

TABLE OF CONTENTS

Upcoming Technical Meetings

- 2009 IEDM 1
- 2009 SISC 4
- 2009 CAS 5
- 2010 MIEL 7

2009 Spring AdCom Meeting Summary 3

Society News 12

- Spotlight On: 2009 IEEE Photovoltaics Specialists Conference (PVSC)
- Your Career and Networking with IEEE EDS AdCom Members
- 2009 EDS AdCom Call for Nominations
- EDS Region 10 Chapters Meeting Summary
- EDS Educational Activities Committee Report
- 2008 EDS Paul Rappaport Award Winners
- 2008 EDS George E. Smith Award Winners
- 2009 EDS Masters Student Fellowship Winners
- EDS Masters Student Fellowship Call for Nominations
- EDS Members Named Recipients of 2009 IEEE Medals
- Congratulations to the EDS Members Recently Elected to IEEE Senior Member Grade
- IEEE Annual Election – Did You Vote Yet?
- EDS Distinguished Lecturers Participate in the 17th WIMNACT-Nepal
- EDS Distinguished Lecturers Participate in the 18th WIMNACT-India
- EDS Distinguished Lecturer Visits Bogota, Colombia
- EDS Distinguished Lecturers Participate in the 19th WIMNACT-Bangladesh
- Annual EDS DVD Update Package Available to EDS Members
- Humanitarian Technology Challenge Workshops – Call for Volunteers
- EDS Membership Fee Subsidy Program
- EDS Senior Member Program
- On-Line Access to IEEE Journals Available to EDS Members

Regional and Chapter News 30

EDS Meetings Calendar 38

EDS Executive Office 40

2009 IEEE INTERNATIONAL ELECTRON DEVICES MEETING (IEDM)



New Location for 55th IEDM; slated For Baltimore, Maryland, December 7–9, 2009

The IEEE Electron Devices Society's annual technical conference, the International Electron Devices Meeting (IEDM), is the world's premier forum for leading-edge research into electronic, microelectronic, and nanoelectronic devices and processes. This year, the IEDM will be held at a new location – the Hilton Baltimore Hotel in Baltimore, Maryland, U.S.A. Scheduled for December 7–9, 2009, the IEDM will be preceded by a full day of short courses on Sunday, December 6th.

The IEDM draws presentations and attendees from industry, academia and governmental agencies worldwide. No other meeting presents as much leading work in so many different areas of microelectronics, encompassing both silicon and non-silicon device and process technology, molecular electronics, nanotechnology, optoelectronics and MEMS (microelectromechanical system) technology.

IEDM 2009 will feature increased participation in the fields of energy harvesting, power devices, biomedical devices and circuit-technology interactions. The conference will offer a full slate of short courses, evening panel debates, invited plenary talks and presentation of prestigious

(continued on page 3)

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

ELECTRON DEVICES SOCIETY

President

Cor L. Claeys
IMEC
E-mail: c.claeys@ieee.org

President-Elect

Renuka P. Jindal
University of Louisiana at Lafayette
E-mail: r.jindal@ieee.org

Treasurer

Stephen A. Parke
Tennessee Tech University
E-mail: sparke@tntech.edu

Secretary

James L. Merz
University of Notre Dame
E-mail: jmerz@nd.edu

Jr. Past President

Ilesanmi Adesida
University of Illinois
E-mail: iadesida@uiuc.edu

Sr. Past President

Hiroshi Iwai
Tokyo Institute of Technology
E-mail: h.iwai@ieee.org

Vice-President of Awards

Alfred U. Mac Rae
Mac Rae Technologies
E-mail: a.macrae@ieee.org

Vice-President of Educational Activities

Paul K.L. Yu
Univ. of California at San Diego
E-mail: p.yu@ieee.org

Vice-President of Meetings

Jon J. Candelaria
Motorola
E-mail: jon.candelaria@motorola.com

Vice-President of Membership

Albert Z.H. Wang
University of California, Riverside
E-mail: aw@ee.ucr.edu

Vice-President of Publications

Samar Saha
SilTerraUSA, Inc.
E-mail: samar@ieee.org

Vice-President of Regions/Chapters

Juin J. Liou
University of Central Florida
E-mail: liou@mail.ucf.edu

Vice-President of Technical Activities

Joachim N. Burghartz
IMS Chips
E-mail: burghartz@ims-chips.de

IEEE Newsletters

Theresa Smith
IEEE Operations Center
E-mail: tsmith@ieee.org

Executive Director

Christopher Jannuzzi
IEEE Operations Center
E-mail: c.jannuzzi@ieee.org

Business Coordinator

Joyce Lombardini
IEEE Operations Center
E-mail: j.lombardini@ieee.org

EDS AdCom Elected Members-at-Large

Elected for a three-year term (maximum two terms) with 'full' voting privileges

2009	TERM	2010	TERM	2011	TERM
S. S. Chung	(2)	J. N. Burghartz	(2)	G. Baccarani	(2)
R. Huang	(1)	M. J. Chan	(2)	M. Jamal Deen	(2)
R. P. Jindal	(1)	S. Ikeda	(2)	S. Deleonibus	(1)
M. Lundstrom	(2)	R. J. Nikolic	(2)	F. Guarin	(1)
H. S. Momose	(1)	J. J. Wesler	(2)	S. Saha	(1)
A. Z. H. Wang	(2)	T.-L. Ren	(1)	H. Shang	(2)
X. Zhou	(2)	R. M. Todi	(1)	J. W. Swart	(2)
				P. K. L. Yu	(1)

NEWSLETTER EDITORIAL STAFF

Editor-In-Chief

Ninoslav D. Stojadinovic
University of Nis
E-mail: ninoslav.stojadinovic@elfak.ni.ac.rs

REGIONS 1-6, 7 & 9

Eastern, Northeastern & South-eastern USA (Regions 1,2 & 3)

Ibrahim M. Abdel-Motaleb
Northern Illinois University
E-mail: ibrahim@ceet.niu.edu

Central USA & Canada

(Regions 4 & 7)

Jamal Deen
McMaster University
E-mail: jamal@mcmaster.ca

Southwestern & Western USA (Regions 5 & 6)

Adam M. Conway
Lawrence Livermore Nat. Lab.
E-mail: conway8@llnl.gov

Latin America (Region 9)

Francisco J. Garcia Sanchez
University Simon Bolivar
E-mail: fgarcia@ieee.org

REGION 8

Eastern Europe & the former Soviet Union

Tomislav Suligoj
University of Zagreb
E-mail: tom@zemris.fer.hr

Scandinavia & Central Europe

Zygmunt Ciota
Technical University of Lodz
E-mail: ciota@dmcs.pl

UK, Middle East & Africa

Zhirun Hu
University of Manchester
E-mail: z.hu@manchester.ac.uk

Western Europe

Cora Salm
University of Twente
E-mail: c.salm@utwente.nl

REGION 10

Australia, New Zealand & South Asia

Xing Zhou
Nanyang Technological University
E-mail: exzhou@ntu.edu.sg

Northeast Asia

Kazuo Tsutsui
Tokyo Institute of Technology
E-mail: ktsutui@ep.titech.ac.jp

East Asia

Mansun J. Chan
Hong Kong Univ. of Sc. & Tech.
E-mail: mchan@ee.ust.hk

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.

IEEE Electron Devices Society Newsletter (ISSN 1074 1879) is published quarterly by the Electron Devices Society of the Institute of Electrical and Electronics Engineers, Inc. Headquarters: 3 Park Avenue, 17th Floor, New York, NY 10016-5997. Printed in the U.S.A. One dollar (\$1.00) per member per year is included in the Society fee for each member of the Electron Devices Society. Periodicals postage paid at New York, NY and at additional mailing offices. Postmaster: Send address changes to IEEE Electron Devices Society Newsletter, IEEE, 445 Hoes Lane, Piscataway, NJ 08855.

Copyright © 2009 by IEEE: Information contained in this Newsletter may be copied without permission provided that copies are not used or distributed for direct commercial advantage, and the title of the publication and its date appear on each photocopy.

2009 SPRING AdCOM MEETING SUMMARY



James L. Merz

The meeting was called to order at 8:00 a.m., on Sunday, May 31, by our President, Cor Claey's. The first item on the agenda was a most important statement of thanks to the meeting organizers, Subho Chakrabarti and M. K. Radharkrishnan, for organizing this meeting in Mumbai (formerly Bombay) India at the Leela Kempinski Hotel, an outstanding site for our deliberations. Cor also introduced Christopher Jannuzzi as the new Executive Director charged with the nearly impossible job of filling Bill Van Der Vort's shoes. Though difficult, it is clear that Chris is up to the job, and we all welcomed him with enthusiasm.

President's Report. Cor Claey's then went on to summarize important items from the recent TAB meeting in Puerto Rico, during which phase one approval for several new periodicals was provided: one for the Biometrics Council, two new journals for Power and Energy, and one for Engineering in Medicine and Biology. Final approval was also given for the name change of the Laser and Electro-Optics Society (LEOS) to the Photonics Society. This led to a discussion concerning the need for the IEEE to continue to address new and emerging technologies, for which Photovoltaics was offered as an important example. The technology roadmap, now called the *Technology Navigator*, has been updated, broadening the technology base of IEEE with the identification of 14 industry sectors, and all societies of IEEE are in the process of linking

their products to these sectors. Cor also reminded us of the impending **five year review on June 25th of EDS and its publications: *Transactions on Electron Devices (T-ED)*, *Electron Device Letters (EDL)*, and *Transactions on Device and Materials Reliability (T-DMR)*.** The review will include a consideration of directions for the future of EDS. Significant time has been devoted in recent months by all the appropriate leaders of EDS for this review, and a report on its outcome will be forthcoming at a later date.

The IEEE celebrated its 125th anniversary at its conference on the history of technical societies, which was held in August in Philadelphia. Cor presented a talk about the EDS, giving our Society excellent visibility. The importance of this anniversary is

(continued on page 9)

2009 IEEE INTERNATIONAL ELECTRON DEVICES MEETING (IEDM)

(continued from page 1)

IEEE/EDS awards, in addition to an outstanding technical program.

The hotel is located in Baltimore's Inner Harbor, close to shopping, dining, and entertainment venues, including CamdenYards (the Baltimore Orioles' stadium), the University of Maryland, Johns Hopkins University and the M&T Bank Stadium (the Baltimore Ravens' stadium).

Short Courses

The IEDM sponsors two short courses on Sunday, December 6th, from 9 a.m. to 5:30 p.m. The courses are "Low Power/Low Energy Circuits: From Device to System Aspects" and "Scaling Challenges: Device Architectures, New Materials, and Process Technologies." These courses will be presented by experts in the fields, providing attendees the opportunity

to learn about these emerging areas through lectures and introductory material as well as discussing the latest developments. Advance registration is required.

Emerging Technology Session

IEDM 2009 will feature a special session on Tuesday, December 8th with papers focused on "Graphene Nanoelectronics."

Technical Program

This year's technical program areas include:

- CMOS Devices and Technology
- Characterization, Reliability and Yield
- Displays, Sensors and MEMS
- Memory Technology
- Modeling and Simulation
- Process Technology

- Quantum, Power, and Compound Semiconductor Devices
- Solid State and Nanoelectronic Devices

CMOS Devices and Technology sessions will cover breakthroughs and advancements in device physics, novel MOS device structures, circuit/device interaction and co-optimization, CMOS scaling issues, high performance, low power, analog/RF devices, and CMOS platform technology and manufacturing issues, such as DFM and process control. Other topics of interest are SOI, high-mobility channel devices such as strained silicon and SiGe MOS devices, and 3D integrated circuits.

Characterization, Reliability and Yield sessions will focus on areas of

(continued on page 8)

UPCOMING TECHNICAL MEETINGS

2009 IEEE SEMICONDUCTOR INTERFACE SPECIALISTS CONFERENCE (SISC)

The 40th IEEE Semiconductor Interface Specialists Conference (SISC) will be held December 3–5, 2009, at the Key Bridge Marriott Hotel in Arlington, Virginia, immediately prior to the IEEE International Electron Devices Meeting (IEDM). An evening Tutorial session, free to all registered SISC attendees, will be held on December 2nd. SISC is sponsored by the IEEE Electron Devices Society.

The SISC is a workshop-style conference that provides a forum for device engineers, materials scientists, and solid-state physicists, to openly discuss issues of common interest. Principal topics are semiconductor/insulator interfaces, the physics of insulating thin films, and the interaction among materials science, device physics, and state-of-the-art technology. At this year's SISC, novel topics such as dielectrics on nanowires and carbon-based channels, oxide electronics, and interfaces in photovoltaics are expected to gain in importance.

At SISC, oral sessions of invited and contributed talks, as well as a lively

poster session, are designed to encourage discussion. Conference participants have numerous opportunities for social gatherings with renowned scientists and engineers. They also enjoy Washington, D.C., attractions such as the National Mall with the Lincoln Memorial, the National Air and Space Museum, the National Gallery of Art, the White House, the U.S. Capitol, and the Library of Congress.

Conference Focus

The program includes 60 presentations from all areas of MOS science and technology, including but not limited to:

- SiO₂ and high-k gate dielectrics on Si and their interfaces
- Insulators on high-mobility and alternative substrates (SiGe, Ge, III-V, SiC, etc.)
- MOS gate stacks with metal gate electrodes
- Stacked dielectric layers for non-volatile memory
- Oxide and interface structure, chemistry, defects, and passivation: Theory and experiment

- Electrical characterization, performance and reliability of MOS-based devices
- Surface cleaning technology and impact on dielectrics and interfaces

SISC 2009 will further explore novel topics such as:

- Dielectrics on nanowires/tubes and graphene
- Oxide electronics and multiferroics
- Interfaces in photovoltaics, e.g. Si passivation

Invited Presentations

This year's invited presentations will include:

- **Prof. Charles H. Ahn**, Yale University, USA – *Multifunctional complex oxide heterostructures*
- **Dr. Xavier Garros**, CEA-LETI-Minatec, Grenoble, France – *How to improve mobility, performance, and BTI reliability of adv. high-k/metal gate transistors?*
- **Prof. Hideki Hasegawa**, Hokkaido University, Sapporo, Japan – *Fermi level pinning and its removal at III-V MOS interfaces*



Washington, D.C., attractions are within easy reach from the Key Bridge Marriott Hotel in Arlington, Virginia

- **Dr. Jan Van Houdt**, IMEC, Leuven, Belgium – *Memory technology: Evolutionary versus revolutionary concepts*
- **Prof. Andrew Kummel**, University of California San Diego, USA – *Atomic structure of passivation layers for Ge MOSFETs*
- **Prof. Tso-Ping Ma**, Yale University, USA – Special invited talk on the occasion of the 40th SISC: *Gate Dielectrics, Interfaces, and SISC*
- **Dr. Naoto Umezawa**, National Institute for Materials Science, Tsukuba, Japan – *Quality control of high-k gate oxides by doping with impurities: Guidelines from theory*

Wednesday evening Tutorial – free to all registered SISC attendees

- **Dr. Thomas Schroeder**, IHP, Frankfurt (Oder), Germany – Physical characterization of dielectric films: Laboratory and synchrotron techniques

Unique Poster Session

A unique feature of SISC is the attention paid to the poster presentations.

Each author of a poster presentation has the opportunity to introduce their work orally, using two visuals, to the entire SISC audience during special poster introduction sessions. The posters are then presented during a separate poster reception on Thursday evening.

Best Student Presentation Award

SISC is a popular conference with students, who can get immediate and candid feedback on their latest results from the experts in the field. In addition to a strongly reduced registration fee for students, a Best Student Presentation award is conferred every year in memory of E.H. Nicollian, a pioneer in the exploration of the metal-oxide-semiconductor system who had a strong presence within the SISC. The winner will receive a plaque and a cash prize.

Accompanying Program

The scientific content of the conference is complemented by informal events designed to encourage

lively discussion and debate. A hospitality suite with complimentary drinks is available to attendees to continue their discussions on every evening of the conference. Friday afternoon has no scheduled talks, to allow time to meet informally, relax, or visit local attractions. On Friday evening the conference hosts a banquet and awards ceremony, complete with the famous limerick contest. The limericks never fail to give the conference presentations, people and events an entirely new perspective!

SISC is always a rewarding experience for specialists, students, as well as newcomers to the field. For more information about the conference, to consult its program and to register, please visit <http://www.ieeesisc.org>. We hope to see you at SISC!

Martin M. Frank

*2009 SISC Technical Program Chair
IBM T. J. Watson Research Center
Yorktown Heights, NY, USA*

2009 INTERNATIONAL SEMICONDUCTOR CONFERENCE (CAS)

The 32nd edition of the International Semiconductor Conference (CAS), co-sponsored by the IEEE Electron Devices Society, will be held in Romania, at the Hotel Sinaia, in the mountain resort of Sinaia, Romania, October 12–14, 2009. The Conference is underlying the development in micro- and nano-technologies while still maintaining the “traditional” connection with semiconductor electronics. More information can be found at the IMT-Bucharest website www.imt.ro.

