications. The conference venue is at the Summit Hotel – Gaeta (143 km away from the Fiumicino International Airport of Rome and 105 km from Capodichino International Airport of Naples).

The conference will concentrate on two main areas of interest in electronics concerning designers, manufacturers and users:

- Strategy for Quality and Reliability Assessment during Product Development and Life Cycle
- Advanced Analysis Techniques for Technologies and Product Evaluation

The main topics are: Quality and Reliability assessment techniques and methods for Devices and Systems, Physical Modeling and Simulation for Reliability Prediction, Advanced Failure Analysis: Defect Detection and Analysis, Failure Mechanisms in New Materials and Transistors, Failure analysis and Reliability of Advanced and Nanoscale electronics, Power Devices Reliability, Packaging and Assembly Reliability. Special hot topics will be: Organic Electronics and Technologies for photovoltaic systems.

Elsevier Science will publish the ESREF 2010 proceedings as a special issue of *Microelectronics Reliability Journal*. The deadline for the

submission of summaries is March 14, 2010. Please visit the conference web site for more information, <http://www.esref.org>.

### ED Germany Chapter Re-Activated

- by *Joachim Burghartz*

After the previous chair of the ED Germany Chapter had to resign for personal reasons and the position was vacant for a short while, we decided to re-activate the chapter with the ad-interim officers Prof. Joachim Burghartz (Chair) and Prof. Manfred Berroth (Treasurer). Prof. Franz-Josef Tegude, who himself was the chapter's chair several years ago, will help with setting up and maintaining the chapter's home page. When the chapter is fully active, elections will be held for appointing new officers.

On March 3rd, we had our kick-off meeting in Stuttgart at the Institute of Microelectronics Stuttgart (IMS CHIPS), which several German EDS members attended. We had good participation both from academia and industry. The purpose of this meeting was to collect ideas on activities the chapter could organize, in particular under the given circumstance that there is only one single EDS chapter in Germany, while the related university groups and companies are spread all over the country. From past experience we had seen that it was very difficult to maintain an active chapter if



*ED Germany Chapter kick-off meeting attendees on March 3, 2009, in Stuttgart*

travelling distances were far. Nevertheless it was concluded that Germany should have an active chapter in order to provide networking for German IEEE EDS members and help them keep in touch with their international peers. As a result of the discussions, we decided to partly decentralize the chapter activities by having local events at the various industrial centers in Germany, in addition to just one or a few central meetings each year. The activities will be organized by local coordinators who will be part of the chapter's executive committee. Fortunately, several colleague EDS members have already offered to step in and serve as local coordinator. They will also try to cooperate with neighboring student branches. Particular attention will be given to cooperate with the related technical societies of the German engineering association VDE/VDI, which is very active and successfully organizes technical meetings at a national level. We believe that such cooperation can be fruitful for both the IEEE and the VDE/VDI. The various activities of the ED Germany Chapter, together with other useful information for EDS members will be posted on the chapter's home page

## ED Spain

- by Josep Pallares Marzal

The 6th Graduate Student Meeting on Electronic Engineering (for-

merly called NEPHOS Workshop) organized by the Universitat Rovira i Virgili (URV, Tarragona, Spain) was held June 18–19, in Tarragona.

The Postgraduate Student Meeting on Electronic Engineering has been held since 2003. It consists of two days of (a total of six) plenary talks given by invited prestigious researchers (from different countries) and also oral and poster presentations by Ph.D. students. The plenary talks, especially devoted to Ph.D. students, address different topics in nanoelectronics, photonics, power electronics and automatic control. There was one Best Oral Student Presentation Award and one Best Poster Award. The meeting was partially sponsored by the Department of Electronic, Electrical and Automatic Control Engineering of URV and also by "NANOSIL" European Network of Excellence.

This year, we invited two EDS lecturers, Prof. Juin J. Liou (University of Central Florida, Orlando, Florida, USA), Vice-Chair of IEEE EDS Regions/Chapters Committee, who gave a talk entitled "Protecting Microchips against Electrostatic Discharge (ESD) Shock" and Prof. Yuhua Cheng (Beijing University, China), IEEE EDS Senior Member, who conducted a lecture entitled "Design-for-Manufacturing in Nano-CMOS Era."

There were two lecturers from teams participating in the NANO-

SIL Network, targeting nanotechnology issues. Prof. Dennis Buttard (NAC/SP2M/SiNaPS, MINATEC-BCA, Grenoble, France), member of the team which coordinates the NANO-SIL Network, spoke on the "Elaboration and structural investigation of the confined growth of silicon nanowires in a nanoporous matrix: application to a photovoltaic cell" and Dr. Daniela Iacopino (Nanotechnology group at Tyndall National Institute, Cork, Ireland) gave a presentation on "Nanocrystal-Molecule Nanostructures: Formation, Plasmonic Properties & Electrical Contacting."

Prof. Ettore Napoli (Dept. of Electronic and Telecommunication Engineering, University of Naples Federico II, Italy) conducted his lecture on "Superjunction power devices" and finally, Dr. Michele Penza (ENEA, Italian National Agency for New Technologies, Energy and Environment, Research Center Brindisi, Italy), gave a talk addressing "Carbon nanotubes gas sensors: chemiresistors and SAW devices"

~ Cora Salm, Editor

## AP/ED/MTT/CPMT/NPS Saratov/Penza

- by Nikita M. Ryskin

On September 7–9, 2009, the fourth conference for young scientists, "Nanoelectronics, Nanophotonics and Nonlinear Physics" was held in Saratov (NNNPh'09) and hosted by



Participants of 6th Graduate Student Meeting on Electronic Engineering held, June 18–19, 2009, at Universitat Rovira i Virgili, Tarragona, Spain



Prof. N.M. Ryskin, Saratov/Penza Chapter Chair, presenting the 2008/09 Annual Report

the Saratov Branch of the Institute of Radio Engineering and Electronics, Russian Academy of Science (IRE RAS). The conference program included 10 Plenary Lectures presented by invited speakers, 49 talks and 26 posters presented by young scientists and students. The presentations were divided into 5 sessions: "Micro and nanoelectronics, nanomaterials and nanostructures," "Optics and nanophotonics," "Acousto and magnetoelectronics," "Nonlinear physics." Over 100 participants attended the conference, including guests from Moscow, Ulyanovsk, Ufa, and Ekaterinburg. The book of abstracts was published and distributed at the conference. For more information, please visit the NNNPH web page, located at <http://nnnph06.fatal.ru>.