The CAS conference was originally created in 1978 and up until 1996 was organized as the *Annual Semiconductor Conference* (in Romanian – Conferința Anuală de Semiconductoare –

CAS). Starting in 1991, CAS was opened to the international scientific community and changed its name accordingly to *the International Semiconductor Conference*, still maintaining the same acronym (CAS). In 1995, the conference became an IEEE event, being co-sponsored by the Electron Devices Society. Since 1997 the organizer of CAS has been the National Institute for Research and Development in Microtechnologies (IMT-Bucharest).

IMT-Bucharest, coordinated by the Romanian Ministry of Education, Research and Innovation, is the first institute with this profile in Eastern Europe and the main actor in microtechnologies in Romania. The

mission of IMT consists of research and development in micro-nano-bio-technologies, technology transfer, education and training, dissemination. The institute is a pole of multidisciplinary research, integrating research, education and technology transfer, emerging as a regional center. Between 2003 and 2009, IMT was involved in approximately 25 European projects (FP6, FP7 and related). Now IMT houses a *European Centre of Excellence* financed by the EC (2008–2011), the first one after Romania became a European Union member.

In the last decade, the Conference profile has been gradually extended from semiconductor device physics



The Peleș Castle in late Autumn

and technology (including semiconductor materials and microelectronics) to micro- nano-and biotechnologies. The conference is an ideal forum for presentation of the latest results in:

- Nanoscience and nanoengineering;
- Micro and nanotechnologies for biomedical and environmental applications;
- Novel materials and intelligent materials;
- Micro and nanotechnologies for transducers, interfaces and microsystems;
- Microoptics and microphotonics;
- Micromachined devices and circuits for microwave and millimeter wave applications;
- Power devices and microelectronics (including CAD);
- Simulation and fabrication of microstructures and microsystems;
- Semiconductor device physics and technology;

- Design and technology of micro-electronic components;

CAS 2009 will begin with a half-day plenary session, followed by two and a half days of parallel technical sessions – oral and poster. The agenda also includes a Student Papers Session, allowing the students to present their work and get immediate feedback from the experts in the field. A Best Student Paper Award is given every year by the IEEE ED Romania Chapter. Furthermore, the eleven invited speakers will be present the entire duration of the conference.

An important goal of CAS 2009 is to provide an environment that encourages discussions and interactions between researchers from institutes, academia and companies from all over the world. This year participants from the U.S.A., South Africa, Korea and numerous European countries will attend. Conference

participants will have many opportunities for social gatherings to meet and exchange ideas with colleagues.

CAS 2009 will be held in the Fall season at Hotel Sinaia, in the mountain resort of Sinaia, Romania. The “Henri Coanda” Otopeni International Airport is 115 Km from Sinaia and the organizers have arranged for car transportation for all participants arriving at the airport.

Sinaia is situated at 800 meters altitude, near the Bucegi Mountains, in the Prahova River valley. The mountains are 2500 meters at the highest altitude. Sinaia was developed around the Sinaia Monastery built at the end of the 17th century. The monastery was named after the biblical Mount Sinai. The small town of Sinaia, with its famous *Peleș* Castle, formerly the Summer Royal Residence, is the favorite place outside Bucharest for international conferences and high-level meetings. The rocky landscape of the Prahova valley is a paradise for mountain climbers. You may reach the height of 2000 or 2200 meters by cable or by car and enjoy a walk, without any special equipment

The papers, original and previously unpublished, submitted on-line (www.imt.ro/cas/) were reviewed by the CAS Technical Program Committee. Invited and accepted papers are published in the CAS 2009 Proceedings (an IEEE publication), which will be delivered to the participants at the beginning of the conference.

For Call for Papers and further information regarding the next conference, CAS 2010, please visit our website <http://www.imt.ro/cas/>. For additional information contact us at cas@imt.ro.

Dan Dascalu
2009 CAS General Chairman
IMT Bucharest
Romania

2010 INTERNATIONAL CONFERENCE ON MICROELECTRONICS (MIEL)

The 27th International Conference on Microelectronics (MIEL 2010) will be held May 16–19, 2010, at the Faculty of Electronic Engineering, University of Nis, Serbia. The MIEL 2010 Conference will be organized by the IEEE Serbia and Montenegro Section – ED/SSC Chapter, in cooperation with the Faculty of Electronic Engineering, University of Nis, Ei-Holding Co.-Nis, and Society for ETRAN, under the co-sponsorship of the IEEE Electron Devices Society, with the cooperation of IEEE Solid-State Circuits Society, and under the auspices of Ministry of Science and Technological Development, Serbian Academy of Science and Arts, Academy of Engineering Sciences of Serbia, and City Assembly of Nis.

MIEL is an outstanding European conference providing an international forum for the presentation and discussion of the recent developments and future trends in the field of microelectronics. Since 1984, there is an aura of internationalization around the MIEL conferences, providing an opportunity for specialists from both academic and industrial environments from around the world, to meet in an informal and friendly atmosphere and exchange their theoretical and practical experiences. Since 1995, MIEL has been organized under the technical co-sponsorship of IEEE receiving EDS co-sponsorship for the first time in 2000.

The topics to be covered by the technical program of MIEL 2010 include all important aspects of microelectronic devices, circuits and systems, ranging from materials and processes, technologies and devices, device physics and modeling, pro-



Monument to the liberators of Niš

Wikimedia Commons

cess and device simulation, circuit design and testing, system design and packaging, and characterization and reliability. Based on the past decade the technical program is expected to consist of about 130 contributed papers by authors from more than 30 countries around the world and will be structured into oral and poster sessions. These papers, together with about 15 invited papers, will be presented by the world's leading authorities in the field of microelectronics and will form a solid foundation for the mini-colloquia on nano-technologies and nano-devices to round off the technical program.

The prospective invited speakers are: Ashraf Alam (USA), Elena Atanassova (Bulgaria), Joachim Burghartz (Germany), Petar Igic (United Kingdom), Kiyoo Itoh (Japan),

Juin J. Liou (USA), Meyya Meyyappan (USA), Mikael Ostling (Sweden), Norio Sadachika (Japan), Enrico Sangiorgi (Italy), Siegfried Selberherr (Austria), Krishna Shenai (USA), Jan Vobecky (Czech Republic), Hei Wong (Hong Kong).

For registration and other information, visit the MIEL 2010 Home Page at <http://miel.elfak.ni.ac.rs>, or contact the MIEL Conference Secretariat, Department of Microelectronics, Faculty of Electronic Engineering, University of Nis, Aleksandra Medvedeva 14, 18000 Nis, Serbia; Tel.: +381 18 529 325; Fax: +381 18 588 399; E-mail: miel@elfak.ni.ac.rs.

Tihomir Jovanovic
2010 MIEL Conference Secretary
University of Nis
Nis, Serbia

2009 IEEE INTERNATIONAL ELECTRON DEVICES MEETING (IEDM)

(continued from page 3)

yield and reliability, both front-end and back-end of the process. Topics include, but are not limited to, hot carriers, gate dielectric wearout and breakdown, process charging damage, latch-up, ESD, soft errors, noise and mismatch behavior, bias temperature instabilities, and reliability of high-k and low-k materials, circuits, and packaging. Other topics include interconnect reliability, electromigration, the impact of back-end processing on devices, chip-packaging interaction, manufacturing technologies for reliability, physics of failure analysis, as well as reliability issues for memory and logic technologies and characterization and measurement.

Displays, Sensors and MEMS sessions will cover critical devices, structures, and integration for imaging, displays, detectors, sensors, and micro-electromechanical systems (MEMS). A subset of key topics in the Displays and Sensors area includes CMOS imagers, CCDs, TFTs, organic, amorphous, and polycrystalline devices, vacuum microelectronics, emissive displays and sensors for chemical, molecular and biological detection. Topics of interest in the MEMS area include resonators, switches, and passives for RF applications, integrated sensors, micro-optical devices, micro-fluidic and biomedical devices, and micro power generators, with particular emphasis on integrated implementations. Other relevant subjects include design, fabrication, reliability, theory, and modeling.

Memory Technology sessions will discuss memory-related technology, from novel memory cell concepts to fully integrated memories and manufacturing. Areas of interest include volatile and nonvolatile memories, processes for advanced memories, novel memory cells include NEMS-based device, 3D integration, reliability and modeling.

Modeling and Simulation sessions will discuss all areas of analytical,

numerical, and statistical approaches to the modeling of electronic, optical and multiphysical devices, their isolation and interconnection. Topics include physical and compact models for devices and interconnects, and the modeling of fabrication processes and equipment, including simulation algorithms, process characterization, parameter extraction, early compact models for advanced technologies; performance evaluation and technology benchmarking methodology. Submissions should advance the modeling and simulation art or apply existing techniques to gain new insights into devices.

Process Technology sessions will cover front- and back-end process modules for fabrication of logic, memory and 3D integrated circuits. Front-end topics will include substrate technologies; lithography; etching; isolation; thin dielectrics; high-k materials and metal electrodes for transistors and MIM capacitors; shallow junctions; silicides; self-assembly techniques and new materials. Back-end topics will include conductor systems; low-k materials, contact and via processes; barrier materials; planarization, design considerations for multi-level interconnects, and advanced packaging.

Quantum, Power and Compound Semiconductor Devices sessions will cover compound semiconductors with electronic and optoelectronic device applications (e.g. GaAs, InP, GaN, SiC, SiGe, Antimonides and related alloys). Papers also will discuss discrete and integrated high-power/current/voltage devices including those on silicon. Topics will include FETs, HBTs, LEDs, lasers, external modulators, and high-power and compound RF and millimeter-wave devices. Also, devices with ballistic and quantum effects; spintronics, optoelectronic ICs, optical interconnects; photonic bandgap structures and crystals, and integrated RF

components including inductors, capacitors and switches.

Solid State and Nanoelectronic Devices sessions will focus on novel solid state and nanoelectronic devices such as novel memory cells; nanoelectronic devices including nanotubes, nanowires, and quantum dots; devices for bioelectronic applications; spintronic based devices; NEMS-based logic and memory devices; molecular devices and new device characterization and performance evaluation methodologies.

Evening Panel Discussions

On Tuesday evening, December 8, beginning at 8:00 p.m., the IEDM will offer an evening panel discussion on "Managing Innovation: An Oxymoron?" plus a special evening session on "Technology Elements for 15nm Node."

IEDM Luncheon

The IEDM 2009 luncheon will be held on Tuesday, December 8, at 12:20 pm. Luncheon tickets are available through Advance Registration or on-site at a cost of \$55.00 to conference attendees only.

For registration and other information, visit the IEDM 2009 home page at <http://www.ieee-iedm.org/> or contact Conference Manager, Phyllis Mahoney, 19803 Laurel Valley Place, Montgomery Village, MD 20886, USA; telephone (301) 527-0900, extension 2; fax (301) 527-0994; or e-mail: phyllism@widerkehr.com. The IEDM committee members look forward to seeing you in December.

Veena Misra

*2009 IEDM Publicity Chair
North Carolina State University
Raleigh, NC, USA*

John Suehle

*2009 IEDM Publicity Vice-Chair
NIST
Gaithersburg, MD, USA*

2009 SPRING AdCom MEETING SUMMARY

(continued from page 3)

underscored by the fact that the IEEE is the largest professional society in the world!

Secretary's Report. Jim Merz reviewed a list of nine motions discussed at the December 2008 AdCom Meeting in San Francisco, all of which passed unanimously. The minutes of the December meeting were then also approved unanimously. As Koko said in the Gilbert and Sullivan comic opera, *The Mikado*, "Never knew such unanimity on a point of law in my life!"

Review of the Executive Committee Meeting held May 30. Renuka Jindal, the Incoming President, told us that the ExCom Meeting was then preceded by a three-hour Presidents Strategy Meeting involving the President, President-Elect, Junior and Senior Past Presidents and Executive Director, on Friday to "brainstorm" future directions and strategic issues for EDS. He showed the vision and mission statements as they now read, and said that we will discuss them in more detail at the December meeting.

Additional items covered in the ExCom Meeting included: a recent visit by several of the Officers to Qualcomm, budget considerations, the question of designating EDS "Celebrated Members" and the establishment of a GOLD Committee, high school student exposure to "Snap" circuits, the possibility of producing DVDs containing IEDM short courses, a solar energy documentary (a concept which has a lot of enthusiastic support), and a PowerPoint presentation, perhaps with audio, for Distinguished Lecturers. The idea of a *T-ED*, *EDL* and *T-DMR* manuscript editing service for authors for whom English is a second language was discussed, as was the idea of an EDS "Express" publishing journal. Finally, procedures for the 2009 Officer and AdCom Member election process continues to be discussed, and it was proposed that the Secretary

and Treasurer be elected for two year terms rather than having elections for those positions every year. However, due to the disappointing attendance of AdCom voting members at this meeting, a quorum of voting members was not present, so that no motions could be formally put forward for a vote.



Steve Parke presented a Treasurer's Report that was generally positive despite the sharp economic downturn. For Fiscal 2008 income was of the order of \$7.3 million with ~\$7.1 million expenses, for a net income of ~\$152K. That's the good news. The bad news is that investment losses (managed by IEEE) were of the order of \$2.6 million, reducing the EDS reserve from \$6.65 million to approximately \$4 million. Steve felt that the damage was relatively light, given the magnitude of the current recession, and the EDS still maintains a comfortable cushion. For Fiscal 2009 the forecast is for an income of \$6.9 million, (a 5% reduction), with a 3% reduction forecast for Fiscal 2010. The wild card in any budget forecast is, of course, conference income and expense, as \$5.5 million of the \$7.3 income last year was conference attendance and publication. The major EDS publications (*T-ED* and *EDL*) continue to be fiscally sound, although the increased page counts approved last year may eat into their profits.

Bill Van Der Vort gave what will be his last report as the Executive Director of EDS. Bill first thanked Fran Urbaniak

and Joyce Lombardini for the huge effort they made for the success of this meeting in Mumbai, and he thanked Ilesanmi Adesida for the many changes he has proposed for the EDS election process. He pointed out that the first EDS Early Career Award presentation will be given at the GOLD Lecture event at IEDM and the recipient will also be recognized at the December EDS AdCom Meeting in Baltimore. As usual, he is working on a long list of projects for the Society, an incomplete list of which includes the following. He is working with GOLD representatives to improve the program, with Al Mac Rae, the Awards Committee VP, to revamp the text of the Ebers and Education Awards and that of several of the nomination forms, with IEEE representatives to improve the EDS web-site, in particular to benefit EDS members on a member-only website, to improve QuestEDS so that only members see the answers provided by experts, working on the conversion of the IEDM short courses from videotape to DVD, and on videos on solar energy and photovoltaics. He is working to have a membership promotion booth at the 2009 IEEE Photovoltaic Specialists Conference, and to have conference proceedings posted to IEEE *Xplore* in a more efficient manner, and he has completed work on the editorial service for language editing mentioned above. Bill announced that all manuscripts will be moved to IEEE Manuscript Central, and an author feedback system will be employed through the Manuscript Central office, and that another initiative approved by the AdCom is to have a student-authored article published in two issues of the EDS Newsletter each year. Bill concluded by describing the huge amount of work that has gone into preparations for the June IEEE review of EDS, and thanked all those whose efforts were critical in this preparation.

VP for Membership. Albert Wang reported that as of December 31, 2008, EDS membership is 10,845, up 1.9% from the preceding year, as opposed to decreases of 1.3% and 3.9% in the last two years. Regions 1-6, however, continue to decrease, whereas Regions 8 and 10 are large (one-third and one-half of Regions 1-6, respectively) and both these regions continue to increase. Interestingly, he noted that the IEEE membership increase was only 1.6% compared to the EDS increase of 1.9%, but that memberships in all societies is decreasing, down 2.7%. There has been considerable discussion about increasing the membership numbers in all the societies in general and in EDS in particular. Albert has initiated several activities to increase membership in EDS. He also noted that EDS gets \$10 for each member promoted to senior member. EDS got 150 member promotions in 2008, and so far 79 have been elevated in 2009.

This discussion was continued during the **VP report on Regions and Chapters**, which was also given by Albert in Juin J. Liou's absence. There are now 145 chapters – majority of growth has been in Regions 10 (Asia & Pacific) and 8 (Europe, Middle East & Africa), with a total of 44 chapters. There was extended discussion about the importance of establishing new chapters, and methods to do so. This continues to be an important issue, as it deals directly with growth of membership. There are now 51 potential new chapters currently under discussion, including ten in Region 8 and twenty in Region 10. Albert noted that the Distinguished Lecturer (DL) Program is also the most active in Regions 8 and 10, with 19 and 55 lectures given last year, respectively. As an inducement to stimulate chapter activity, 95 chapters have received the new EDS banner. The Secretary again notes here, for the record, that the EDS Newsletter is an ideal vehicle to advertise chapter activities, and hence hopefully increase chapter membership!