The Saratov/Penza Chapter supported the conference financially and technically. The Conference Chair was Prof. S.A. Nikitov (IRE RAS, Moscow) who is also the Vice-Chair of the IEEE Russian Section. Dr. Irene E. Kuznetsova chaired the Local Technical Committee. Many other IEEE members served on the Program Committee, as Session Chairs or Plenary Lecturers.

On September 24, 2009, the Saratov/Penza Chapter held its annual Workshop, "Electromagnetics of Microwaves, Submillimeter and Optical Waves," with 13 IEEE members and 8 guests attending. The workshop began with our Chapter Chair, Prof. N.M. Ryskin, presenting the 2008/09 Activity report, which was approved by the IEEE members present. The

technical program included 7 talks, one poster and 2 Internet reports.

### MTT/ED/AP/CPMT/SSC West Ukraine

- by Mykhaylo Andriychuk

The XIVth International Seminar/Workshop on Direct and Inverse Problems of Electromagnetic and Acoustic Wave Theory (DIPED-2009) was organized by the IEEE MTT/ED/AP/CPMT/SSC West Ukraine and MTT/ED/AP Republic of Georgia Chapters.

DIPED-2009 was held September 21–24, 2009, at the Institute of Applied Problems of Mechanics and Mathematics. The IEEE Electron Devices, Antennas & Propagation, Microwave Theory & Techniques societies provided the Technical Co-sponsorship for the event. The IEEE Solid State Circuits Society and IEEE Ukraine Section also supported the event.

This year, the DIPED Seminar/Workshop was dedicated to the 90th anniversary of Prof. Boris Z. Katsenelenbaum. His role was decisive for the birth of our Seminar and supporting its continuous work. Organized by his initiative as an annual informal meeting of the scientists from Moscow, Tbilisi and Lviv, the seminar attracted the scientists and engineers from other cities for a long time; and as a result, became a known international event.

The DIPED-09 technical program consisted of 60 papers includ-

ing 4 invited talks, with scientists from China, Georgia, India, Israel, Poland, Russia, Turkey, USA, and The Ukraine presenting their papers, which were grouped to the following sections:

- Theoretical aspects of electrodynamics
- Scattering and diffraction
- Propagation in complex media
- Waveguide and photonic crystal structures
- Inverse problems and synthesis
- Antennas and antenna arrays
- Numerical methods
- Acoustics: theory and applications

The DIPED Organizing Committee traditionally pays significant attention to encouraging young scientists and students. This year, the following young speakers were granted the special Prof. Katsenelenbaum's Award, established by Prof. Nikolai Votovich, Organizing Committee Chairman: Lali Bibilashvili (TSU, Tbilisi, Georgia), Lyubomyr Kapko (PMI, Lviv, Ukraine), Olga Kostylyova (IRE, Kharkiv, Ukraine), Sergiy Alexin (DNU, Dnipropetrovsk, Ukraine), and Evgeniy Antonenko (KNU, Kharkiv, Ukraine).

The Best Young Speaker Awards were granted at the traditional dinner. The social events included an excursion tour around the City of Lviv, the unique architectural pearl of Europe. The next Seminar/



DIPED-2009 participants in front of the IAPMM building



Workshop DIPED will be held at the Tbilisi State University, Tbilisi, Georgia, on September 27–30, 2010.

~Tomislav Sulgoj, Editor

## ASIA & PACIFIC (REGION 10)

### ED Japan

- by Mitsumasa Koyanagi

On July 29, 2009, an EDS Distinguished Lecture was held at Tokyo Institute of Technology, Yokohama. Prof. Hei Wong (City University of Hong Kong, China) gave a lecture on recent interesting technologies, entitled "Silicon Integrated Photonics: Potentials and Promises." Prof. Wong talked about the successful development of Si integrated photonics including on-chip optical interconnection. His presentations offered the attendees the opportunity to get to grips with up-to-date, interesting and useful research. The meeting, with 25 participants, was very successful.

In addition, in the third quarter of this year from July–September 2009, the ED Japan Chapter held three joint technical meetings with the Japan Society of Applied Physics.

### ED Kansai

- by Michinori Nishihara

The ED Kansai Chapter held a Technical Meeting on June 30, 2009, on the Suita Campus of Osaka University, by inviting Dr. Daisuke Ueda from Panasonic, an IEEE Fellow and Senior Adviser of ED Kansai. The title of his lecture was Future of GaN Power Devices, which is one of the most exciting topics in electron device technology. Dr. Ueda spoke about the history of power devices research and development from GTO, MOSFET then GaN and showed its promising future as an energy saving technology. He also discussed business issues and difficulties to promote a new technology as a mainstream technology in consumer electronics industry, which was very inspiring and educational. The majority of the 24 attendees were graduate



Dr. Daisuke Ueda lecturing at the ED Kansai technical meeting held at Osaka University

students from Osaka University and they learned not only about the most advanced power device development front but also the business aspects of the technology such as the limit of cost uplift due to introducing a new technology is 30% etc. It is very important for young students to have a good business sense as well as basic technical skills. It was another successful and stimulating DL meeting at the ED Kansai Chapter.

~ Kazuo Tsutsui, Editor

### ED Taipei

- by Steve Chung

The ED Taipei Chapter held two special DL talks in the 3rd quarters of 2009. The first event is a 15 hours workshop, "Power Semiconductor Devices and Design Criteria," which has been held from August 10 to 14, at the National Tsing-Hua University (NTHU), Hsinchu. The workshop was hosted by the Center for Advanced Power Technologies of NTHU and sponsored by the ED Taipei chapter and PELS Taipei chapter. The speaker was Dr. Leo Lorenzo from Infineon Technologies China Co. Ltd. In this workshop, several topics of interest have been covered: (1) Power semiconductor device physics, (2) Power semiconductors: Power semiconductor concepts for power MOSFETs, IGBTs, SiC, (3) Devices



Speakers and attendees of the EDS DL meeting held on July 29, 2009. Prof. Hei Wong of City University of Hong Kong, China, and Prof. Hiroshi Iwai, Partner and EDS Sr. Past President (second row, sixth and seventh from the left, respectively)





ED Taipei : (left) August 24th, EDS DL- Prof. J. J. Liou. (right) August 14th, the establishment of two student branch chapters, photos with Steve Chung (Chapter chair, 6th from left), Prof. C.-F. Huang (workshop organizer, 8th from left)

limiting factors, (4) Driving and protection of power semiconductors. More than 100 people registered for this workshop, with one-third of them being new student members. The industry in the Hsinshu Science Park showed much interest in the workshop, due to management IC's development in the region nowadays and as a result, gave support to a fairly large portion of the engineers who attended. On August 24th, Prof. Juin Liou, a DL and VP of Regions/Chapters in EDS, gave a talk in advanced research topics in Nanowire technology with focus on the ESD design of a potential transistor and IC technology for future applications. His talk is entitled, "ESD Challenges in Silicon Nanowire Technology." In his talk, he first presented an overview on the ESD sources, models, protection schemes, and testing, and then followed with an investigation of ESD robustness of the advanced Si nanowire devices. Around 35 graduate students and several professors attended.