Paul Yu provided the VP Report on Educational Activities. The DL program continues to be one of the Society's most successful programs. For 2008, there were 110 lecturers who participated out of a total of 129 members who are listed as DLs. There were 208 lectures given in 2008, and the total combined budget for the DL and Mini Colloquia (MQ) programs has grown from \$5.2K in 1999 to \$96K in 2008, with \$81K already spent as of May 9, 2009. (Note that \$90K was budgeted for each of these years.) There was discussion about attendance at these lectures and ways to measure the success of the program. Leda Lunardi pointed out that there are far fewer DLs for the Photonics Society; they tend to be very distinguished and their individual budgets are larger. Some DLs (e.g., Mark Lundstrom) give talks through video conferencing, but this is expensive for the chapters because they have to pay for the communication lines. All IEEE Fellows are eligible to be DLs, and an effort is made to recruit them. There are very few women DLs. Concerning student fellowships: 6 were awarded to Ph.D. students, with a \$5,000 check plus a plaque presented to each at IEDM. There were 5 awarded to Masters students, with a \$2,000 check and a certificate presented by a Dean or Department Chair. Finally, creation of an IEEE TAB documentary on solar energy was approved with a budget of \$20K. The project will be led by Peter Wiesner, Rebecca Nikolic, and Steve Ringel and was launched in the Bay Area in California, May 21–22, as well as in Las Vegas, Nevada in June.

The Publications Committee Report was given by Samar Saha, who said that he has begun requesting feedback from authors after the publication decision is made on a specific article. Up to now there has been only informal feedback to the editors. Samar described three best paper awards, two of which went to authors from Singapore, and one to

the University of Illinois (UIUC). EDS members receive a customized Table of Contents of the EDS journals, and can access the actual article with a single click. The IEDM short course DVDs are of high quality and low cost. A draft proposal for a new "EDS Express" Journal (rapid publication, high quality peer review) is scheduled for review by the Publications Committee in June, along with the possibility of a new, peer-reviewed journal IEEE EDS Transactions on Photovoltaics. A teleconference was held in April with the IEEE Photovoltaics Specialists Conference (PVSC) organizers and it was recommended that the top papers at the June 2009 conference be considered for publication. It may instead be appropriate to publish a special issue of T-ED. Steve Ringel has pointed out that there would be no competition for a new journal devoted exclusively to photovoltaics. Note that EDS sponsors the PVSC.

Samar also reported briefly on the QuestEDS project. One important point is that students cannot ask questions that are obviously homework or exam questions! (Breathe easily, you professors.) Usage so far has been minimal, with only 15 questions in 2007 and 14 last year. Most are answered in 14 days or less. (Hey, maybe this is a good way to make up an exam – solutions manuals are getting harder and harder to come by!) It should be noted that no names are given. QuestEDS needs promotion to increase the usage.

Ilesanmi "Ade" Adesida gave an important summary of his proposed changes to the EDS Election Procedures. For the Officer Election, a President-Elect, Secretary and Treasurer will be elected. All candidates must be nominated by a full voting member of AdCom, and endorsed by two other full voting members (Currently only one is needed.) Each voting member can nominate only one candidate but can endorse as many candidates as desired.

Voting members cannot nominate or endorse each other. Names of nominators and endorsers will be included on the ballot. Nominations and Elections Chairperson is excluded from voting, except in the case of a tie.

For the election of members at large, self nomination is allowed, but endorsement is needed; other rules are similar to above. Seven AdCom members will be elected in December for terms of three years, with a maximum of two consecutive terms. It is also proposed to change the terms of the EDS Secretary and Treasurer from one year to two, with an unlimited number of terms. The EDS President and President-Elect each serve single two-year terms.

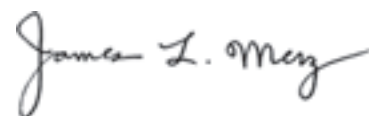
There was some discussion of these changes, **but we could not vote on them because we did not have a quorum!**

GOLD: Graduates of the Last Decade. Ravi Todi explained that the GOLD program is Institute wide, not just an EDS activity, and he described the many activities for GOLD members: newsletters, on-line seminars emphasizing such things as early career development and the development of presentation skills, conferences, and a talent search project. EDS has established a GOLD committee, with a Career Assistance subcommittee, an EDS Student/GOLD Ambassador Program, an annual GOLD event at IEDM, an Early Career Award, and new student articles added to the newsletter. The Early Career Award will be presented at IEDM during the GOLD Lecture session. Those nominated for the award must be GOLD members, and must be nominated by EDS members. The deadline for nominations is August 15.

The Region 10 SRC-AP Report was given by Xing Zhou. Since this AdCom meeting is being held in Region 10, it was the occasion for the Region 10 chapters to meet on Saturday, the day before the EDS AdCom Meeting, and attendance was excellent. Fifteen chapter chairs gave their reports, and the chapter locations covered the map of Region 10. This was a very successful event, which should encourage new members to join the Electron Devices Society.

The meeting was formally closed at 12 Noon by Cor Claeys, President of EDS.

Respectfully submitted, Jim Merz,
EDS Secretary



Secretarial Comments

In my first Newsletter article describing the Spring Meeting in Athens last year, I wrote about the significance of the changes I observed in EDS during my years of absence as Secretary, particularly the rather amazing development of globalization of the Society. However, with this world-wide outreach comes responsibility – we have all agreed, in accepting nomination to AdCom, to attend both meetings each year. The good news is that EDS membership is increasing as a result of our meetings in these regions overseas; the bad news is that attendance of AdCom members is declining; leading to a most unfortunate situation that real business cannot be executed because of the lack of a quorum, as happened in Mumbai. The situation is no doubt exacerbated by the current economic downturn, making it more difficult for many of us to travel. Nevertheless, the Officers of the Electron Devices Society join

me in exhorting all AdCom members to make every effort to attend both meetings each year. Otherwise, the concept of EDS globalization will wither – it has even been suggested

that the next spring meeting be held in Piscataway! Many of our members did indeed flock to Mumbai, coming by air, land, and sea, but not enough of us came!



EDS Secretary arriving at the Leela Kempinski, ready to take the AdCom Meeting minutes with the assistance of Leela staff (Note the ball-point pen in his pocket protector)

SOCIETY NEWS

SPOTLIGHT ON: 2009 IEEE PHOTOVOLTAICS SPECIALISTS CONFERENCE (PVSC)

The 34th IEEE Photovoltaic Specialists Conference (PVSC) was held June 7–12, 2009, in Philadelphia, featuring keynote presentations from luminaries such as Penn. Gov. Edward G. Rendell, Deutsche Bank Senior Analyst Stephen O'Rourke and the DOE's Office of Energy Efficiency and Renewable Energy CTO Dr. Sam Baldwin. The event drew 1,348 attendees—an attendance record, despite the economic downturn—which included scientists, policy-makers, industry executives, and others. The PVSC also showcased 140 exhibitors and 654 technical presentations on topics running the gamut of solar technologies, from crystalline silicon to thin film to PV applications in space.

The audience was welcomed by Renuka P. Jindal, President-Elect of the IEEE Electron Devices Society, sponsor of the PVSC.



The PVSC's prestigious William R. Cherry Award was presented to University of New South Wales Prof. Stuart Wenham for his decades of

dedication to the advancement of the PV industry, while the PV Velocity Forum brought together industry analysts, investors and executives to address the key challenges facing the industry and offer insight on potential solutions. The program also featured the Cherry Hill Revisited luncheon, honoring the 1973 meeting of PV researchers that is widely recognized as the birth place of the American solar industry.

Overall, the 34th PVSC was a tremendous success, garnering international media attention. Please join us again. June 20–25, 2010, when we say "Aloha" to the 35th PVSC at the Hawaiian Convention Center on Waikiki Beach, Honolulu, Hawai'i.

Lonnie Shekhtman
Antenna Group Inc.
www.antennagroup.com

YOUR CAREER AND NETWORKING WITH IEEE EDS AdCom MEMBERS

Come join us at the Hilton Baltimore Hotel on Sunday evening, December 6, 2009, at 5:00–7:00 p.m. for a free EDS sponsored, career development strategy session, especially designed for graduate students and young professionals, who are Graduates of the Last Decade (GOLD). The session includes a seminar on career development strategies in today's globally competitive world and a panel discussion focusing on career options and career path selection with expert panelists from academia, research, design, development and manufacturing and will be followed by a golden opportunity

for you to meet with EDS Officers and Administrative Committee (AdCom) members at a special networking session. Establishing a network



with successful EDS AdCom members and enjoying some of the other key EDS benefits (e.g., online access to ED Letters and Transactions and the IEDM proceedings) are some of the primary reasons for joining EDS. This event will be held in conjunction with EDS' flagship conference, the

IEEE International Electron Devices Meeting (IEDM), held December 7–9. For information concerning the IEDM and to register for the GOLD Seminar, please visit the conference website at <http://www.his.com/~iedm/>.

For additional details on this EDS sponsored GOLD event, please contact EDS GOLD representative, Dr. RaviTodi at rtodi@ieee.org.

Ravi M. Todi
IEEE GOLD Committee
Representative
IBM Semiconductor Research
and Development Center
East Fishkill, NY, USA

CALL FOR NOMINATIONS

ELECTRON DEVICES SOCIETY ADMINISTRATIVE COMMITTEE

The Electron Devices Society of the IEEE invites the submission of nominations for election to its Administrative Committee (AdCom). Presently, the AdCom meets twice per year and is composed of 22 members. Seven members will be elected this year for a term of three years, and a maximum of two consecutive terms is allowed. In 2009, the election will be held after the AdCom meeting on Sunday, December 6th. Electees begin their term in office on January 1, 2010. For your information, the nominees do not need to attend the AdCom Meeting/Election to run.

Nominees are being sought to fill the slate of candidates. Nominees may be self-nominated, or may be nominated by another person; in the latter case, the nominee must have been contacted and have agreed to serve if elected. Any member of EDS

in good standing is eligible to be nominated. As another condition for nomination and election, *a nominee is expected to attend the two annual AdCom meetings*. In general, the travel and accommodation costs to attend these meetings are borne by the elected member.

New Requirement for 2009! All nominees must be endorsed by one 'full' voting member, i.e., one of the four officers (President, President-Elect, Treasurer or Secretary), the Jr. or Sr. Past President or one of the 22 current AdCom Members-at-Large.

Please send your nominee's name, address, endorsement letter and supporting information to the EDS Executive Office Administrator, Laura J. Riello in time to be received by the deadline of **October 15, 2009**. It is very desirable that submissions include a biographical summary in a standard

two-page format. The EDS Executive Office can provide you with an example of the format. If you have any questions regarding the nomination requirements or process, feel free to contact the EDS Sr. Administrator:

Laura J. Riello
IEEE Operations Center
EDS Executive Office
445 Hoes Lane
Piscataway, NJ 08855-1331
Tel: +1 732 562-3927
Fax: +1 732 235-1626
E-mail: l.riello@ieee.org

The deadline for submission of nominations is October 15, 2009.

*Ilesanmi Adesida
EDS Nominations and
Elections Chair
University of Illinois
Urbana, IL, USA*

EDS REGION 10 CHAPTERS MEETING SUMMARY

The EDS Region 10 Chapters Meeting was held on May 30, 2009, at the Leela Kempinski Hotel in Mumbai, in conjunction with the EDS AdCom Meeting, which is the first time held in India, and follows the previous one held two years ago in Beijing. Even with travel restrictions in many institutions due to the swine flu, we had about 30 participants and 13 chapters reported their activities.

The meeting started with Welcome and Opening Remarks by Renuka Jindal, EDS President-Elect. Renuka welcomed the chapter chairs and representatives, and briefed them about the EDS structure and spirit and emphasized the key role chapters play as grassroots of the Society. Xing Zhou, SRC Chair for Region 10, gave an

overview of the SRC-AP, existing and new chapters, past activities, and resources. He also reviewed the history of the WIMNACT-Workshop and IEEE EDS Mini-colloquium on Nanometer CMOS Technology – a Distinguished Lecture (DL) series in Region 10. There have been 16 WIMNACTs since 2002, and there will be 3 organized in conjunction with this year's AdCom meeting in Nepal, India (Bangalore, Mysore, Delhi), and Bangladesh. Chapters are encouraged to organize WIMNACTs and coordinate in multiple cities/countries together with major EDS events. Then, the EDS VP of Educational Activities, Paul Yu, presented a summary of the DL program, its structure and budget, and chapter/education-related key initiatives.

Finally, M.K. Radhakrishnan, who is the key person in coordinating this year's Region 10 Chapters Meeting and the 3 WIMNACTs with the South Asia Chapter Chairs/Partners Committee, gave the audience a comprehensive review of the history and activities of South Asia chapters: starting in the early 1990s (Indian Council Chapter, 1998 Chapter of the Year Award), to late 1990s (Bombay; 2001 Chapter of the Year Award), and throughout 2000s (Bangalore 2001; 2004 Chapter of the Year Award; SJCE Mysore 2002; Calcutta 2003; Bhubaneswar/NIST 2005; Delhi 2007, Bangladesh 2007; Nepal 2008). He also shared interesting pictures and stories of the past chairs/partners meetings as well as various activities in the region.



Participants of the EDS Region 10 Chapters Meeting at the Leela Kempinski Mumbai Hotel on May 30, 2009

The meeting was followed by presentations of chairs or representatives from 13 chapters in two sessions on their activities and plans. The first session included chapters from South Asia (Bombay, Bangalore, Bangladesh, Calcutta, India Council, SJCE Mysore, NIST, Nepal), and after the break, chapters from South-East Asia (Malaysia, Singapore, Western Australia) and East Asia (Chengdu, Xi'an) reported their activities. The Beijing Chapter and Tsinghua University Student Branch also planned their participation but their arrival was delayed. A Representative from Suzhou for potential

chapter formation was invited and also attended the meeting. After the chapter reports, there was an open forum for discussions on ways to promote chapter activities, memberships, and various issues faced by chapters, which lasted more than an hour. The aim of the Chapters Meeting is to bring the chapter leaders in Region 10 together and, through interactions and sharing ideas, they can learn from one another. It was fulfilled with enthusiastic participation by the meeting attendees, once again demonstrating that Region 10 is a fast-growing region with very active chapters.

The meeting concluded successfully with a group photo taken for all the participants. We would particularly like to thank Dr. Radhakrishnan for his coordination of the Chapters Meeting and the WIMNACTs as well as his dedication in South Asia EDS activities.

Xing Zhou
Chair, SRC-AP

Nanyang Technological University
Singapore

Ramgopal Rao
Vice-Chair, SRC-AP
Indian Institute of Technology
Mumbai, India

EDS EDUCATIONAL ACTIVITIES COMMITTEE REPORT



Paul K.L. Yu,
EDS Vice-President of
Educational Activities

A main objective of the Educational Activities Committee is to provide an active forum for members to expand their knowledge of our technical fields. In doing so, the Committee also helps the Society to attract new members and to promote membership and

student activities. The Committee's membership strength in 2009 is 20, and its members were appointed by the President to reflect the worldwide geographical spread of the Society. The Vice-President for Education, who chaired the committee, is Paul Yu of the University of California, San Diego, USA, and the other members are Kris Campbell (Boise State University, Idaho); Mansun J. Chan (Hong Kong University of Science & Technology, Hong

Kong); Yuhua Cheng (Peking University, China); Jamal Deen (McMaster University, Canada); Arturo Escobosa, (CINESTAV-IPN, Mexico); Fernando J. Garcia-Sanchez (University Simon Bolivar, Venezuela); Fernando Guarin (IBM Microelectronics, USA); Agis Illiadis (University of Maryland, USA); M. Jagadish Kumar (Indian Institute of Technology, India); Kei-May Lau (Hong Kong University of Science & Technology, Hong Kong); Juin J. Liou (University of Central Florida,

USA); Rebecca J. Nikolic (Lawrence Livermore Nat. Lab., USA); Fan Ren (University of Florida, USA); Jacobus W. Swart (CTI, Brazil); Dorota Temple, (RTI International, USA); Ravi M. Todi (IBM Microelectronics, USA); Albert Z. H. Wang (University of California, Riverside, USA); Philip Wong (Stanford University, USA) and Xing Zhou (Nanyang Technological University, Singapore). In 2008 the committee met during the Spring EDS Administrative Committee (AdCom) Meeting in Athens, Greece and Fall AdCom Meeting in San Francisco, California. In between these meetings, the Committee also conducted business via electronic means.

An important responsibility of the Committee is to maintain a vibrant Distinguished Lecturer (DL) Program for the Society by means of the DLs' nomination and approval as well as the recognition of their service. The DL Program aims at providing EDS chapters with a list of active researchers (and effective speakers) who volunteer to give talks at local chapter meetings and other occasions. The listing of Distinguished Lecturers along with their topics and travel schedules is maintained on the EDS homepage. While the nominations of DLs occur throughout the year, their selection and approval occur twice a year, at the June and December AdCom Meetings. Also, each DL must give 2 lecture talks within a 2-year period to remain as an active EDS DL. A certificate of recognition will be presented to those DLs who have served continuously for 5 years. The year 2008 ended with a roster of 123 lecturers – there were over 208 lectures conducted worldwide by 110 of our Distinguished Lecturers!

To arrange for a lecture, EDS chapters are encouraged to contact lecturers directly. A general guideline for the visit, but not the absolute rule, is that the lecturer should be able to include the meeting site with an already planned travel schedule at a small incremental cost to the travel plan. Alternatively, a prior coincident

travel plan would not be required if the lecturer is already located within an approximate fifty mile radius of a meeting site.

In addition to the individual lectures, there were twenty mini-colloquia conducted last year. The mini-colloquia concept generally involves engaging three or more EDS Distinguished Lecturers to travel to a region/chapter and present the latest developments in a particular field. The chapters/regions would be responsible for handling all the arrangements of the event and only minimal financial support would be required of EDS and could be covered by the DL Program budget upon request. Up to August 2009, twelve MQs (with a majority of them in Region 10) have taken place so far, with several mini-colloquia being scheduled for the remaining of the year. Reports on the DL/MQ Program are presented frequently in this newsletter. For more information, please contact Laura Riello of the EDS Executive Office (l.riello@ieee.org). Feedbacks are actively solicited on the program from chapter chairs, lecturers, and members of the Society.

The Graduate Student Fellowships Program (GSFP) was established eight years ago under the auspices of the Committee. For 2009, the Chair of the GSFP sub-committee is Agis Illiadis. In 2008, for the Ph.D. Fellowships Program, there were four awards made with the winners presented with their awards at the IEDM in San Francisco, California. The winners were Ahmed E. Islam, Purdue University; Jay Mody, IMEC; Rusheng Wang, Peking University; and Jiahui Yuan, Georgia Institute of Technology. Reports on these winners are published in this edition of the EDS Newsletter. In addition to the Ph.D. Fellowship, EDS launched two years ago the Masters Fellowship for recognizing potential candidates and encourage them to continue the doctoral study in EDS technical areas. There were four Masters awards made in 2008: Blerina Aliaj; University

of Central Florida, Daniel Camacho, Southern Methodist University; Jiale Liang, Stanford University; Jianqiang Lin, National University of Singapore (NUS), Singapore.

Advertisement for the next competition of the Fellowships Program with the qualifications required and the remunerations are published in this Newsletter and other EDS publications. We are appealing to all our members to advertise the program among potential candidates and nominators so that students become aware of these opportunities for funding and recognition. With these awards, we hope to assist the very best students in our fields and also to make a positive impact on the future leaders of our Society.

The Committee worked with the IEEE Educational Activities Board (EAB) on its initiative known as IEEE Expert Now. This is a continuing education program which seeks to deliver short courses over the web. EDS has currently sponsored more than eight courses over the years, with the latest module being "Interconnect Technology for 32 NM and Beyond" given by Jeff Gambino.

A new project the Committee worked on with the IEEE Technical Activities Board (TAB) is to produce a video documentary on solar energy. Rebecca Nikolic and Steve Ringel from EDS and Peter Wiesner from IEEE TAB is charting this project, with video shoots in the Bay Area in California and Las Vegas, Nevada.

Lastly, the committee has been exploring ways and mechanisms to involve student and gold members in conferences and other activities of the Society. In this regard, the committee assisted the EDS GOLD Committee in the launching of the EDS Early Career Award that promotes, recognizes and supports Early Career Technical Achievements within the IEEE Electron Devices Society's field of interest. All EDS members who are Graduates of the Last Decade (GOLD) are eligible to be nominated. The award will be presented

at the annual GOLD Lecture held in conjunction with the IEEE International Electron Devices Meeting (IEDM). The recipient will receive a certificate and a check for \$1,000. A new Student/GOLD Ambassador Lecturers Program was also launched in 2009 with Shadi Dayeh as the

first GOLD Ambassador (NAW region) who will travel to various IEEE Student Branches to promote EDS activities as well as help to start EDS student chapters.

If you have any suggestions or information on these or any other activities that you may want us to

engage in, please contact me at p.yu@ieee.org.

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

2008 EDS PAUL RAPPAPORT AWARD



*Samar Saha
EDS Vice-President
of Publications*

A high priority of the Electron Devices Society is to recognize and enhance the quality of papers published in EDS archival literature. Every year, the Society confers its prestigious

Paul Rappaport Award to the best paper published in the *IEEE Transactions on Electron Devices*. Among other criteria including technical excellence, an important metric for selection for the award is comprehensive and impartial referencing of prior art. The winning paper was selected from among 350 manuscripts that were published in 2008. The article is entitled, "Strained n-MOSFET with Embedded Source/Drain Stressors and Strain-Transfer Structure (STS) for Enhanced Transistor Performance." This paper was published in the March, 2008 issue of the *IEEE Transactions on Electron Devices*, and was authored by Kah-Wee Ang, Jianqiang Lin, Chih-Hang Tung, Narayanan Balasubramanian, Ganesh S. Samudra, and Yee-Chia Yeo. The award will be presented in the plenary session of the IEEE International Electron Devices Meeting (IEDM) to be held on December 7, 2009, in Baltimore, Maryland. In addition to the award certificate, the authors will receive a check for \$2,500. On behalf of the Electron Devices Society, I would like to congratulate the authors for this achievement. Brief biographies of the authors are given below.



Kah-Wee Ang received the M.S. and Ph.D. degrees from the National University of Singapore. He is currently a Senior Researcher with the Institute

of Microelectronics, Singapore. His research interests relate to strained-channel transistor, advanced SOI devices, and CMOS-compatible photonics technology. Dr. Ang is a recipient of the 2007 IEEE EDS Graduate Fellowship Award.



Jianqiang Lin received a B.Eng. in 2007 from the National University of Singapore (NUS). He is currently a graduate student in SNDL, NUS. His

research interest is on future devices for VLSI applications and he has authored or co-authored over 10 papers. Dr. Lin was awarded the IEEE EDS Masters Student Fellowship 2008.



Chih-Hang Tung has worked in the Singapore and Taiwan semiconductor industry for more than 20 years. His research focuses

on using transmission electron microscopy in novel devices and materials characterization. He has co-authored over 200 papers and one book and is currently working in TSMC. Dr. Tung is an EDS Distinguished Lecturer and IEEE Senior Member.



N. Balasubramanian received a Ph.D. in physics from the Indian Institute of Technology, Madras, India, in 1990. He was with the Institute of Microelectronics,

Singapore, where he held various positions including Director for the Semiconductor Process Technology Lab and in April 2008 began working with Silterra, Malaysia. Dr. Balasubramanian is also a recipient of the 2007 EDS George Smith Award.



Ganesh Samudra received his Ph.D. from Purdue in 1985, is an associate professor at National University of Singapore, Department of Electrical and Computer Engineering and was also a

visiting professor at MIT in 2001. He is involved in research in the area of simulation and novel devices and has published about 200 technical papers in journals and conferences.



Yee-Chia Yeo received his Ph.D. from the University of California, Berkeley and leads research on sub-30 nm transistors and novel devices

with steep subthreshold-swing at the National University of Singapore. He was formerly at TSMC and has published more than 300 journal/conference papers. An inventor with 76 U.S. patents, Dr. Yeo received the 2001 IEEE EDS Graduate Student Fellowship Award.

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

2008 EDS GEORGE E. SMITH AWARD WINNERS



*Samar Saha
EDS Vice-President
of Publications*

A high priority of the Electron Devices Society (EDS) is to recognize and enhance the quality of papers published in EDS archival literature. The George E. Smith Award was established in 2002

to recognize the best paper appearing in a fast turnaround archival publication of EDS, targeted to *IEEE Electron Device Letters*. Among other criteria including technical excellence, an important metric for selection for the award is comprehensive and impartial referencing of prior art. The papers winning the 2008 George E. Smith Award were selected from among 278 manuscripts that were published in 2008. The articles are entitled "Low-Temperature-Processed Inorganic Gate Dielectrics for Plastic-Substrate-Based Organic Field-Effect Transistors," along with the paper entitled, "Complementary Logic Gates and Ring Oscillators on Plastic Substrates by Use of Printed Ribbons of Single-Crystalline Silicon." These papers appeared in the July 2008 and January 2008 issues of *Electron Device Letters* and were authored by S. G. Mhaisalkar, H. S. Tan, T. Cahyadi, Z. B. Wang, A. Lohani, Z. Tsakadze, S. Zhang, and F. R. Zhu, along with J. A. Rogers, D-H Kim, J-H Ahn, H.-S. Kim, K. J. Lee, T.-H. Kim, C.-J. Yu, and R. G.

Nuzzo. The award will be presented in the plenary session of the IEEE International Electron Devices Meeting to be held on December 7, 2009, in Baltimore, Maryland. In addition to the award certificate, the authors will receive a check for \$2,500. On behalf of the Electron Devices Society, I would like to congratulate the authors for this achievement. Brief biographies of the authors follow.



S. G. Mhaisalkar

Subodh Mhaisalkar is a Professor, Materials Technology Division, School of Materials Science & Engineering at Nanyang Technological University, Singapore. He is also the Co-Director, Energy Research Institute at NTU (ERIAN). Subodh received his Bachelors' and degrees from IIT-Bombay (BTech) and Ohio State University (MS/PHD); his research interests include Printed Electronics, Photovoltaics, and Charge Storage devices.



H. S. Tan

Tan Huei Shuan obtained her bachelor's degree (Honors) from Nanyang Technological University of Singapore in 2005. She is pursuing her Ph.D.,

at the same university, under the supervision of Prof. Subodh G. Mhaisalkar. Her research focuses on the influence of gate dielectric to organic field effect transistors.



T. Cahyadi

in organic field effect transistors during his Ph.D. study and is currently with Chartered Semiconductor Manufacturing, Singapore. His current interests are gate oxide reliability and general FEOL reliability focused on ASICs.

Tommy Cahyadi received his Ph.D. in materials engineering from Nanyang Technological University, Singapore, in 2008. He worked on application of sol-gel dielectric



Z. B. Wang

search group at the university, led by Prof. Subodh Mhaisalkar. He worked for a year on organic electronics, inkjet printing, and CNT biosensors and is currently a Ph.D.

Zongbin Wang graduated in 2007 from the School of Materials Science and Engineering, Nanyang Technological University, Singapore. Afterwards, he joined the re-

candidate for the Singapore-MIT Alliance Program.



A. Lohani

Anup Lohani received his Doctoral degree in Physics from the University of Bombay, India, in 2002 and continued working as a Postdoctoral Fellow in the Department of Physics, Indian Institute of Technology, Bombay. He is currently a Research Fellow in the School of Materials Science and Engineering at Nanyang Technological University, Singapore. His current research interests include self assembly, organic electronics, and surface science.



Z. Tsakadze

Zviad Tsakadze was born in 1964, Tbilisi, Georgia. He received his S.M. degree in physics from Moscow Engineering Physics Institute, Moscow, Russia in 1991 and a Ph.D. degree in physics from Nanyang Technological University, Singapore in 2005. He is currently working as a Research Fellow in the School of Materials Science and Engineering, Nanyang Technological University. His research interests include synthesis and characterization of nanostructures, nanofabrication and carbon nanotube based vacuum devices.



S. Zhang

Sam Zhang received his Ph.D. from the University of Wisconsin-Madison, and is a full professor at the School of Mechanical and Aerospace

Engineering, Nanyang Technological University, Singapore. He authored and co-authored more than 200 research papers in processing and characterization of nanocomposite coatings, biological coatings and electronics thin films. For details visit <http://www.ntu.edu.sg/home/msyzhang>



F. R. Zhu

Furong Zhu is a Senior Scientist and Program Manager at IMRE, and an adjunct Associate Professor with the School of Materials Science and Engineering at NTU. He is currently leading the photovoltaic R&D activity at IMRE. He has authored/co-authored over 80 refereed journal/conference publications, and filed 6 patents in organic electronics.



J. A. Rogers

John A. Rogers obtained his Ph.D. from M.I.T. in 1995. From 1995 to 1997, he was a member of the Harvard University Society of Fellows and from 1997 to 2002 he worked at Bell Laboratories. Rogers currently holds the Flory-Founder Chair in Engineering at the University of Illinois at Urbana-Champaign.



D-H Kim

Dae-Hyeong Kim obtained his BS and MS from Seoul National University in 2000 and 2002, respectively. From 2002 to 2006 he worked at KCTech. Currently Dae-Hyeong is a Ph.D. candidate

at the University of Illinois, Urbana-Champaign.



J-H Ahn

Jong-Hyun Ahn obtained his Ph.D. from POSTECH, South Korea in 2001. From 2004 to 2008, he was a research associate at the University of Illinois at Urbana-Champaign. He is currently an assistant professor for School of Advanced Materials Science and Engineering in Sungkyunkwan University, South Korea.



H-S Kim

Hoon-sik Kim received his B.S. degree from the University of Illinois, Urbana-Champaign in Electrical Engineering in 2005. He worked at Semiprius from 2005 to 2007 as a device engineer and in 2007 started his Ph.D. at the University of Illinois, Urbana-Champaign in Material Science and Engineering.



K.J. Lee

Keon Jae Lee received his Ph.D. degree from the University of Illinois, Urbana-Champaign, in 2006. From 2006 to 2008, he conducted a joint research project of Unisantis (Japan) and IME (Singapore) in the field of three dimensional surrounding gate nano-transistors (SGT) for the future logic technology. Since 2009, he has been an Assistant Professor in MSE at KAIST. His current research interests are flexible and nano devices for bio, energy, and electronic applications.



T.-H. Kim

Tae-Ho Kim received a Ph.D. in chemical engineering from the Korea Advanced Institute of Science and Technology, Daejeon, Korea in 2006. He worked with

Prof. Roger's group at the University of Illinois at Urbana-Champaign, U.S.A., as a post-doctoral scholar for two years. Since May 2008, he has been working on printable LED at the Samsung Advanced Institute of Technology.



C.-J. Yu

Chang-Jae Yu received his Ph.D. degree in electrical engineering from Seoul National University, Korea, in 2005. From 2006 to 2007, he was a postdoctoral fel-

low with the Department of Materials Science and Engineering, University of Illinois at Urbana-Champaign, U.S.A. Since 2007, he has been a professor in the Department of Electronics and Communications Engineering, Hanyang University, Korea.



R. G. Nuzzo

Ralph G. Nuzzo, the G. L. Clark Professor of Chemistry at UIUC, earned his Ph.D. from MIT in 1980 and was a Distinguished Member of Staff at Bell Laboratories. He is a fellow

of the American Academy of Arts and Sciences and a recipient of the ACS Admanson Award.

Samar Saha

EDS Vice-President of Publications

SilTerra USA, Inc.

San Jose, CA, USA

2009 EDS MASTERS STUDENT FELLOWSHIP WINNERS



Paul K.L. Yu



Agis A. Iliadis

The Electron Devices Society Masters Student Fellowship Program was designed to promote, recognize, and support Masters 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 three 2009 EDS Masters Student Fellowship winners. Brief biographies of the 2009 recipients appear below. Detailed articles about each Masters Student Fellowship winner and their work will appear in forthcoming issues of the EDS Newsletter.



Bin Gao is pursuing his M.S. degree in Microelectronics at Peking University in Beijing, China. His research is focused on designing high per-

formance and high density integration resistive random access memory (RRAM) for the next generation universal memories. Particularly, he

has been working on investigating the resistive switching mechanisms and developing material-oriented methodology for RRAM. Recently, he is mainly working on enhancing RRAM's performance, including improving uniformity, reducing programming/erasing current, evaluating retention and enhancing scalability. He has published his works in IEDM 2008 (San Francisco, USA) and VLSI 2009 (Kyoto, Japan) as the first author.



Carlos Polanco is currently pursuing his M.S. degree in Electrical Engineering at the Pontificia Universidad Javeriana in Bogotá, Colombia. Soon,

he will begin his Ph.D. studies at the University of Virginia, focused on charge transport modeling on nano-devices. His current work is centered on modeling electrical transport on quantum wells with Non Equilibrium Green Functions (NEGF) formalism

and on their possible applications as switches, amplifiers or sensors.



Nuo Xu was born in Tianjin, China in 1985. He received his B.S. degree in Microelectronics from Department of EECS, Peking University, in 2008.

His undergraduate research areas were emerging Nonvolatile Memory (NVM) technology and nano-struc-

ture fabrication. He received the UC Berkeley Graduate Fellowship and joined the Berkeley Device Group to pursue his graduate research in the Autumn of 2008. His current research is focused in physically-based predictive modeling for nano-scale transistors, under the supervision of Prof. Tsu-Jae King Liu and fast-CAD tools to evaluate layout dependent transistor variations advised by Prof. Andrew Neureuther. He became a student member of IEEE EDS in 2009. He has served as a reviewer for Applied Physics Letters since 2008 and

has authored or co-authored 10 papers and applied 2 patents.