In the above workshop, the chapter also took this opportunity to do membership promotion, in which 27 graduate students were solicited to join IEEE EDS as student members with the benefit of a registration fee waiver to attend this workshop. Two petitions from two major universities in the area to establish two student branch chapters for EDS, the NCTU (National Chiao

Tung University) Student Branch and the NTHU (National Tsing Hua University) Student Branch, driven by the chapter officers, have recently been submitted to the EDS office for further approval.

### 2010 VLSI-TSA and VLSI-DAT

- by Clara Wu and Elodie Ho

The 2010 International Symposium on VLSI Technology, Systems and Applications (2010 VLSI-TSA) and the 2010 International Symposium on VLSI Design, Automation and Test (2010 VLSI-DAT) will be held in the same week with a two-day overlap (including a half-day joint invited 3D IC Special Session) April 26–29, 2010, at the Ambassador Hotel in Hsinchu, Taiwan.

Sponsored by the Industrial Technology Research Institute (ITRI) and divided into separate annual symposia since 2006, VLSI-TSA and VLSI-DAT are proud to create a platform for technical exchanges and communications between experts from all over the world.

The aim of the joint conference or joint session is to bring together scientists and engineers actively engaged in research, development, and manufacturing on VLSI technology, systems, and applications and on VLSI design, automation and test to discuss current progress in this field.

The details of the conference agenda will be released in January 2010 and early bird registration will

open at the same time. Please visit the conference websites at <http://vlsitsa.itri.org.tw> (for VLSI-TSA) or <http://vlsidat.itri.org.tw> (for VLSI-DAT).

~ Mansun J. Chan, Editor

### ED/SSC Bangalore

- by Sankara Reddy

The ED/SSC Bangalore Chapter organized two technical talks and two distinguished lectures in the past 3 months on topics of interest to our members. These lectures attracted many chapter members, academics and researchers from local industry. Attendance at each of the lectures totaled more than forty people. The technical talk on August 22, 2009, "Towards 22nm Devices and beyond..." was given by Dr. Arvind Kumar, IBM T.J. Watson Research Center, New York, USA. The distinguished lecture on "Recent Advances in Optical MEMS Technologies for Electrically Tuneable Multi-Spectral Infrared Sensors and Arrays" was given by Prof. Lorenzo Faraone, Microelectronics Research Group, The University of Western Australia. This DL was held on September 8th, in association with the IEEE Photonics Society.

Of these topics, two were arranged in tandem as part of a half-day technical program on August 18, 2009. The program consisted of a technical talk by Sudheer Prasad, SMTS, Texas Instruments, India and a Distinguished Lecture by Stefan Rusu, Sr. Principal Engineer, Intel, and IEEE Fellow. This half-day program was attended by 85 people across industry and academia.

### ED Bangladesh

- by Anisul Haque

Professor A.F.M. Anwar, University of Connecticut, Storrs, USA and Editor, *IEEE Transactions on Electron Devices*, delivered a talk at United International University, Dhaka, July 30, 2009. The topic of his presentation was *GaN HFETs: Physics and Applications* and was attended by



Professor A. F. M. Anwar, delivering his talk on GaN HFETs: Physics and Applications at United International University, Dhaka

approximately 40 students and faculty members.

Professor Anisul Haque, East West University, Dhaka, and founding Chair of the ED Bangladesh Chapter, was selected as a Distinguished Lecturer (DL) of the IEEE Electron Devices Society.

## ED India

- by M. Madheswaran

The ED India Chapter is promoting researchers and practitioners by assisting them to exhibit their findings by organizing and sponsoring workshops, conferences, seminars, symposiums and project contests. Membership drives and promotion campaigns were also organized to create interest in joining IEEE and

utilize the society benefits. A brief report follows of various chapter activities for January–June 2009.

Events Sponsored (International and National – Workshops / Symposiums / Conferences)

- International Conference on “Advances in Optoelectronic Materials and Devices” at IIT BHU during December 22–24, 2009
- 5th International Conference on “Microwaves, Antenna, Propagation and Remote Sensing” (ICMARS), organized by International Centre for Radio Science (ICRS), Jodhpur, India during 19th–21st December 2009
- National Workshop on “Nanotechnology in Health Care”

(NTHC-2008) at PSNA College of Engineering and Technology, Dindigul during August 23–24, 2009

- National Conference on “Micro/Nano Devices Structures and Systems” (MiNDSS-2009), at Muthayammal Engineering College, Rasipuram, April 9–10, 2009
- National Conference on “Trends in Communication” (NCTC) – 2009 at Sona College of Technology, Salem, during April 8–9, 2009

Guest Lectures / Invited Talks / Tutorials

- Dr. M. Madheswaran, ED India Chapter chair delivered guest lectures on:
  - “Challenges in wireless communication: SDR and Cognitive radio” at St Josephs Engineering College, Palai, Kerala, March 7, 2009
  - “Research issues in Nano-device Technology” at Oxford Engineering College, Trichy, August 21, 2009
  - “Nano Devices for future Nano Technology” at Kavery Engineering College, Mecheri
  - “Devices and systems” at National Technical Symposium organized by Vidhya Vikas College of Engineering and Technology, Tiruchengode on August 21, 2009
- Dr. E. Jayakumar, Gandhigram Rural University delivered a lecture on “Nanophysics and Nanoparticles” at the pre-conference tutorial in the National Conference on Micro Nano Devices Structures and Systems (MiNDSS – 2009).

## Student Branch Activities

- Dr. M. Madheswaran, inaugurated the IEEE Student Branches at KSR College of Technology, Tiruchengode, James Engineering College, Nagercoil and St. Joseph’s College of Engineering and Technology, Palai.