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

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

CALL FOR NOMINATIONS 2010 IEEE EDS MASTERS STUDENT FELLOWSHIP

At the December 2005 EDS Administrative Committee Meeting, EDS approved a Masters level student Fellowship Program.

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. 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, 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>

EDS MEMBERS NAMED RECIPIENTS OF THE 2009 IEEE MEDAL OF HONOR AND IEEE JUN-ICHI NISHIZAWA MEDAL



Robert H. Dennard of the IBM T.J. Watson Research Center, Yorktown Heights, New York, has been named the recipient of the 2009 IEEE Medal of Honor. His citation

states, "For invention of the single-transistor Dynamic Random Access Memory and for developing scaling principles for integrated circuits."

Robert H. Dennard has been a pioneering figure in the semiconductor industry. His invention of one-transistor dynamic random access memory (DRAM) and contributions to principles of scaling MOS devices brought about far-reaching and fundamental changes in science and technology, impacting a broad range of industries from aviation to telecommunications.

He was granted a patent for DRAM in 1968, and it first began to appear in products in the 1970s. Now used by all computer component and system manufacturers, DRAM requires less power and costs much less than previous magnetic memory and also is less complex and, therefore, denser than the other semiconductor memory cells previously developed. At the time of its development, the largest memory

configuration in a computer was 1 MB, requiring several kilowatts of power, while today 1 to 2 GB of DRAM is common, requiring only a few watts of power.

Dr. Dennard's development of scaling theory has also been a driving force in microelectronics. Along with some researchers, Dr. Dennard developed a concept of MOS transistor and circuit scaling that provides for systematic reduction of MOS integrated circuit dimensions and predicts the benefits of such reduction in improved circuit performance, lower power and greater density. They showed how to design devices and highly integrated circuits at the micrometer level at a time when device fabrication was at much larger dimensions. In the 1980s, he generalized the original work to show how to design devices down to submicrometer dimensions with further improvements in performance and density. The scaling concept led the way from the 5- μm devices of the early 1970s to today's 0.045- μm devices used in Gigabit memory chips and powerful microprocessors.

Dr. Dennard's research career spans over 50 years and includes 52 U.S. patents and many awards and recognitions, including the IEEE Cle-

do Brunetti Award, the IEEE Edison Medal, the National Medal of Technology and induction into the National Inventors Hall of Fame. In 2009, Dr. Dennard was named recipient of the Charles Stark Draper Prize. An IEEE Life Fellow, Dr. Dennard is an IBM Fellow at the IBM T.J. Watson Research Center in Yorktown Heights, New York, where he continues to investigate the limits of scaling and future evolution of microelectronics.



Chenming Calvin Hu of the University of California, Berkeley, California, has been named the recipient of the 2009 IEEE Jun-ichi Nishizawa Medal.

His citation states, "For technical contributions to MOS device reliability, scaling of CMOS and compact device modeling."

Chenming Calvin Hu's seminal work on MOS reliability and device modeling has had enormous impact on the continued scaling of electronic devices, enabling smaller yet more functional and higher-performance integrated circuits. Dr. Hu's work has addressed reliability and scaling issues with models and simulation tools that are critical to

current predictive capabilities in the semiconductor industry. During the 1980s, Dr. Hu developed models capable of predicting circuit failures caused by hot electron effects, oxide breakdown and wearout, metal interconnect failure and the effects of external ionizing radiation. This led to the development of highly reliable integrated circuits. Dr. Hu led the team that created the FinFET, a promising MOSFET with a multiple-gate structure that will allow much smaller transistors to be built and has already enabled several cor-

porations and universities to set records for designing the smallest transistor. Dr. Hu also contributed to the creation of the Berkley Short-Channel IGFET Model (BSIM) series of compact models, which most major chip manufacturers have made their preferred choice for circuit simulation. The research on transistor size reduction by Dr. Hu led to innovations such as variable threshold transistors, low-power flash memory cells, ultra-thin-body devices and multiple-gate structures. An IEEE Fellow, Dr. Hu has co-

authored three books, 800 research papers and supervised 60 doctoral students in the field of semiconductor technology. He served as TSMC's Chief Technology Officer from 2001–2004 and is currently the TSMC Distinguished Professor of Microelectronics at the University of California, Berkeley.

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

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

Henok Abebe*
Masoud Agah*
John Berg
Yu Cao
Lars Carlson
Runzi Chang
Yeong-Chang Chou
Geoffrey Coram
Paulo De Morais
Jens Egerer
Omar Elkeelany*
Bruno Foucher
Jaydip Guha
Mridula Gupta

Najeeb Hakim
Stephen Hall*
Jerald Hallmark*
Jin-Ping Han
Satoshi Inabe
Thomas Klinger
William Kueber*
Jae-Hoon Lee*
Yeow Kheng Lim
Lance McBride*
Masaaki Niwa*
Ellis Meng
Thomas Mikolajick
Christopher Nordquist

Andrew Opicka
Robinson E. Pino
Prashant Raghu*
Nirmal Ramaswamy*
Assaf Shappir
Navab Singh
Thomas P. Vernier
Shien-Yang M. Wu
Jingqiong Xie
John Zahurak*
Jingjing Zhang
Sergei A. Zhgoon
Volker Ziegler

* = 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>

IEEE ANNUAL ELECTION — DID YOU VOTE YET?

This is a reminder for EDS members to vote in the 2009 IEEE Annual Election for the following positions and candidates.

Listed below are the positions and candidates that will appear on the 2009 IEEE Annual Election ballot.

Position	Candidate
IEEE President-Elect, 2010	J. Roberto Boisson de Marca (Nominated by IEEE Board of Directors) Moshe Kam (Nominated by IEEE Board of Directors) Joseph V. Lillie (Nominated by IEEE Board of Directors)
IEEE Region 1 Delegate-Elect/Director-Elect, 2009–2010	Peter Alan Eckstein (Nominated by IEEE Region 1) Albert J. Reinhart (Nominated by IEEE Region 1)
IEEE Region 3 Delegate-Elect/Director-Elect, 2010–2011	Eric S. Ackerman (Nominated by IEEE Region 3) David G. Green (Nominated by IEEE Region 3)
IEEE Region 5 Delegate-Elect/Director-Elect, 2010–2011	James A. Jefferies (Nominated by IEEE Region 5) Richard A. Painter (Nominated by IEEE Region 5)
IEEE Region 7 Delegate-Elect/Director-Elect, 2010–2011	Keith B. Brown (Nominated by IEEE Region 7) Maïke Luiken (Nominated by IEEE Region 7) Marcelo O. Mota Nominated by IEEE Region 7)
IEEE Region 9 Delegate-Elect/Director-Elect, 2010–2011	Gustavo A. Giannattasio (Nominated by IEEE Region 9) Norberto M. Lerendegui (Nominated by IEEE Region 9)
IEEE Standards Association President-Elect, 2010	S. Mark Halpin (Nominated by IEEE Standards Association) Steve M. Mills (Nominated by IEEE Standards Association)
IEEE Standards Association Board of Governors Member-at-Large, 2010–2011	M. (Mark) Epstein (Nominated by IEEE Standards Association) Stanley L. Moyer (Nominated by IEEE Standards Association)
IEEE Standards Association Board of Governors Member-at-Large, 2010–2011	Andrew L. Drozd (Nominated by IEEE Standards Association) T.W. (Ted) Olsen (Nominated by IEEE Standards Association)
IEEE Technical Activities Vice President-Elect, 2010	Thomas G. Habetler (Nominated by IEEE Technical Activities) Donna L. Hudson (Nominated by IEEE Technical Activities)
IEEE-USA President-Elect, 2010	James M. Howard (Nominated by IEEE-USA) Ronald G. Jensen (Nominated by IEEE-USA)
IEEE-USA Member-at-Large, 2010–2011	Winnfort J. Myles (Nominated by IEEE-USA) Mauro G. Togneri (Nominated by IEEE-USA)

Petition Candidates

There are no petition candidates for any elective position in the 2009 IEEE Annual Election.

Completed ballots must be received by noon U.S. Central Time (17:00 Greenwich Mean Time) on 1 October. Members can also access the ballot and related materials electronically. To learn more, visit the election site at <http://www.ieee.org/election> or contact Carrie Loh, IEEE Corporate Activities at +1 732 562 3934, e-mail: c.loh@ieee.org.

EDS DISTINGUISHED LECTURERS PARTICIPATE IN THE 17TH WIMNACT-NEPAL

In connection with our mini-colloquium, EDS Distinguished Lecturers, Prof. Hiroshi Iwai, Prof. Chandan Kumar Sarkar, Prof. Ram Gopal Rao, Prof. Shunri Oda and Prof. E. Y. Chang arrived on June 2, 2009. A welcome dinner was organized by the IEEE EDS Nepal Chapter in association with the Nepal Physical Society and the Vice Chancellor of Tribhuvan University. The dinner was made colorful by a traditional Nepalese cultural program, organized by the Nepal Tourism Board.

Registration began on the morning of June 3, 2009, at the Himalayan Hotel, Kupondole. There were 118 participants, with members from the IEEE ED Nepal Chapter, the Nepal Physical Society and various other engineering organizations.

The Inauguration Ceremony began at 8:30 a.m., with a welcome speech by Prof. Bhadra Pokharel, ED Nepal Chapter Chair. Prof. Pokharel gave thanks to the distinguished lecturers, the mini-colloquium participants, EDS Executive Office and well wishers. Prof. Hiroshi Iwai stressed

the objectives and activities of IEEE and EDS, while Prof. Sarkar provided suggestions on future activities. Finally, our senior Professor and IEEE EDS member, Prof. Sitaram Byahut, handed over the token of love to the distinguished lecturers.

The mini-colloquium program started promptly at 9:00 a.m. and ended at 6:00 p.m. The first session began with a very interesting and informative talk by Prof. Iwai (Frontier Research Centre, Tokyo, Japan), on "Past and future of integrated circuits technology." The next talk was on "Polymer Based Sensor Systems for Healthcare & Security Applications," by Prof. Ram Gopal Rao (IIT Mumbai, India). Prof. Gopal's talk was exciting and most applicable to modern technology. The final talk of the session was delivered by Prof. E. Y. Chang (National Chiao-Tung University, Taiwan) on "III-V Quantum well devices for low power logic applications." The session was chaired by Prof. C. K. Sarkar, Jadavpur University, Kolkata, India.

The second session of the day began after lunch and was chaired

by Prof. Iwai and began with an interesting talk by Prof. Sarkar, on "Performance of Gate and Channel Engineered Double gate MOSFET structures and their applications." Finally, Prof. Shunri Oda presented the final talk on "Silicon quantum dot devices." At the beginning and end of each session the participants had a chance to discuss future exchanges and collaborations with all the distinguished lecturers. The Master of Ceremony for the program was Dr. Raju Khanal, Joint Secretary, ED Nepal Chapter. That evening another dinner was organized by the ED Nepal Chapter, the Nepal Physical Society and the Vice-Chancellor of Kathmandu University and the participants enjoyed watching typical Nepalese dances from around the country. A farewell dinner was held on June 4th, organized by our chapter, the Physical Society and the Registrar of Pokhara University.

*Bhadra Pokharel
ED Nepal Chapter Chair
IOE, Pulchowk
Kathmandu, Nepal*



Participants of WIMNACT17-Nepal

EDS DISTINGUISHED LECTURERS PARTICIPATE IN THE 18TH WIMNACT-INDIA

The IEEE ED SJCE Student Branch hosted the 18th WIMNACT-India (MQ2) in Mysore. We were very pleased to have the following EDS Distinguished Lecturers from the U.S. and Singapore: Dr. M. K. Radhakrishnan, "Nanoelectronic Devices: Challenges in Analysis, Metrology and Characterization;" Dr. Samar Saha, "Managing Process Variations in Advanced CMOS Technologies;" and Dr. Xing Zhou, "Unification of MOS Compact Models with the Unified Regional Modeling Approach."

The above lectures were held in the Sri Jayachamarajendra College



EDS Distinguished Lecturers and participants of WIMNACT-18, held at Sri Jayachamarajendra College of Engineering, Mysore



ED SJCE Student Branch Host, Dr. C. R. Venugopal (second from left) with EDS DL speakers, Dr. Xing Zhou, Dr. Samar Saha, and Dr. M. K. Radhakrishnan

of Engineering Seminar Hall on June 4, 2009, from 9:30 a.m. to 2:30 p.m. About 85 EDS student members attended the lecture and participated in a very interactive session. Principal Dr. Snagameshawara welcomed the experts, and Dr. C. R. Venugopal, EDS Branch Advisor, introduced the EDS DL speakers to the members.

Just before the lecture, the speakers visited the labs and interacted with faculty members and students.

*C. R. Venugopal
ED SJCE Branch Advisor
Sri Jayachamarajendra
College of Engineering
Mysore, India*

EDS DISTINGUISHED LECTURER VISITS BOGOTA, COLOMBIA

The ED Colombia Chapter hosted IEEE Fellow and EDS Distinguished Lecturer, Dr. Fernando Guarín, on August 6, 2009, at the "Pontificia Universidad Javeriana" in Bogotá. The event was arranged by Prof. German Yamhure and began with an overview of the recent trends in CMOS device scaling, the current status, challenges, and possible solutions were also addressed. The second part of the talk presented the audience with practical applications of these advanced technologies for the solution of real problems. A solution was presented for the smart water and energy manage-



(left to right) Fernando Guarín, Carlos Polanco and Germán Yamhure

ment in the case of a microelectronic wafer fabricator and showed the way that these implementations could be utilized in the local environment.

Before the closure of the session a small ceremony was held to present Mr. Carlos Polanco with the IEEE EDS Masters Student Fellowship Award certificate and a check from the Society in the amount of USD\$2000. This award recognized Carlos' outstanding scholastic achievement as well as the body of work entitled "Electrical Transport Model in Single Walled Carbon Nanotubes."

*Germán K. Yamhure
ED Columbia Chapter Chair
Pontificia Universidad Javeriana
Bogota, Colombia*

EDS DISTINGUISHED LECTURERS PARTICIPATE IN THE 19TH WIMNACT-BANGLADESH

The ED Bangladesh Chapter organized the 19th WIMNACT on June 6, 2009, at Bangladesh University of Engineering and Technology (BUET), Dhaka. EDS Distinguished Lecturers, Dr. Xing Zhou of Nanyang Technological University, Singapore and Dr. Samar K. Saha of Silterra, Inc., U.S.A., were the invited speakers in the half-day mini-colloquium (MQ). Dr. Zhou discussed unification of MOS compact models with the unified regional modeling approach and Dr. Saha presented an overview of modeling of process variations in advanced MOSFET devices. The program was presided over by Prof. Q. D. M. Khosru, ED Bangladesh Chapter Chair. The MQ was attended by more than 75 persons, including approximately 20 EDS members. Afterwards, the student attendees



ED Bangladesh Chapter Chair, Prof. Q. D. M. Khosru (2nd from left, front row), EDS Distinguished Lecturers, Xing Zhou and Samar Saha (3rd and 4th from left), with the audience of the 19th WIMNACT-Bangladesh

had the opportunity to interact with the DLs and ask questions on the topics.

Anisul Haque
East West University
Dhaka, Bangladesh

ANNUAL DVD UPDATE PACKAGE AVAILABLE TO EDS MEMBERS

The 2008 Annual DVD update package was distributed in April 2009. It includes all issues from 2004 through 2008 of *Electron Device Letters* (EDL) and *Transactions on Electron Devices* (T-ED), as well as the proceedings of the IEEE International Electron Devices Meeting (IEDM) over the same period. This update is fully compatible with the EDS Archival Collection DVD, which work together seamlessly providing extensive search capabilities to all issues of EDL, T-ED and all technical digests of the IEDM. The DVDs include comprehensive author, subject and publications indices, abstract pages and all articles are in searchable PDF format.

The 2008 EDS DVD Update Package is available exclusively to EDS members for a bargain price of US \$40 (students \$20), through the IEEE online store <http://shop.ieee.org/store/> or using a downloadable or

der form from the EDS website at, <http://www.ieee.org/portal/pages/society/eds/pubs/pubs.html>.

You can request the 2009 EDS DVD Update Package in advance as a subscription via your 2010 IEEE Membership renewal bill when you receive it this Fall. The 2009 EDS DVD Package will be available at the latest by May 2010. Once you sign-up to receive the 2009 package via your member renewal bill, you will automatically be billed each year for subsequent versions of the package.

For those interested, the EDS Archival Collection is still in stock and available solely to EDS members for US \$30 (\$9.95 students) through the IEEE online store at <http://shop.ieee.org/store/>.

This archival collection and DVD update package, includes all issues of *Transactions on Electron Devices*

(1954-August through 2004), *Electron Device Letters* (1980-August through 2004), and all the technical digests of the IEEE International Electron Devices Meeting (IEDM) (1955-2004).