Dr. M. Madheswaran, ED India Chapter Chair, inaugurating the activities of the IEEE Student branch for the current academic year at KSR College of Technology, Tiruchengode



Dr. E. Jayakumar interacting with the participants at the pre-conference tutorial of the National Conference on Micro Nano Devices Structures and Systems (MiNDSS 2009)



*EDS and Region 10 chapter members visit to Nanofabrication lab at IIT – Bombay*

Initiatives have been taken to increase the membership in IEEE India EDS chapter by conducting Membership Drives and Membership Campaigns. With these drives about 100 new members have been inducted to IEEE.

Dr. M. Madheswaran also participated in the EDS Region 10 chapter meet at Mumbai conducted during 30th–31st May 2009, and presented a brief report on the activities carried out. An International Conference on Nano Devices and Structures and a Workshop on Nano Particles are also planned in the near future.

### **ED Nepal**

*- by Bhadra Pokharel*

After the successful completion of the 17th WIMNACT, on June, 3, 2009, we organized four more programs this year. The first talk delivered by Dr. Lekha Nath Bhusal, National Renewable Energy, La, Golden Colorado, USA, on "Gallium Indium Phosphide Alloy on Technology" was held August 12, 2009, at the Central Department of Physics, Kirtipur. This event was attended by 50 physicists and students.

On September 8th, Prof. Devendra Raj Mishra, an ED Nepal Chapter member, spoke on "The Role of Semiconductor Technology for the Development of a Nation." Prof.

Mishra stressed the importance and role played by the semiconductor devices in information technology, which made the globe a short span. Many questions were asked from the audience regarding semiconductors and a comparison with nanotechnology. We also included in the program a Greeting Exchange on the eve of the Great Hindu Festivals, Dashain and Tihar, on behalf of the 76 participants. Members of the IEEE ED Nepal Chapter, the Nepal Physical Society and the Engineers' Association attended this special event.

### **REL/CPMT/ED Singapore**

*- by Kin-Leong Pey*

Together with the Institute of Microelectronics, the Singapore Chap-

ter jointly organized a talk on July 20, 2009, on "Recent Advances in Anisotropic Conductive Adhesives (ACAs) Interconnection Technology – Low Temperature and Fast Assembly Methods" by Prof. Kyung-Wook Paik, Korea Advanced Institute of Science and Technology (KAIST). The response was overwhelming, with about 80 participants attending.

Jointly organized with the Micro-electronic Center, School of Electrical and Electronic Engineering (EEE) and Nanyang Technological University (NTU), the Chapter organized a Workshop and IEEE EDS Mini-colloquium on NANometer CMOS Technology (20th WIMNACT) on August 11, 2009, featuring three EDS Distinguished Lecturers, Prof. Juzer Vasi, IIT Bombay, India; Prof. Ramgopal Rao, IIT Bombay, India; and Dr. Samar Saha, EDS Vice-President of Publications; Silterra USA, Inc. The workshop was officially opened by Prof. Kam Chan Hin, Chair of the School of EEE, NTU. Approximately 30 participants listened to lectures on the following topics: "Modeling and Simulation of Flash Memory Devices," by Prof. Vasi; "Polymer Based Sensor Systems for Healthcare & Homeland Security," by Prof. Rao, and "Device Considerations for Ultra-Low Voltage Analog Integrated Circuits," by Dr. Saha.

The Chapter also co-hosted the 16th IEEE International Symposium on the Physical and Failure Analysis



*20th WIMNACT (first row from left) Prof. Zhou Xing (Rel/CPMT/ED Singapore Chapter ExCo member), Prof. Kin-Leong Pey (Rel/CPMT/ED Singapore Chapter Chair), Prof. Kam Chan Hin (Chair, School of Electrical and Electronic Engineering, NTU), Dr. Samar Saha (EDS Vice-President of Publications), Prof. Juzer Vasi, and Prof. Ramgopal Rao*



of Integrated Circuits (IPFA 2009), which was held July 6–10, 2009, in Suzhou, China. Eight tutorials were conducted on July 6–7, with two parallel sessions. Fifteen invited papers were presented over the three-day symposium, July 8–10. This is the first time that the IPFA was held in China and despite the global financial crisis, almost 200 abstracts were received. For the three-day symposium, there were two parallel sessions with 81 oral presentations. A record 94 papers were accepted for the poster presentations and there were more than 200 participants for the tutorials and symposium and 27 exhibitors participated. The “Art of Failure Analysis” Photo Contest attracted some high quality photographs. The first-prize photo was featured on the cover page of the *IEEE Spectrum* online and the top 10 entrants were included as a slideshow on the magazine’s website. More information can be found at [http://www.sipac.gov.cn/ywdd/200907/t20090709\\_49025.htm](http://www.sipac.gov.cn/ywdd/200907/t20090709_49025.htm) and [http://www.sipac.gov.cn/sipnews/gd/200907/t20090709\\_49000.htm](http://www.sipac.gov.cn/sipnews/gd/200907/t20090709_49000.htm).

## ED SJCE

- by Vikram Divakar

With ever increasing zeal and enthusiasm, the ED Sri Jayachamarajendra College of Engineering Student Branch Chapter (SJCE) yet again came out with flying colors in organizing a series of workshops and seminars thus standing true to the words ‘Redefining Technicality’.



Dr. Xing Zhou delivering his talk



Successful completion of the lecture series

## WIMNACT-19

The ED SJCE is pleased to have successfully conducted on June 4th, the IEEE EDS Distinguished Lecture series named WIMNACT-19, with three eminent speakers having the distinction of being EDS Distinguished Lecturers. The event spanned a day with the lecturers, being experts in their respective fields, exposing the students and faculty alike with their profound understanding and knowledge in the field of VLSI and recent advances in microelectronics. The first DL talk by Dr. M.K. Radhakrishnan, Chief Consultant, NanoRel Inc., gave a very refreshing and detailed seminar on “Nano Devices.” The second lecture was given by Dr. Samar K Saha, EDS Vice President of Publications. His seminar on “Device Considerations for Ultra-Low voltage Analog Integrated circuits,” gave us insight into the designers considerations in creating Ultra-Low voltage analog ICs. The last lecture by Prof. Xing Zhou of Nanyang Technological University, Singapore, on “Unification of MOS compact models with Unified Regional modeling approach,” detailed his research on MOS compact models. These talks exposed the students to the myriad of research opportunities present in the vast world of VLSI. The lectures were intellectually stimulat-

ing and gave the students an opportunity to expose themselves to the latest advancements and to interact with some of the top minds in the field of VLSI.

## Cyberia-09

As a part of Cyberia-09, the national level technical fest conducted by IEEE ED SJCE, EDS played an important role in conducting a national level Robotics project presentation contest called ‘ROBOEUREKA’, for the second time around. Students and robotics enthusiast alike participated with increased vigor from all parts of the state for the event.

A hands-on workshop on the 8051 microcontroller was conducted for the students of 2nd and 3rd semesters. The workshop was a two-day event with a presentation on the internal architecture and instruction set on the first day followed by a hands-on interactive class with teams of students learning to program and execute codes on the microcontroller. This helped establish a foundation for further learning into the world of robotics and embedded systems. Weekly tests on basic electronics were conducted throughout the year to help the students hone their technical skills.

~ Xing Zhou, Editor



# EDS MEETINGS CALENDAR

## (As of 15 DECEMBER 2009)

THE COMPLETE EDS CALENDAR CAN BE FOUND AT OUR WEB SITE:  
[HTTP://WWW.IEEE.ORG/SOCIETY/EDS/MEETINGS/MEETINGS\\_CALENDAR.XML](http://www.ieee.org/society/eds/meetings/meetings_calendar.xml) PLEASE VISIT!

January 3 - 8, 2010, T **IEEE International Nanoelectronics Conference**, Location: City University of Hong Kong, Hong Kong, China, Contact: Ricky Fu, E-mail: pkyfu@cityu.edu.hk, Deadline: 7/15/09, www: [www.cityu.edu.hk/ieeenec](http://www.cityu.edu.hk/ieeenec)

January 9 - 15, 2010, T **IEEE Radio and Wireless Symposium**, Location: Sheraton New Orleans Hotel, New Orleans, LA, USA, Contact: Charlie Jackson, E-mail: c.jackson@ieee.org, Deadline: 8/2/09, www: <http://raw-con.org/index.html>

January 18 - 18, 2010, T **International Workshop on Compact Modeling**, Location: Taipei International Convention Center, Taipei, Taiwan, Contact: Zhiping Yu, E-mail: yuzhip@tsinghua.edu.cn, Deadline: 11/30/09, www: <http://www.asp-dac.itri.org.tw/aspdac2010>

February 1 - 4, 2010, T **International Workshop and Tutorials on Fundamental Problems of Micro/Nanosystem Technologies**, Location: Ski Resort 'Tanaj', Kemerovo, Russia, Contact: Andrey Kazakov, E-mail: ap-kazakov@yandex.ru, Deadline: 12/6/09, www: <http://mnst.conf.nstu.ru>

February 7 - 11, 2010, T **IEEE International Solid-State Circuits Conference**, Location: San Francisco Marriott, San Francisco, CA, USA, Contact: Diane Melton, E-mail: isscc@courtesyassoc.com, Deadline: 9/14/09, www: [www.isscc.org/isscc](http://www.isscc.org/isscc)

February 22 - 26, 2010, T **International Conference on Nanoscience and Nanotechnology**, Location: Sydney Convention & Exhibition Centre, Sydney, Australia, Contact: Liz Micallef, E-mail: arcnn@ausnano.net, Deadline: 9/18/09, www: [www.ausnano.net/iconn2010](http://www.ausnano.net/iconn2010)

February 23 - 27, 2010, T **International Conference on "Modern Problems of Radio Engineering, Telecommunications and Computer Science"**, Location: Lviv Polytechnic National University, Lviv, Ukraine, Contact: Mykhailo Andriychuk, E-mail: andr@iapmm.lviv.ua, Deadline: 12/15/09, www: <http://www.lp.edu.ua/TCSET2010>

March 18 - 19, 2010, T **China Semiconductor Technology International Conference**, Location: Plaza Royale Oriental Shanghai, Shanghai, China, Contact: April Peng, E-mail: apeng@semi.org, Deadline: 10/30/09, www: <http://semiconchina.semi.org/cstic>

March 22 - 24, 2010, T **IEEE International Symposium on Quality Electronic Design**, Location: DoubleTree Hotel, San Jose, CA, USA, Contact: Ali Iranmanesh, E-mail: ali@isqed.org, Deadline: 9/29/09, www: <http://www.isqed.org/>

March 22 - 25, 2010, @ **IEEE International Conference on Microelectronic Test Structures**, Location: International Conference Center, Hiroshima, Japan, Contact: Satoshi Habu, E-mail: satoshi\_habu@agilent.com, Deadline: 10/2/09, www: <http://www.ee.ed.ac.uk/icmts>

April 12 - 14, 2010, T **IEEE Sarnoff Symposium on Advances in Wired and Wireless Communications**, Location: TBD, Princeton, NJ, USA, Contact: Ashutosh Dutta, E-mail: sarnoff2010@gmail.com, Deadline: 11/15/09, www: <http://www.sarnoffsymposium.org>

April 12 - 13, 2010, T **IEEE Wireless and Microwave Technology Conference**, Location: Crown Plaza Melbourne Oceanfront, Melbourne, FL, USA, Contact: James Culver, E-mail: jwculver@ieee.org, Deadline: 10/30/09, www: <http://www.wamicon.org/>

April 16 - 16, 2010, T **IEEE Workshop on Microelectronics and Electron Devices**, Location: Boise State University, Student Union Bldg, Boise, Idaho, USA, Contact: William Kueber, E-mail: billrk@ieee.org, Deadline: 1/25/10, www: <http://www.ewh.ieee.org/r6/boise/wmed2010/WMED2010.html>

April 20 - 23, 2010, T **International Conference on Perspective Technologies and Methods in MEMS Design**, Location: Polyana, Polyana, Ukraine, Contact: Pavlo Denysyuk, E-mail: memstech@polynet.lviv.ua, Deadline: 2/15/10, www: <http://www.lp.edu.ua/Institute/IKN/CAD/MEMSTECH>

April 26 - 30, 2010, T **International SemOI Workshop - "Nanoscaled Semiconductor-on-Insulator Materials, Sensors and Devices"**, Location: TBD, Kyiv, Ukraine, Contact: Alexey Nazarov, E-mail: nazarov@lab15.kiev.ua, Deadline: 1/15/10, www: [http://www.sinano.eu/data/document/firstann\\_kievsoiworkshop-2010.pdf](http://www.sinano.eu/data/document/firstann_kievsoiworkshop-2010.pdf)