These products are being made available to our members in the spirit of providing technical information at a most affordable price possible. Hand-in-hand with this goes the concept of individual ownership. We hope that you will adhere to this concept and encourage others interested in using them to acquire their own copy. If you are currently not an EDS member, we encourage you to become one to avail of these exceptional products designed to empower our members.

Samar K. Saha
EDS Vice-President of Publications
Silterra USA, Inc.
San Jose, CA, USA



Humanitarian Technology Challenge

CALL FOR VOLUNTEERS

Participants are needed to take part in the upcoming Humanitarian Technology Challenge (HTC) workshops, which are scheduled to begin October 2009 and continue into 2010. The schedule is as follows:

October, 2009 – Multi-day solution workshop
November, 2009 – Draft Phase I Solution descriptions
Jan-Feb, 2010 – Second solution workshop
February, 2010 – Draft Phase II Solution Set descriptions
April, 2010 – Completed Phase II Solution Set descriptions

These workshops have been planned to supplement the online interactions of participants using Spigit and tentatively will begin Wednesday, October 28th and conclude early Friday afternoon on October 30th, in Washington, D.C.

The October workshop is expected to have a brief opening session for all participants, and then attendees will break out into working groups to focus on specific solution areas. These will be roll-up-your-sleeves-and-work-out-details-together sessions. While the thrust will be on technologies, having humanitarian representatives present to offer their feedback on behalf of users would be most welcome. There may also be time for discussion of various operational issues, including training and economic planning.

Active participation in the workshop will be welcome by all. There will be no registration fee.

If you have not already joined one or more of the working groups generating solution ideas, we invite you to do so immediately. Contact the appropriate Solution Coordinators:

Butch Shadwell (b.shadwell@ieee.org) Reliable Electricity
Peter Spring (fs4276@hotmail.com) Data Connectivity
Rex Gantenbein (rex@uwyo.edu) Individual ID

In case of attendance limitations, preference will be given in the following order:

- 1) Those who attended HTC Conference on June 1-2 in Washington, D.C.;
- 2) Those who replied to this message with some indication of interest in attending;
- 3) Those who notified us before June that they wanted to attend the June 1-2 conference but were unable;
- 4) Others who register for the workshop in advance (registration info will be forthcoming);
- 5) Those that do not pre-register and arrive at the door of the workshop.

The budget for this event is limited. Meeting space and lunch will be provided for all participants and some funds are available to a limited number of attendees to offset travel and hotel costs. Allocation of travel and hotel subsidies will be determined by monitoring Spigit for the most active online participants. The most active in making substantive contributions before September 18, 2009, will be notified of funding available for travel and hotel costs.

If people miss the October workshop they will still have an opportunity to attend the next one. However, **the key is to be extremely active in the Solution Development Process through Spigit**, so please get involved through that on-line channel as soon as possible.

Lastly, we are asking our colleagues to fill out a brief (10 question) survey to give us a better sense of the landscape in these areas. If you know of a project being done with alternative energy for example, you could fill out one survey for that. If you also know of a project on data connectivity, you could fill out a second survey on that. You can fill out as many surveys as there are projects.

We will collect this information and hopefully build a better picture of what global initiatives already exist in the three Solution areas listed above so that we can learn from and interact with them. We will provide you with a copy of the final report, with appropriate credit for the source of the information.

The survey can be found on-line here: http://www.surveymonkey.com/s.aspx?sm=ZRVuNDUbdHd5BF7yryQ_2belg_3d_3d.

Regards,

Harold Tepper
Senior Technical Project Manager – Humanitarian Technology Challenge
IEEE Technical Activities
Email: h.tepper@ieee.org

Karl Perusich, Ph.D.
Chair, HTC Society Partnership Group
Email: perusich@sbcglobal.net

EDS MEMBERSHIP FEE SUBSIDY PROGRAM (MFSP)



*Albert Wang
EDS Vice-President
of Membership*

The EDS Membership Fee Subsidy Program (MFSP) is a chapter program that enables chapters in low income geographical areas to increase their membership. This program is also used to help

launch new IEEE EDS chapters.

The MFSP guidelines are as follows:

IEEE policy currently allows a 50% discount on IEEE dues and one society membership for any individual whose annual salary is less than US\$13,400. This offering is referred to as the Minimum Income Special Considerations Option. The Electron Devices Society currently has a program for its chapters called the Membership Fee Subsidy Program

(MFSP), which both complements the IEEE Minimum Income offering and provides a significant additional benefit for qualified individuals.

With the EDS Membership Fee Subsidy Program, EDS will pay 50% of the IEEE and EDS dues for any **new/existing** member or student qualifying for the Minimum Income option. EDS will cover up to twelve (12) chapter members/students per year. Each member/student can only be covered 'one time' under this program and four of the twelve members/students each year must be new IEEE/EDS members/students. The individuals can be applying for either regular membership or student membership. This program is also available to all unemployed members. Although the IEEE Minimum Income option allows individuals to purchase publication subscriptions for one-society at a 50% reduced rate, the EDS

MFSP does not cover the payment of publication subscriptions.

If a chapter has individuals who qualify for the reduced IEEE Minimum Income offering and the EDS MFSP, all the Chapter Chair needs to do is obtain the IEEE/EDS membership application forms or IEEE Renewal Bills from all individuals participating in the program (maximum 12) and submit them to the EDS Executive Office. Once received, the application forms will be coded with a special account number and submitted to the pertinent IEEE department for processing.

For any questions concerning the program, please contact the EDS Executive Office (eds@ieee.org).

*Albert Wang
EDS Vice-President of
Membership
University of California
Riverside, CA, USA*

EDS SENIOR MEMBER PROGRAM

The Electron Devices Society established the EDS Senior Member Program to both complement and enhance the IEEE's Nominate-a-Senior-Member Initiative and make IEEE/EDS members aware of the opportunity and encourage them to elevate their IEEE membership grade to Senior Member. This is the highest IEEE grade for which an individual can apply and is the first step to becoming a Fellow of IEEE. If you have been in professional practice of 10 years, you may be eligible for Senior Membership.

New Senior Members receive an engraved wood and bronze plaque and a credit certificate for US\$25 to be used towards a new IEEE society membership. Upon your request, the IEEE Admission & Advancement Department will send a letter to your employer recognizing this new status as well. The URL to request this letter is

<http://www.ieee.org/web/membership/senior-members/notification.html>.

As part of the IEEE's Nominate-a-Senior-Member Initiative, the nominating entity designated on the member's application form will receive US\$10 from IEEE for each application approved for Senior Member grade when there are at least five approved applications. As an EDS member, we would appreciate it if you could indicate on your Senior Member application form that EDS is your nominating entity.

Please be aware that even if you decide to list EDS as your nominating entity, you still need to have an IEEE member nominate you along with two other references. Your nominator and your references all must be active IEEE members holding Senior Member, Fellow or Honorary Member grade.

For more information concerning Senior Membership, please visit

<http://www.ieee.org/web/membership/senior-members/index.html>. To apply for Senior Member grade, please complete an application form, which is available at <http://www.ieee.org/web/membership/senior-members/application.html>. You can also request a hard copy Senior Member packet via mail or fax by contacting IEEE Admissions and Advancements Department, Attn: Denise Howard, 445 Hoes Lane, Piscataway, NJ 08854, USA, Fax: +1 732 463 9359, E-mail: d.howard@ieee.org.

We strongly encourage you to apply for IEEE Senior Membership to enhance your career. At the same time, you'll be helping EDS.

Thank you for supporting IEEE and EDS.

*Albert Wang
EDS Vice-President of Membership
University of California
Riverside, CA, USA*

ON-LINE ACCESS TO IEEE JOURNALS AVAILABLE TO EDS MEMBERS



Samar Saha
EDS Vice-President
of Publications

As an EDS member, you have FREE on-line access to the full articles of the following publications:

- **Electron Device Letters** (All Issues From 1980 through current)
- **Transactions on Electron Devices** (All Issues From 1954 through current)
- **International Electron Devices Meeting** (All Digests From 1955 through current)
- **EDS Newsletter**
- **Journal of Lightwave Technology**

These publications can be viewed through the on-line delivery system, IEEE Xplore, which provides EDS members with the following benefits/capabilities:

- Online access to their IEEE personal subscriptions
- Full-text PDF image files for content, including all original charts, graphics, diagrams, photographs and illustrative material, from an integrated-circuit schematic to a topographic map to a photograph of a new crystalline structure

- Full-text search allows you to search metadata fields and the associated full-text journal/transaction
- Links to references and cross linking between EDS publications and other IEEE publications is available in articles
- CrossRef search offers outbound links to publications by other leading publishers, employing the google search engine
- Online version available prior to the print equivalent
- Free and unlimited access to abstract/citation records
- Unlimited printing of bibliographic records and full-text documents
- Includes cover to cover material starting (starting in 2004) i.e., letters to editor, editorial boards, call for papers

In addition to the above benefits, EDS members can purchase a combined paper and on-line subscription to *Transactions on Semiconductor Manufacturing* and/or the *Journal of Microelectromechanical Systems*. Other publications offered by EDS that have both an electronic only version and a combination paper and electronic

version, also available for an additional cost, include; *Transactions on Applied Superconductivity*, *Transactions on Computer-Aided Design of Integrated Circuits and Systems*, *Transactions on Device and Materials Reliability*, *Journal of Display Technology*, *Journal of Electronic Materials*, *Transactions on Nanotechnology*, *Nanotechnology Magazine*, *Sensors Journal*, and new for 2009, *Embedded Systems Letters*, *Solid-State Circuits Magazine*, and *Photonics Journal* (electronic only).

To use the Xplore system, you must establish an IEEE Web Account. This account is also used for renewing your IEEE membership on-line. If you need to establish an IEEE Web Account, please visit www.ieee.org/web/accounts/. IEEE members can go to the Xplore site through the URL www.ieeexplore.ieee.org. We encourage all members of the Society to use this dynamic system and leverage their membership benefits to the fullest extent.

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

REGIONAL AND CHAPTER NEWS

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

ED Orlando

- by Slavica Malobabic

The ED Orlando Chapter started this year's activities in January with the visit of Dr. Vladislav Vashchenko, technical leader and manager of the process development ESD group at National Semiconductor, who talked about "System level and hot plug-in ESD specs and solutions."

In February, the chapter and the University of Central Florida hosted Andrew Olney, Director of Reliability, Product Analysis, Calibration & ESD at Analog Devices, Inc. Dr. Olney gave two talks. In the first he introduced the topic of "Real-World Charged Board Event (CBE) ESD Failures," followed by "Quality & Reliability Issues with Counterfeit ICs," which generated a lot of interest by the students. Also, during this event, the Chapter and the student branch held a membership drive. February activity concluded with a visit by Dr. Chih Tang Sah, University of Florida, and Dr. Bin B. Jie, Peking University, with "MOS Field Effect Transistor is Bipolar: Device Theory and Circuit."

In the following month, the Chapter had the pleasure to host EDS Distinguished Lecturer, Dr. Adelmo Ortiz-Conde, professor at the University Simon Bolivar, Caracas, Venezuela, with "A review of recent Integration-based Methods for Parameter Extraction and Distortion Evaluation."

The month of April started with "Physics of III-N-based Field Effect Transistors" by EDS Distinguished Lecturer, Dr. Michael Shur, Center for Integrated Electronics, ECSE and Physics Rensselaer Polytechnic Institute and concluded with Dr. Steven H. Voldman, Intersil Corporation, presenting: "ESD: Failure Mechanisms, Nano Defects in the Nano Electronic Era."

The Orlando Section celebrated their 50 year anniversary this May at the Orlando Science Center and the ED Orlando Chapter took part in the celebration by creating a poster on the ED Society and its history.

Finally, the Chapter is working with the Orlando Section to post all of the presentation slides from chapter activities beginning with 2008, on the section website <http://ewh.ieee.org/r3/orlando/> starting this fall. Currently, the 2008 colloquium slides are available at: <http://www.ewh.ieee.org/r3/orlando/2008/Jun>.

~ Ibrahim M. Abdel-Motaleb, Editor

ED Phoenix

- by Steve Rockwell



Michael Goryll

from Arizona State University give a seminar on "Ion Channel Biosensors on Silicon."

Dr. Goryll received his Diploma (1997) and Ph.D. (2000) degrees, all in physics, from the RWTH Aachen University, Germany. He held a research position at the Institute of Bio- and Nanosystems at the Research Center Juelich, Germany, from 1996 to 2007. He held a post-doc position at Arizona State University, U.S.A. from 2003 to 2005, where he started his research on ion channels. He is currently an Assistant Professor at the Department of Electrical Engineering at Arizona State University, U.S.A., since 2007 and is a member of the Materials Research Society as well as the Biophysical Society.

His talk began with an introduction to genetically engineered ion channels which can be used for a wide variety of applications, ranging from biochemical detection to DNA sequence readout. The main focus of this talk was a silicon device that can act as a replacement for the plastic substrate in which ion channels are traditional made. The presentation included a discussion on the amplifier technology needed to record the ionic currents in the picoampere range with a high signal-to noise ratio, pointing out how the integration of analog electronics and biological membranes can lead to compact sensors based on ion channels. For additional information contact Dr. Rockwell at steve.rockwell@ieee.org.



Center: Professor Liou and Dr. Voldman with some of the students that attended the April 2009 talk

ED Santa Clara Valley

- by Prasad Chaparala and Sandeep Bahl

The ED Santa Clara Valley Chapter typically hosts a seminar on the second Tuesday of every month at National Semiconductor in Santa Clara. The speaker for the most recent seminar (June 9th) was Dr. Souvik Mahapatra, Professor of Electrical Engineering at the Indian Institute of Technology (IIT), Bombay, India. Dr. Mahapatra is also an Adjunct Professor of the ECE Department at Purdue University, and is an EDS Distinguished Lecturer. He is a pioneer in the field of Negative Bias Temperature Instability (NBTI), and this was the subject of his talk.

NBTI is one of the most severe front-end reliability issues in modern CMOS processes. Proper understanding of stress, measurement, physics, process etc. is important in order to reliably determine lifetime. Dr. Mahapatra began by explaining the measurement challenges, primarily that of the error introduced by the actual time taken to pause the stress in order to do the measurement. He then outlined a method to extract the actual degradation, and applied it to characterize oxides with different nitridation schemes. This showed that the nitrogen density at the Si/SiON interface controls the degradation transient. He concluded by presenting a model for the physical mechanism of NBTI and its success in explaining their extensive measurement data.

For further details, the slides of his talk are posted on the chapter website at <http://www.ewh.ieee.org/r6/scv/eds/>

The chapter was also honored in April, to have Professor Carlos Galup-Montoro from Federal University of Santa Catarina, give a seminar entitled **"Charge and surface potential based MOSFET models, what are the differences?"**

Prof. Galup-Montoro studied engineering sciences at the University of the Republic, Montevideo, Uruguay, and electronic engineering at

the National Polytechnic School of Grenoble (INPG), France. He received an engineering degree in electronics in 1979 and a doctorate degree in 1982, both from INPG. From 1982 to 1989 he was with the University of São Paulo, Brazil, where he was engaged in junction field effect transistor (JFET) fabrication and analog circuit design. Since 1990, he has been with the Electrical Engineering Department, Federal University of Santa Catarina, Florianópolis, Brazil, where he is now a professor. From August 1997 to February 1998 he was a research associate with the Analog Mixed Signal Group, Texas A&M University. His main research interests and expertise are in field effect transistor modeling and transistor-level design.

His talk began by going over the "golden" reference, the Pao-Sah MOSFET model. The presentation also covered the details of the charge sheet (Brews') model as well as simplified charge sheet (SCS) models which includes, "surface potential" and "charge"-based models. Next he gave a numerical comparison between SCS and Pao-Sah models and explained how using unified charge control model to calculate the inversion charge, consistency can be maintained between the SCS and Pao-Sah models.

For additional information contact Dr. Chaparala at prasad.chaparala@nsc.com.

WMED 2009

- by Shyam Surthi

The Seventh Annual IEEE Workshop on Microelectronics and Electron Devices (WMED 2009) was held on April 3, 2009, in Boise, Idaho. It provided a forum for 180+ attendees to review and discuss all aspects of microelectronics, including processing, characterization, design, and new device technologies. The goal was to provide high quality professional speakers to discuss pertinent issues/concepts and to maintain momentum of this workshop in difficult economic times. Judging by attendee feedback, the intended goal was met and exceeded.

The invited talks/tutorials were:

- Keynote, Dr. Vijay Kapur, ISET, "Commercialization of 'Ink Based' and Low Cost CIGS Solar Cells/Modules"
- Dr. Jeffrey Welser, SRC Nano-electronics Research Initiative,



Dr. Mark Lundstrom (IEEE Fellow and EDS Distinguished Lecturer) presented an engaging discussion on device physics of the nanoscale MOSFETs



Best Poster Winner, Manasseh Obi, with his presentation



The 180+ attendees asked some focused questions to each of the invited speakers and rated the workshop high on all accounts

"The Semiconductor Industry's Nanoelectronics Research Initiative: Motivation and Challenges"

- Dr. Daniel Edelstein, IBM, "Integration/Reliability Issues for Cu/Low-k BEOL Interconnects"
- Dr. Veena Misra, North Carolina State University, "Application of High-k Dielectrics in Memory, Power and Emerging Technologies"
- Dr. Mark Lundstrom, Purdue University, "Device Physics of the Nanoscale MOSFET: An Introduction to Electronics from the Bottom Up"
- Dr. Eric Vogel, UT- Dallas, "Electrical Characterization of Advanced MOS Devices"

The WMED 2009 Best Paper Award Winner was the paper entitled "Design of a Novel Capacitorless DRAM Cell with Enhanced Retention Performance," by Peng-Fei Wang, et al., and the Best Poster Award Winner was "A New Printable Approach to Nano-Ionic Non Volatile Memory," by Manasseh Obi and Maria Mitkova. We initiated Student Travel Awards for high quality student manuscripts. The winners were: Saumitra Mehrotra, Purdue University; Fan Nelson, University of Idaho; and Saurabh Mandhanya, Washington State University. We had a continuation of a High School Program which brings in key engineers, university students, and experts to discuss items of interest to college-bound students. The WMED-2010 will be held on April 16, 2010. Please contact William Kueber, General Chair



Prof. Juin J. Liou (3rd from left) with some of the attendees of the EDS DL held at the Instituto Superior Técnico, Lisbon

at wkueber@micron.com for additional information.

~ Adam Conway, Editor

EUROPE, MIDDLE EAST & AFRICA (REGION 8)

ED/AP/MTT Portugal

- by Custódio Peixeiro

In the framework of the IEEE Electron Devices Society Distinguished Lecturer Program, Prof. Juin J. Liou presented his DL entitled "Protecting Microchips Against Electrostatic Discharge (ESD) Shock," at the Instituto Superior Técnico, Lisbon, on June 22, 2009. The lecture was attended by university academic staff and students.

~ Cora Salm, Editor

AP/ED/LEO/MTT UKRI

- by Zhirun Hu

Professor Albert Wang, EDS Vice-President of Membership and Distinguished Lecturer, delivered his seminar on "ESD Protection for RF/



Prof. Albert Wang talked on "ESD Protection for RF/AMS ICs"

AMS ICs" to 50 attendees at the University of Manchester, Manchester, England.

The seminar was organized by the AP/ED/LEO/MTT UKRI Chapter and the IEEE Student Branch of the University of Manchester. The meeting was chaired by Dr. Zhirun Hu, EDS Regional Newsletter Editor for UK, Middle East and Africa.

Professor Wang's presentation covered a wide range of ESD protection techniques for RF/AMS ICs, from conventional discrete circuit technique to integrated approach and nano-scale protection. The talk was well received.

~ Zhirun Hu, Editor

ASIA & PACIFIC (REGION 10)

ED Guangzhou

- by Kong Xuedong and
Yang Shaohua

The ED Guangzhou Chapter, in collaboration with the failure analysis center of the ministry of industry and information technology, P. R. China, hosted a two-day mini-colloquium (MQ) July 10–11, 2009, at Guangzhou, China. This is the second MQ organized by the Chapter since it was founded in 2007. The focus of the MQ was Microelectronics Reliability Physics and Failure Analysis. The event was organized by the China CEPREI Laboratories and financially co-sponsored by both CEPREI and the IEEE Electron Devices Society. Total attendance was about 160 participants from the electronics and telecom industry. The event began with welcome addresses by Prof. Kong Xuedong, ED Guangzhou Chapter Chair, and Prof. Juin J. Liou, EDS Vice-President Regions/Chapters.

During the two-day event, presentations and invited seminars related to microelectronics reliability were given by nine lecturers, including three Distinguished Lecturers from EDS:

- "Advanced Electrostatic Discharge (ESD) Protection Solutions in BiCMOS/CMOS Technologies" by Prof. Juin J. Liou (University of Central Florida, U.S.A.)
- "Power Semiconductor State of the Art, Development Trends and Reliability" by Dr. Leo Lorenz (Infineon (Shanghai) Co., Ltd)
- "Physical analysis of dielectric breakdown in SiON and high-k gate dielectric materials" by Prof. Pey Kin Leong (Nanyang University of Technology, Singapore)

The other presenters of the mini-colloquium:



Speakers and part organizers of the Guangzhou EDS mini-colloquium, (from left to right) Li Bin, En Yunfei, Jacob Phang, Kong Xuedong (ED Guangzhou chair), Julin J. Liou (distinguished lecturer), Leo Lorenz (distinguished lecturer), Paul Ho and Waisum Wong

- Dr. Waisum Wong (SMIC Inc, China)
- Prof. Jacob Phang (National University of Singapore)
- Mr. Li Shaoping and Mr. Luo Daojun, Senior members (China CEPREI Laboratories)
- Mr. Paul Ho (Kimpson Company, Taiwan)
- Mr. Lin Qun (Questar – China, Inc.)

Another important objective of the mini-colloquium was to gather worldwide experts and provide technical support to the foundation and first seminar of the local technical consortium on the "Chinese Network for the Co-ordination of Failure Analysis Technologies in Electronics Production." This consortium was setup to provide a platform for related government divisions and industrial organizations working on quality, reliability and failure analysis in electronics production to work together to leverage on the personnel, equipment and technical know-how of individual members to promote activities related to reliability and failure analysis technologies in manufacturing. Combining the strength of IEEE EDS with local institutes prompted technical exchanges of electronics reliability engineering in China.

ED Taipei

- by Steve Chung

The ED Taipei Chapter held two talks. On February 10th, Dr. Dong Ping Wu from Qimonda/Infineon, Germany, gave a DL talk on "Advanced DRAM technology." In Dr. Wu's talk, he first introduced the current market and technology aspects of DRAM, and then described the important building blocks from capacitor and transistor to architecture. He also pointed out that trench capacitor is the key technology of DRAM before 90 nm. But Qimonda has changed to use the stack capacitor structure after 65nm and 45nm with a buried word line structure, as a result of the scaling issues. Approximately 30 graduate students from local universities and engineers from the Science Park were in attendance.

Prof. Albert Wang of the University of California-Riverside was invited to give a DL talk on May 26th, entitled "ESD Protection Design for RF/AMS ICs." He presented various issues associated with ESD protection design for RF/AMS ICs, including complex ESD-IC interactions, mixed-mode ESD simulation-design methodology, advanced RF ESD protection design, accurate RF ESD design characterization, ESD-RFIC co-design and whole-chip ESD design optimization, etc.



ED Taipei invited talk on February 10th: Dr. Dong Ping Wu (speaker, 5th from left), Dr. M. J. Tsai (ITRI Director, 6th from right), photos with Steve Chung (Chapter Chair, 1st from left)

The talk was attended by 150 participants, including graduate students and professors from local universities.

We would like to announce a major upcoming semiconductor conference in Taiwan, the 2009 International Electron Devices and Materials Symposia (IEDMS), November 19–20, at Chang Gung University. Please visit the conference web site: <http://iedms2009.cgu.edu.tw/>. The submission deadline is August 15, 2009. Another major conference focusing on VLSI, the 2010 VLSI-TSA and VLSI-DAT symposia series will be held in April 2010. For further information, please contact Miss Clara Wu, vlsitsa@itri.org.tw.

~ Mansun Chan, Editor

IWJT 2009

- by Kazuo Tsutsui

The 9th International Workshop on Junction Technology (IWJT 2009) was held June 11–12 at Kyoto University. The purpose of the workshop is to provide an open forum for all engineers and scientists who are working in various areas of junction technologies. The number of attendees exceeded 80 and there were many famous engineers and scientists from Japan, China, Taiwan, Singapore, U.S.A., Italy, France, Denmark and Belgium.

The technical program of the 9th IWJT consisted of 36 excellent papers: one special speech (from China), 2 keynote speeches (from Japan and France), 13 invited papers (4 from the U.S.A., 1 each from

Belgium, Italy, and Singapore, 6 from Japan), 19 contributed papers (5 from the U.S.A., 2 from Belgium, 1 each from China and Taiwan, 10 from Japan). These papers were categorized into 7 technical sessions: Nano-device and Advanced Integration 1 & 2, Advanced Doping 1 & 2, Metrology and Characterization, Silicides/Germanides, and Activation and Annealed Defects.

One of the features of IWJT 2009 is that each invited paper presented not only provides a review of the authors' previous works but brand-new results. Therefore, attendees could understand both the background technology and the brand-new technology with a lot of novel data. A new proposal was made on device integration and modeling, doping technology, activation technology for ultra-shallow junction, silicidation/germanidation technology and characterization technology.

The next IWJT will be held May, 2010 in Shanghai, China.

ED Kansai

- by Michinori Nishihara

The ED Kansai Chapter held the 7th International Meeting for Future of Electron Devices, Kansai (2009 IM-FEDK) at Kansai University Centenary Memorial Hall, Osaka, Japan, May 14–15, 2009, with 152 attendees.

The meeting was preceded by a tutorial seminar with two distinct subjects. The first lecturer was Prof. Satoshi Sugahara on "Nonvolatile Logic Technologies for Green IT" and the second was Dr. Shinji Watanabe from Panasonic and he talked about "High Performance CO₂-Heat-Pump, Hot Water Supply".

The formal program began with opening remarks by Dr. Tadashi Nishimura of Renesas Technology Corp. on behalf of General Chair, Prof. Kenji Taniguchi of Osaka University.

We had four keynote speakers this year: "Electric Light Source Technologies: Historical Development and Current Activities Directed at Global Energy Saving" by Dr. Mamoru



IWJT 2009, held in at Kyoto University, Japan



2009 IMFEDK award recipients



Poster session at 2009 IMFEDK

Takeda (Panasonic), "Overview of Recent Solar Photovoltaic Energy Conversion Technologies and its Future Prospect" by Prof. Hideyuki Takakura (Ritsumeikan University), "Next-Generation Power-Aware Integrated Circuit Design" by Prof. Takayasu Sakurai (Tokyo University), and "Solving Complex Global Problems: Emerging Opportunities for Future Electron Devices" by Dr. Kazuo Yano (Hitachi).

There were three regular technical sessions as usual and two special sessions as well as a poster session along with a short oral presentation on each poster.

In the "Compound Semiconductor Devices" session, three papers

were presented regarding growth of GaN and SiC crystals and in the "Emerging Devices" session, seven papers were presented on modeling of nano-devices. Six papers were presented in the "Si Devices and Related" session.

At the end of the meeting awards were presented by Dr. Nishimura, Executive Committee Chair, to the following papers: Best Paper Award to Satofumi Souma of Kobe University and the student award to the following students; Hiroki Miyake (Kyoto University), Eri Ogawa (Hokkaido University), Hironori Yoshioka (Kyoto University), Kosuke Ohara (Nara Institute of

Science and Technology), Shunsuke Nakano (Kansai University).

ED Korea

- by Jong-Ho Lee

An IEEE mini-colloquium on Nano-Scale Devices and Circuits was jointly presented April 9–10, 2009, by the SSC Seoul, ED Korea and ED/SSC/MTT Youngnam chapters and sponsored also by the BK21 program of Seoul National University. The event took place at the Doyeon Hall of Inter-University Semiconductor Research Center (ISRC), Seoul National University, Seoul, and attracted about 50 participants. The eleven invited talks comprised 5 fifty-minute EDS Distinguished Lectures, two SSCS DL talks, 3 EDS distinguished talks and 2 SSCS distinguished talks. Each lecture concluded with a question and answer session.

The six Distinguished Lecturer talks were as follows:

- Prof. Hei Wong (City University of Hong Kong, Hong Kong), "Complex High-k Oxides: The Promising Candidates for Next Generation CMOS Technology."
- Prof. King Leong Pey (Nanyang Technical University, Singapore), "The Chemistry of Nanosize Breakdown Path in Ultrathin SiON and High-k Gate Dielectrics of Nanoelectronic Devices."
- Prof. Juin J. Liou (University of Central Florida, U.S.A.), "Advanced On-Chip Electrostatic Discharge (ESD) Protection Solutions in CMOS/BiCMOS Technologies."
- Prof. Mansun Chan (Hong Kong University of Science and Technology, Hong Kong), "3-D Stacked Nanowire Transistor Technology."
- Dr. Takayuki Kawahara (Central Research laboratory, Hitachi Ltd, Japan), "SPRAM (SPin-transfer torque RAM) Technology for Green IT World."
- Prof. Phillip K. T. Mok (Hong Kong University of Science and Technology, Hong Kong),



The organizers of a mini-colloquium on Nano-Scale Devices and Circuits held in Seoul, Korea, April 2009, and distinguished lecturers (from left to right) Professors Hyungcheol Shin, Jong-Ho Lee (ED Korea Chapter Chair), Jinyong Chung, Kwangsup Yoon (SSC Seoul Chapter Chair), Juin J. Liou, Phillip K. T. Mok, Mansun Chan, Dr. Takayuki Kawahara, Professors Hei Wong and King Leong Pey

"On-Chip Switching DC-DC Converters-Design and Challenges."

Five Distinguished talks are introduced briefly in the following:

- Prof. Hyungcheol Shin (Seoul National University, Seoul, Korea), "A channel thermal noise model."
- Prof. Jong-Ho Lee (Kyungpook National University, Daegu, Korea), spoke on "High-Density Flash Memory Cells and Characterization."
- Dr. Byung-Ha Park (Samsung Electronics Co., Ltd, Korea), "A discussion about the limitations and challenges in devices and mixed-signal IC design in nano-scale technology."
- Prof. Bumman Kim (POSTECH, Pohang, Korea), "A New Emerging Technology of Digitally Assisted RF Circuits."
- Dr. Sungwoong Chung (Hynix Semiconductor Inc., Korea), "3-D Memory Cell Transistor as an Access Device for DRAM and Other Applications."

At the afternoon poster session on April 10th, an SSCS award was presented to Mr. Hyungdong Roh of Hanyang University, for a paper entitled "A Sub-1-V 20 kHz-Bandwidth Delta-Sigma Modulator." The two EDS awardees were Mr. Ki-Heung Park of Kyungpook National University for the paper "Fully Depleted Double-Gate 1T-DRAM Cell with NVM Function for Improved Performance"

and Mr. Sanghoon Lee of Seoul National University for "A New Method for Lateral Location of Oxide traps Extraction in Short Channel MOSFET's."

~ Kazuo Tsutsui, Editor

EDS/SSC Bangalore

- by Sankara Reddy

The IEEE ED/SSC Bangalore Chapter organized a half-day Mini-Colloquium on November 10, 2008, in association with the Department of Electrical Communication Engineering, Indian Institute of Science, Bangalore. The Mini-Colloquium included talks by four IEEE Distinguished Lecturers, of one hour duration each, on topics of current interest among the device and circuits community, as detailed below:

In the first talk on "Trends in Solar Energy & Solar Photovoltaics", Dr. Betty Prince, CEO of New Energy Strategies International, discussed trends and techniques for improving the efficiency of solar cells and for reducing costs of solar technology. She also gave an overview of the solar market and the solar power plants being built worldwide with focus on their technology and financing.

Dr. Kofi Makinwa, Associate Professor, Delft University of Technology, Netherlands, spoke on "Designing Smart Sensors in Standard CMOS", and elaborated on the design meth-

odology of smart sensors in today's mainstream CMOS technology. He emphasized on the need for dynamic techniques in the design and realization of state-of-the-art smart CMOS sensors for the measurement of temperature, wind velocity and magnetic field. They enable us to trade speed or bandwidth for higher precision, keeping in view that most sensors are quite slow compared to transistors.

The third lecturer, Dr. Tadahiro Kuroda, Professor in Keio University, Japan, IEEE Fellow, gave a talk entitled, "Low Power CMOS Design, Challenges and Opportunities in System LSI", which focused on two future directions in IC technology: "More Moore" and "More than Moore", from a power dissipation perspective. Good practices in low power CMOS design were described in device, circuit, design automation, and system levels. Emerging technologies, such as vertical interconnections using Through-Silicon-Via (TSV) and micro-bump as well as non-contact electrical interfaces using inductive coupling and capacitive coupling and their relative merits were discussed. Circuit techniques to raise an aggregated data rate to 1 Tb/s, to lower energy dissipation to 0.1 pJ/b, and to extend communication ranges over 1 mm were discussed.

The last talk of the day, entitled "Challenges in designing CMOS Wireless SOC", by Dr. David Su, VP of Analog/RF Engineering at Atheros Communications, described the challenges in designing CMOS systems-on-a-chip for wireless communications. RF transceiver building blocks for signal amplification, frequency translation, and frequency selectivity were examined with special emphasis on low noise amplifier and power amplifier.