April 26 - 29, 2010, T **International Symposium on VLSI Design, Automation and Test**, Location: 188 Chung Hwa Road, Section 2, Hsin Chu, Taiwan, Contact: Elodie Ho, E-mail: el-

odieho@itri.org.tw, Deadline: 10/15/09, www: <http://vlsidat.itri.org.tw>

April 26 - 28, 2010, T **International Symposium on VLSI Technology, Systems and Applications**, Location: TBD, Hsin Chu, Taiwan, Contact: Clara Wu, E-mail: clara@itri.org.tw, Deadline: 10/15/09, www: <http://vlsitsa.itri.org.tw>

May 2 - 6, 2010, \* **IEEE International Reliability Physics Symposium**, Location: Hyatt Regency Orange County, Anaheim, CA, USA, Contact: David Barber, E-mail: dbarbsta@aol.com, Deadline: 10/9/09, www: <http://www.irps.org>

May 8 - 11, 2010, T **International Conference on Microwave and Millimeter Wave Technology**, Location: TBD, Chengdu, China, Contact: Bingzhong Wang, E-mail: bz-wang@uestc.edu.cn, Deadline: 1/10/10, www: <http://www.mws-cie.org/icmmt2010/index.php>

May 10 - 13, 2010, T **International Electrostatic Discharge Workshop**, Location: Castle of Tutzing, Tutzing, Germany, Contact: Lisa Pimpinella, E-mail: lpimpinella@esda.org, Deadline: 11/20/09, www: <http://www.esda.org/iew.htm>

May 10 - 11, 2010, T **International Workshop on Junction Technology**, Location: FuXuan Hotel at Fudan University, Shanghai, China, Contact: Yu-Long Jiang, E-mail: yljjiang@fudan.edu.cn, Deadline: 1/15/10, www: <http://www.iwjt2010.com>

May 16 - 19, 2010, \* **IEEE International Memory Workshop**, Location: The Shilla Seoul, Seoul, Korea, Contact: Jungdal Choi, E-mail: jdchoi@samsung.com, Deadline: 1/13/10, www: Not Available

May 16 - 19, 2010, \* **International Conference on Microelectronics**, Location: University of Nis, Nis, Serbia, Contact: Ninoslav Stojadinovic, E-mail: ninoslav.stojadinovic@elfak.ni.ac.rs, Deadline: 10/16/09, www: <http://miel.elfak.ni.ac.rs/>

May 18 - 20, 2010, @ **International Vacuum Electronics Conference**, Location: The Portola Plaza Hotel in Monterey, Monterey, CA, USA, Contact: Ralph Nadell, E-mail: rnadell@pcm411.com, Deadline: 1/15/10, www: <http://www.ivec2010.org>

June 20 - 25, 2010, \* **IEEE Photovoltaic Specialists Conference**, Location: Hawaiian Convention Center, Honolulu, HI, USA, Contact: Americo Forestieri, E-mail: pvsc@wowway.com, Deadline: Not Available, www: <http://www.ieee.org/pvsc>

May 23 - 27, 2010, T **IEEE International Power Modulator and High Voltage Conference**, Location: Atlanta, GA, USA, Contact: Frank Hegeler, E-mail: frank.hegeler@nrl.navy.mil, Deadline: Not Available, www: Not Available

May 23 - 25, 2010, T **IEEE Radio Frequency Integrated Circuits Symposium**, Location: Anaheim Convention Center, Anaheim, CA, USA, Contact: Yann Deval, E-mail: yann.deval@ieee.org, Deadline: 1/5/10, www: <http://www.rfic2010.org>

May 31 - June 4, 2010, @ **IEEE International Conference on Indium Phosphide and Related Materials**, Location: Takamatsu Symbol Tower, Kagawa, Japan, Contact: Takatomo Enoki, E-mail: tenoki@aecl.ntt.co.jp, Deadline: Not Available, www: <http://www.iprm.jp/>

June 6 - 9, 2010, \* **IEEE International Interconnect Technology Conference**, Location: Hyatt Regency at San Francisco Airport, Burlingame, CA, USA, Contact: Wendy Walker, E-mail: wendyw@widerkehr.com, Deadline: 2/1/10, www: <http://www.his.com/~iitc/>

June 6 - 10, 2010, @ **International Symposium on Power Semiconductor Devices & Integrated Circuits**, Location: International Conference Center Hiroshima, Hiroshima, Japan, Contact: Tomoyuki Yamazaki, E-mail: yamazaki-tomoyuki@fujielectric.co.jp, Deadline: 10/30/09, www: <http://www.ispsd2010.com>

June 13 - 14, 2010, @ **IEEE Silicon Nanoelectronics Workshop**, Location: Hilton Hawaiian Village, Honolulu, HI, USA, Contact: Stephen Goodnick, E-mail: stephen.goodnick@asu.edu, Deadline: 3/17/10, www: <http://www-device.eecs.berkeley.edu/snw/>

June 14 - 16, 2010, T **International Conference on Microwaves, Radar and Wireless Communication**, Location: Reval Hotel Lietuva, Vilnius, Lithuania, Contact: Borisas Levitas, E-mail: levitas@ieee.org, Deadline: 1/17/10, www: <http://www.mikon-2010.lt>

June 15 - 17, 2010, @ **IEEE Symposium on VLSI Technology**, Location: Hilton Hawaiian Village, Honolulu, HI, USA, Contact: Phyllis Mahoney, E-mail: phyllism@widerkehr.com, Deadline: 1/1/10, www: <http://www.vlssymposium.org/index.html>

June 16 - 18, 2010, T **IEEE Symposium on VLSI Circuits**, Location: Hilton Hawaiian Village, Honolulu, HI, USA, Contact: Phyllis Mahoney, E-mail: phyllism@widerkehr.com, Deadline: 1/1/10, www: [www.vlssymposium.org](http://www.vlssymposium.org)

June 21 - 23, 2010, T **Device Research Conference**, Location: University of Notre Dame, Notre Dame, IN, USA, Contact: Patrick Faye, E-mail: pfay@nd.edu, Deadline: Not Available, www: <http://www.deviceresearch-conference.org>

June 21 - 23, 2010, T **International Workshop on Low Temperature Electronics**, Location: TBD, Guarujá, Brazil, Contact: Marcello Antonio Pavanello, E-mail: pavanello@fei.edu.br, Deadline: 3/5/10, www: <http://www.fei.edu.br/wolte9>

June 24 - 26, 2010, T **International MIXDES Conference**, Location: Wroclaw, Poland, Contact: Mariusz Orlikowski, E-mail: mariuszo@dmcs.p.lodz.pl, Deadline: 2/28/10, www: <http://www.mixdes.org>

June 28 - July 1, 2010, T **University/Government/Industry Microelectronics Symposium**, Location: Purdue University, Purdue, IN, USA, Contact: Mary Jo Totten, E-mail: tottemm@purdue.edu, Deadline: Not Available, www: [www.ugim.com](http://www.ugim.com)

July 5 - 9, 2010, T **IEEE International Symposium on the Physical and Failure Analysis of Integrated Circuits**, Location: Suntec Singapore Int'l Convention & Exhibit. Ctr., Singapore, Contact: Jasmine Leong, E-mail: ipfa@pacific.net.sg, Deadline: 1/18/10, www: <http://ewh.ieee.org/reg/10/ipfa>

July 5 - 9, 2010, T **American Electromagnetics Conference**, Location: Fairmont Chateau Laurier, Ottawa, Canada, Contact: Shelly Girardin, E-mail: shelly@ee.umanitoba.ca, Deadline: 1/5/10, www: [http://antem.ee.umanitoba.ca/antem\\_amerem2010](http://antem.ee.umanitoba.ca/antem_amerem2010)

August 18 - 20, 2010, T **International Symposium on Low-Power Electronics and Design**, Location: TBD, Austin, TX, USA, Contact: Vojin Oklobdzija, E-mail: voj@ieee.org, Deadline: Not Available, www: <http://www.islpd.org>

September 6 - 9, 2010, T **Symposium on Microelectronics Technology & Devices**, Location: TBD, Sao Paulo, Brazil, Contact: João Antônio Martino, E-mail: martino@lsi.usp.br, Deadline: 3/19/10, www: [www.sbmicro.org.br/sbmicro](http://www.sbmicro.org.br/sbmicro)

September 6 - 10, 2010, @ **World Conference on Photovoltaic Energy Conversion**, Location: Feria Valencia, Valencia, Spain, Contact: Americo Forestieri, E-mail: pvsc@wowway.com, Deadline: Not Available, www: <http://www.wcpec.org>

September 6 - 8, 2010, T **International Conference on Simulation of Semiconductor Processes and Devices**, Location: Royal Hotel Carlton, Bologna, Italy, Contact: Rita Mambelli, E-mail: rmambelli@arces.unibo.it, Deadline: 3/6/10, www: <http://sispad2010.arces.unibo.it>

September 13 - 17, 2010, T **International Crimean Microwave Conference "Microwave & Telecommunication Technology"**, Location: Sevastopol National Technical University, Sevastopol, Ukraine, Contact: Sergey Smolskiy, E-mail: smolskiysm@gmail.com, Deadline: 5/20/10, www: <http://www.crimico.org/en/>

September 19 - 22, 2010, T **IEEE Custom Integrated Circuits Conference**, Location: Double Tree, San Jose, CA, USA, Contact: Melissa Widerkehr, E-mail: melissaw@widerkehr.com, Deadline: Not Available, www: <http://www.ieee-cicc.org>

September 19 - 21, 2010, T **IEEE Conference on Intelligent Transportation Systems**, Location: Tivoli Ocean Park Hotel, Madeira Island, Portugal, Contact: ITSC 2010 Secretariat, E-mail: itsc2010@isr.uc.pt, Deadline: 3/15/10, www: <http://itsc2010.isr.uc.pt>

September 20 - 24, 2010, T **International Conference on Electromagnetics in Advanced Applications**, Location: SMC Conference and Function Centre, Sydney, Australia, Contact: Roberto Graglia, E-mail: roberto.graglia@polito.it, Deadline: 2/26/10, www: <http://www.iceaa-offshore.org/>

September 20 - 23, 2010, T **International Conference on Actual Problems of Electronic Instrument Engineering**, Location: Novosibirsk State Technical University, Novosibirsk, Russia, Contact: Nikolay Pustovoy, E-mail: rector@nstu.ru, Deadline: Not Available, www: Not Available

September 27 - 30, 2010, T **IEEE International Seminar/Workshop on Direct and Inverse Problems of Electromagnetic and Acoustic Wave Theory**, Location: Tbilisi State University, Tbilisi, Georgia, Contact: Mykhalyo Andriychuk, E-mail: andr@iapmm.lviv.ua, Deadline: 8/1/10, www: <http://ewh.ieee.org/r8/ukraine/georgian/DIPED/>

September 28 - October 1, 2010, T **International Conference on Advanced Thermal Processing of Semiconductors**, Location: Hilton University of Florida Conference Center, Gainesville, FL, USA, Contact: Bo Lojek, E-mail: blojek@atmel.com, Deadline: 5/31/10, www: <http://www.ieee-rtsp.org/>

October 3 - 6, 2010, \* **IEEE Compound Semiconductor IC Symposium**, Location: Portola Hotel, Monterey Convention Center, Monterey, CA, USA, Contact: Lisa Boyd, E-mail: l.boyd@ieee.org, Deadline: 5/7/10, www: <http://www.csics.org/>

October 3 - 8, 2010, T **Electrical Overstress/Electrostatic Discharge Symposium**, Location: John Ascuaga Nugget Hotel, Reno, NV, USA, Contact: Lisa Pimpinella, E-mail: lpimpinella@esda.org, Deadline: 1/29/10, www: <http://www.esda.org/>

October 4 - 6, 2010, \* **IEEE Bipolar/BiCMOS Circuits and Technology Meeting**, Location: Radisson Hotel & Suites, Minneapolis, MN,

USA, Contact: Janice Jopke, E-mail: ccsevents@comcast.net, Deadline: 5/3/10, www: <http://www.ieee-bctm.org/>

October 11 - 13, 2010, \* **International Semiconductor Conference**, Location: Hotel Sinaia, Sinaia, Romania, Contact: Cristina Bui-culescu, E-mail: cas@imt.ro, Deadline: 6/1/10, www: <http://www.imt.ro/cas/>

October 11 - 14, 2010, \* **IEEE International SOI Conference**, Location: Catamaran Resort & Spa, San Diego, CA, USA, Contact: Bobbi Armbruster, E-mail: bobbi@bacmnc.com, Deadline: Not Available, www: Not Available