After over 4 hours of presentations, the distinguished speakers had interesting interactions with students, faculty and engineers from the industry, over tea. The mini-colloquium



From left to right, Prof. Bharadwaj, Dr. Sankara Reddy (Chair), Prof. Willy Sansen, Dr. P. R. Suresh (Treasurer), and Dr. Harish (Secretary)



From left to right, Prof. Kuroda, Prof. David Su, Dr. Betty Prince, Prof. Kofi Makinwa, Dr. Sankara Reddy (Chair), Prof. Navakanta Bhat, Prof. Bharadwaj and Dr. Harish (secretary)

evoked tremendous response with participation by more than 100 interested members. The next day, our distinguished guests visited various industries in Bangalore.

On December 29, 2008, Prof. Willy Sansen addressed the IEEE ED/SSC Bangalore Chapter ExCom members, followed by a DL on "Low-power Analog IC Design in Nanometer CMOS Technologies". The talk created a tremendous interest among the engineers from Industry and Academia. In spite of vacation time, we had 45 active participants for this lecture. In the morning session, Prof. Sansen was with IBM in

a round table discussion which included circuit designers, compact modelers and EDA folks. This was very fruitful session and the members of IBM gained insights into the advanced areas of research.

Prof. Sansen visited the facilities of the Microelectronics Laboratory at the Indian Institute of Science and interacted with the faculty on the activities at the center. Prof. Sansen had discussions with Faculty on on-going sponsored and masters projects.

On June 12, 2008, the ED/SSC Bangalore Chapter arranged a technical talk: "A Novel Solid State Self

Powered Neutron Detector" by Prof. Ishwara B. Bhat, ECSE Department, Rensselaer Polytechnic Institute, Troy, New York, U.S.A. Twenty-five people attended this talk that included 10 members of IEEE. Prof. Bhat spoke on a new type of detector that is self-powered and can exhibit high efficiency. The detector uses ^{10}B as the neutron interaction layer and Si vertical pn junction as the detector. The process techniques and some of the feasibility studies were presented.

REL/CPMT/ED Singapore

- by Kin-Leong Pey

During the past few months, the Chapter organized one Distinguished Lecturer talk and two technical talks:

- May 22, 2009, Professor Donald Wunsch (Department of Electrical & Computer Engineering, Missouri University of Science & Technology), gave a talk on "Clustering" at Nanyang Technological University.
- June 5, 2009, Professor Ganesh Subbarayan (School of Mechanical Engineering, Purdue University), gave a talk on "Simulations of Near-Percolation Thermal Transport in Particulate Systems" at the National University of Singapore.
- June 25, 2009, Professor Ganesh Subbarayan (School of Mechanical Engineering, Purdue University), on "Multiscale Modeling of Evolving Voids, Inclusions, and Cracks: Enabling Nanoscale Design of Geometry and Materials" at the National University of Singapore.

The Chapter donated book prizes to Temasek Polytechnic for sponsoring three Medals for Diploma in Microelectronics.

Chapter committee member, Xing Zhou, represented the chapter to attend the EDS Region 10 Chapters Meeting in Mumbai, India, May 30, 2009.

~ Xing Zhou, Editor

EDS MEETINGS CALENDAR

(As of 4 September 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!

October 4 - 9, 2009, T **Symposium on ULSI Process Integration**, LOCATION: Vienna, Austria, CONTACT: Cor Claeys, E-MAIL: c.claeys@ieee.org, DEADLINE: 4/24/09, WWW: www.electrochem.org/meetings

October 4 - 7, 2009, T **IEEE International Conference on Computer Design**, LOCATION: Squaw Creek Resort, Lake Tahoe, CA, USA, CONTACT: Kim Kee Sup, E-MAIL: kee.sup.kim@intel.com, DEADLINE: 5/11/09, WWW: <http://iccd.et.tudelft.nl/2009/generalinformation.html>

October 5 - 8, 2009, * **IEEE International SOI Conference**, LOCATION: Crowne Plaza Hotel, Foster City, CA, USA, CONTACT: Bobbi Armbruster, E-MAIL: bobbi@bacminc.com, DEADLINE: 5/1/09, WWW: www.soiconference.org

October 6 - 9, 2009, T **International Conference on Solid-State Devices and Materials**, LOCATION: Sendai Kokusai Hotel, Sendai, Japan, CONTACT: Mitsumasa Koyanagi, E-MAIL: koyanagi@sd.mech.tohoku.ac.jp, DEADLINE: 3/25/09, WWW: www.ssdm.jp

October 11 - 14, 2009, * **IEEE Compound Semiconductor IC Symposium**, LOCATION: Sheraton Greensboro Hotel at Four Seasons, Greensboro, NC, USA, CONTACT: Marko Sokolich, E-MAIL: msokolich@hrl.com, DEADLINE: 5/8/09, WWW: <http://www.csics.org/>

October 12 - 14, 2009, * **IEEE Bipolar/Bi-CMOS Circuits and Technology Meeting**, LOCATION: Capri Palace, Capri, Italy, CONTACT: Janice Jopke, E-MAIL: ccsevents@comcast.net, DEADLINE: 4/20/09, WWW: <http://www.ieee-bctm.org>

October 12 - 14, 2009, T **IFIP International Conference on Very Large Scale Integration**, LOCATION: Jurere Beach Village, Florianopolis, Brazil, CONTACT: José Luis Güntzel, E-MAIL: Not Available, DEADLINE: 4/15/0, WWW: <http://www.inf.ufrgs.br/vlsisoc/>

October 12 - 14, 2009, * **International Semiconductor Conference**, LOCATION: Sinaia Hotel, Sinaia, Romania, CONTACT: Cristina Buiculescu, E-MAIL: cas@imt.ro, DEADLINE: 6/10/09, WWW: www.imt.ro/CAS

October 18 - 20, 2009, T **International Conference on Nano-Networks**, LOCATION: Hotel Flora, Luzern, Switzerland, CONTACT: Beatrix Ransburg, E-MAIL: beatrix.ransburg@icst.org,

DEADLINE: 5/15/09, WWW: <http://www.nanonets.org/>

October 18 - 22, 2009, * **IEEE International Integrated Reliability Workshop**, LOCATION: Stanford Sierra Conference Center, South Lake Tahoe, CA, USA, CONTACT: J.T. Ryan, E-MAIL: jtr16@psu.edu, DEADLINE: 7/17/09, WWW: www.iirw.org

October 21 - 22, 2009, T **International Forum on Strategic Technology**, LOCATION: Ho Chi Minh City University, Chi Minh City, Vietnam, DEADLINE: 6/15/09, WWW: http://www.must.edu.vn/web/index_of.php?name=DNNews&news_id=602

October 25 - 28, 2009, T **Non-Volatile Memory Technology Symposium**, LOCATION: Hilton Portland & Executive Tower Hotel, Portland, OR, USA, CONTACT: Kristy Campbell, E-MAIL: kriscampbell@boisestate.edu, DEADLINE: 7/1/09, WWW: www.nvmts.org

October 25 - 28, 2009, T **IEEE International Conference on Sensors**, LOCATION: Christchurch Convention Centre, Christchurch, New Zealand, CONTACT: Subhas Mukhopadhyay, E-MAIL: s.c.mukhopadhyay@massey.ac.nz, DEADLINE: 2/1/09, WWW: <http://ieeesensors2009.massey.ac.nz>

October 27 - 29, 2009, T **IEEE International Symposium on Microwave, Antenna, Propagation and EMC Technologies for Wireless Communications**, LOCATION: Jingyan Hotel, Beijing, China, CONTACT: Mengqi Zhou, E-MAIL: houmq@public3.bta.net.cn, DEADLINE: 3/31/09, WWW: <http://mpe09.bjtu.edu.cn/>

November 2 - 5, 2009, T **IEEE International Conference on Computer Aided Design**, LOCATION: Double Tree Hotel, San Jose, CA, USA, CONTACT: Kathy Embler, E-MAIL: kathy@dac.com, DEADLINE: 4/10/09, WWW: www.iccad.com

November 9 - 11, 2009, @ **IEEE International Conference on Microwaves, Communications, Antennas and Electronic Systems**, LOCATION: David Intercontinental Hotel, Tel Aviv, Israel, CONTACT: Ortra, E-MAIL: comcas@ortra.com, DEADLINE: 6/15/09, WWW: www.comcas.org

November 11 - 13, 2009, T **International Conference on Electrical Engineering, Computing Science and Automatic Con-**

trol, LOCATION: Research Center CINVESTAV-IPN, Mexico City, Mexico, CONTACT: Judith Esparza-Azcoitia, E-MAIL: cce@cinvestav.mx, DEADLINE: 6/22/09, WWW: <http://cce.cinvestav.mx>

November 19 - 20, 2009, @ **International Electron Devices and Materials Symposium**, LOCATION: Kwei-Shan, Tao-Yuan, Taiwan, CONTACT: Chao Sung Lai, E-MAIL: cs Lai@mail.cgu.edu.tw

November 23 - 26, 2009, T **IEEE TENCON**, LOCATION: Suntec Int'l Convention & Exhibition Center, Singapore, China, CONTACT: TENCON 2009 Secretariat, E-MAIL: info@tencon2009.org, DEADLINE: 6/1/09, WWW: <http://www.tencon2009.org/>

November 25 - 27, 2009, T **IEEE Conference on Electron Devices and Solid State Circuits**, LOCATION: Ana Grand Hotel, Xian, China, CONTACT: Jun Liou, E-MAIL: liou@ucf.edu, DEADLINE: 8/20/09, WWW: <http://www.edssc2009.com>

December 3 - 5, 2009, @ **IEEE Semiconductor Interface Specialists Conference**, LOCATION: Key Bridge Marriott Hotel, Arlington, VA, USA, CONTACT: Martin Frank, E-MAIL: mmfrank@us.ibm.com, DEADLINE: Not Available, WWW: <http://www.ieeesisc.org/>

December 7 - 9, 2009, * **IEEE International Electron Devices Meeting**, LOCATION: Hilton Baltimore Hotel, Baltimore, MD, USA, CONTACT: Phyllis Mahoney, E-MAIL: phyllism@widerkehr.com, DEADLINE: Not Available, WWW: <http://www.ieee.org/conference/iedm>

December 9 - 11, 2009, T **International Semiconductor Device Research Symposium**, LOCATION: University of Maryland, Stamp Student Union, College Park, MD, USA, CONTACT: Lisa Press, E-MAIL: lpress@umd.edu, DEADLINE: Not Available, WWW: www.ece.umd.edu/isdrs/2009

December 9 - 11, 2009, T **International Conference on Field-Programmable Technology**, LOCATION: The University of New South Wales, Sydney, Australia, CONTACT: Oliver Diesel, E-MAIL: odiessel@cse.unsw.edu.au, DEADLINE: 6/8/09, WWW: <http://fpt09.cse.unsw.edu.au/>

December 14 - 16, 2009, T **International Conference on Computers and Devices for Communication**, LOCATION: Hyatt Regency, Kolkata, India, CONTACT: Gopa Sen, E-MAIL: senstation2003@yahoo.co.uk, DEADLINE: 7/15/09, WWW: www.irpel.org/codec-09

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>

December 15 - 19, 2009, T **International Workshop on the Physics of Semiconductor Devices**, LOCATION: Delhi University, New Delhi, India, CONTACT: IWPSD 2009 Secretary, E-MAIL: secretary@iwpsd.net, ashok.kapoor@sspl.drdo.in, DEADLINE: 6/15/09, WWW: <http://www.iwpsd.net/>

December 19 - 22, 2009, T **International Conference on Microelectronics**, LOCATION: Marrakech, Morocco, CONTACT: Mohab Anis, E-MAIL: manis@vlsi.uwaterloo.ca, DEADLINE: 6/14/09, WWW: <http://www.ieee-icm.com>

January 1, 2010, @ **International Workshop on Compact Modeling**, LOCATION: Taiwan, CONTACT: Hisayo Momose, E-MAIL: hisayo.momose@toshiba.co.jp

January 3 - 8, 2010, T **IEEE International Nanoelectronics Conference**, LOCATION: City University of Hong Kong, Hong Kong, China, CONTACT: Ricky Fu, E-MAIL: apkyfu@cityu.edu.hk, DEADLINE: 7/15/09, WWW: www.cityu.edu.hk/ieeeneec

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: Not Available, WWW: <http://rawcon.org/index.html>

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@courtesyasoc.com, DEADLINE: Not Available, WWW: 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

March 22 - 25, 2010, @ **IEEE International Conference on Microelectronic Test Structures**, LOCATION: International Conference Center, Hiroshima, Japan, CONTACT: Tatsuya Ohguro, E-MAIL: tatsuya.ohguro@toshiba.co.jp, DEADLINE: Not Available, WWW: <http://www.ee.ed.ac.uk/icmts>

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/>

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: Not Available, WWW: <http://www.wamicon.org/>

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: elodieho@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: Not Available, WWW: <http://www.irps.org>

May 16 - 19, 2010, T **IEEE International Memory Workshop**, LOCATION: The Shilla, Seoul, Korea, CONTACT: Tamer San, E-MAIL: t-san@ti.com, DEADLINE: Not Available, 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, @ **IEEE International Vacuum Electronics Conference**, LOCATION: The Portola Plaza Hotel in Monterey, Monterey, CA, USA, CONTACT: Ralph Nadell, E-MAIL: rnadell@pcm411.com, DEADLINE: Not Available, WWW: <http://ivec2010.org>

May 20 - 25, 2010, * **IEEE Photovoltaic Specialists Conference**, LOCATION: Hilton Hawaiian Village, 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 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@aetl.ntt.co.jp, DEADLINE: Not Available, WWW: <http://www.iprm.jp/>

June 6 - 10, 2010, @ **International Symposium on Power Semiconductor Devices**

& **Integrated Circuits**, LOCATION: Hiroshima, Japan, CONTACT: Noriyuki Iwamuro, E-MAIL: iwamuro-noriyuki@fujielectric.co.jp

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

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

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

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>

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: 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>

February 21 - 24, 2011, @ **IEEE International Vacuum Electronics Conference**, LOCATION: Bangalore, India, CONTACT: Lalit Kumar, E-MAIL: director@mttrdc.drdo.in, DEADLINE: Not Available, WWW: Not Available

September 18 - 21, 2011, T **IEEE Custom Integrated Circuits Conference**, LOCATION: Double Tree Hotel, San Jose, CA, USA, CONTACT: Melissa Widerkehr, E-MAIL: melissaw@widerkehr.com, DEADLINE: 6/1/11, WWW: www.ieee-cicc.org

December 5 - 7, 2011, * **IEEE International Electron Devices Meeting**, LOCATION: Hilton Washington, Washington, DC, USA, CONTACT: Phyllis Mahoney, E-MAIL: phyllism@widerkehr.com, DEADLINE: Not Available, WWW: <http://www.ieee.org/conference/iedm>

EDS EXECUTIVE OFFICE

Dear EDS Member,

As already announced in the July EDS Newsletter, the Society has a new Executive Director. In order to better serve our members, we

have created a directory for the EDS Executive Office, which gives staff contact information and subject matter expertise. We would like to request that you address

all your EDS related inquiries and questions to our new Executive Director, Chris Jannuzzi, or the appropriate EDS staff member. Thank you.

SOCIETY MANAGEMENT

Jannuzzi, Christopher	EDS Executive Director	(732) 562-3926	c.jannuzzi@ieee.org	Society Management & Administration
-----------------------	------------------------	----------------	---------------------	-------------------------------------

OPERATIONS STAFF

Bae, Jean	Conference Coordinator	(732) 562-5556	jean.bae@ieee.org	Conferences and Technical Meetings
-----------	------------------------	----------------	-------------------	------------------------------------

Lombardini, Joyce	Business Coordinator	(732) 562-6549	j.lombardini@ieee.org	Chapters, Membership, Newsletter
-------------------	----------------------	----------------	-----------------------	----------------------------------

Riello, Laura	Senior Administrator Business	(732) 562-3927	l.riello@ieee.org	Awards, Chapter Finances, Education
---------------	-------------------------------	----------------	-------------------	-------------------------------------

Urbaniak, Fran	Business Administrator	(732) 465-6616	f.urbaniak@ieee.org	AdCom/ExCom Administration, Publications
----------------	------------------------	----------------	---------------------	--

PUBLICATIONS STAFF

James, Marlene	Sr. Administrator Soc. Pubs	(732) 562-6830	m.james@ieee.org	Transactions on Electron Devices
----------------	-----------------------------	----------------	------------------	----------------------------------

Marsh, Jo Ann	Coordinator Society Pubs	(732) 562-6855	j.marsh@ieee.org	Transactions on Device & Reliability Materials
---------------	--------------------------	----------------	------------------	--

Piatkiewicz, Mariola	Administrator Society Pubs	(732) 562-6361	m.piatkiewicz@ieee.org	Electron Device Letters
----------------------	----------------------------	----------------	------------------------	-------------------------

Schreiber, Rosemary	Admin. Asst. Society Pubs	(732) 465-7818	r.schreiber@ieee.org	Assistant to Publications Group
---------------------	---------------------------	----------------	----------------------	---------------------------------