October 12 - 15, 2010, T **IEEE Nanotechnology Materials and Device Conference**, Location: The Clement Monterey, Monterey, CA, USA, Contact: Xiaoping Yu, E-mail: yun@ieee.org, Deadline: 6/15/10, www: Not Available

October 14 - 16, 2010, T **International Vacuum Electron Sources Conference**,

Location: Liu Yuan Hotel, Nanjing, China, Contact: Flora Li, E-mail: flora.li@eng.cam.ac.uk, Deadline: Not Available, www: Not Available

November 1 - 4, 2010, T **International Conference on Solid-State & Integrated Circuits Technology**, Location: Hotel Equatorial, Shanghai, China, Contact: Mengqi Zhou, E-mail: zhoulmq@public3.bta.net.cn, Deadline: 7/15/10, www: <http://www.icsict2010.com>

November 3 - 3, 2010, T **IEEE Electron Devices Activities in Western New York Conference**, Location: Rochester Institute of Technology, Rochester, NY, USA, Contact: Karl Hirschman, E-mail: kdhemc@rit.edu, Deadline: Not Available, www: <http://www.rit.edu/kg-coe/ue/eds.php>

November 4 - 5, 2010, T **International Symposium on Next-Generation Electronics**, Location: National Sun Yat-Sen University, Kaohsiung, Taiwan, Contact: Jun

Liou, E-mail: liou@ucf.edu, Deadline: 6/4/10, www: Not Available

December 2 - 4, 2010, \* **IEEE Semiconductor Interface Specialists Conference**, Location: TBD, San Diego, CA, USA, Contact: Martin Frank, E-mail: mmfrank@us.ibm.com, Deadline: Not Available, www: <http://www.ieeesisc.org/>

December 6 - 8, 2010, \* **IEEE International Electron Devices Meeting**, Location: Hilton San Francisco, San Francisco, CA, USA, Contact: Phyllis Mahoney, E-mail: phyllism@widerkehr.com, Deadline: Not Available, www: <http://www.ieee.org/conference/iedm>

December 8 - 10, 2010, T **International Conference on Field-Programmable Technology**, Location: Tsinghua University, Beijing, China, Contact: Jinian Bian, E-mail: bianjn@tsinghua.edu.cn, Deadline: Not Available, www: <http://166.111.68.91/fpt2010/index.htm>



## Humanitarian Technology Challenge

### Humanitarian Technology Challenge Launches Student Design Competition

IEEE is sponsoring a Regional Student Design Competition for solutions to one of three humanitarian problems as part of the joint IEEE-United Nations Foundation Humanitarian Technology Challenge (HTC). The competition runs from Oct. 2009 to May 2010.

HTC is a partnership among humanitarians, technologists, funders, and others, to develop implementable technological solutions to some key challenges facing humanitarian health and disaster workers today. The participants volunteer their time to collaborate for the benefit of humanity.

Three challenges have been identified:

1. **Reliable Electricity**: Availability of electric power for lighting and other electronic devices in resource-constrained environments. Important for education, communications, and economic development.
2. **Data Connectivity of Rural District Health Offices**: Capability of exchanging data among remote field offices and central health facilities. Important for accessing treatment protocols, creating and monitoring health trends, and sharing results of treatments.
3. **Individual ID Tied to Health Records**: Consistent availability of patient medical records. Important for ongoing treatment of patients, especially migrants and those with long-term diseases.

The Regional Student Design Competition challenges students to provide a working prototype, scale model or detailed engineering design specifications for a project that satisfies one of the three Challenges. The project can be developed by student individuals or by student teams. Teams must be led by an IEEE student member.

More information about the HTC project, and detailed descriptions of the challenges, can be found at [www.ieeehtc.org](http://www.ieeehtc.org). Rules for the Regional Student Design Competition can be found at [www.ieeehtc.org/students](http://www.ieeehtc.org/students).

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## EDS DISTINGUISHED LECTURERS PARTICIPATE IN THE 20TH WIMNACT - SINGAPORE

The 20th Workshop and IEEE EDS Mini-colloquium on NANometer CMOS Technology (WIMNACT), organized by the Rel/CPMP/ED Singapore Chapter and co-hosted by the School of Electrical and Electronic Engineering (EEE), Nanyang Technological University (NTU), was successfully held August 11, 2009, at NTU, Singapore. This was the 6th WIMNACT event sponsored by the Rel/CPMP/ED Singapore Chapter. The Chair of the School of EEE, Prof. Chan Hin Kam, gave a welcome address to the three EDS Distinguished Lecturers, Prof. Juzer Vasi and Prof. Ramgopal Rao of IIT-Bombay and Dr. Samar Saha of Silterra USA. After the opening address by the Chapter Chair, Prof. Kin-Leong Pey, Dr. Samar Saha (EDS Vice-President of Publications), presented an introduction of IEEE and EDS to the audience. Prior to the afternoon workshop, Prof. Vasi also visited the School of EEE in the morning, and discussed collaborations between IIT-Bombay and NTU, both are members of the recently established 7-member Global Alliance of Technological Universities.

The Workshop started with Prof. Juzer Vasi, who presented a DL talk on *"Modeling and Simulation of Flash Memory Devices."* The second DL was given by Dr. Saha entitled, *"Device Considerations for Ultra-Low Voltage Analog Integrated Circuits."*



From left to right: Ramgopal Rao (DL speaker), Samar Saha (DL speaker), Juzer Vasi (DL speaker), Chan Hin Kam (EEE Chair), Kin-Leong Pey (Chapter Chair), and Xing Zhou (SRC-AP Chair)

Prof. Rao gave the last DL on the topic of *"Polymer Based Sensor Systems for Healthcare & Homeland Security."* These talks covered a broad range of topics of current interests, and also brought many discussions, including some areas of ongoing collaborations among NTU and IIT-Bombay researchers. After the workshop there has been follow-up communications and an NTU delegate is planning to visit IIT-Bombay for another joint workshop and scholarly exchange in November 2009.

This mini-colloquia, being the 20th of the well-established WIMNACT series, sets an example of not only providing services to the members but also bringing collaborative exchanges among researchers and institutions. It was organized when

the DL speakers are on business or personal trips to the region and fully sponsored by the local chapter, which makes the event financially efficient. The complete information on the 20th WIMNACT, including the past history of WIMNACTs, can be found at the website:

<http://www.ntu.edu.sg/eee/eee6/conf/WIMNACT09.htm>

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