IEEE
ELECTRON DEVICES SOCIETY
Newsletter

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Spotlight On: EDS Launches Open-Access Journal of the Electron Devices Society

The IEEE Electron Devices Society (EDS) announces the launching of its inaugural **Open-Access** publication: the IEEE Journal of Electron Devices Society, or J-EDS.

J-EDS is an all-electronic, rapid-turnaround, scientific journal dedicated to publishing high quality research in the field of Electron and Ion Devices ranging from fundamentals to applied research. This new journal provides authors an affordable outlet for rapid publishing and universal access, coupled with the superior technical quality readers have come to expect from IEEE Electron Devices Society.

Submissions to J-EDS will be accepted beginning in Fall 2012, with the first issue to be released in early 2013. To submit manuscripts for publication consideration and peer-review, and for more information, please check the J-EDS home page (http://eds.ieee.org/journal-of-the-electron-devices-society.html) for updated information.

The J-EDS will publish original and significant contributions relating to the theory, modeling,

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2012 IEEE International Electron Devices Meeting (IEDM)

58th Annual IEDM Returns to San Francisco
December 10–12, 2012

LEWIS SOMMER, SAN FRANCISCO CONVENTION & VISITORS BUREAU

The city of San Francisco is just south of the Golden Gate Bridge

Special focus topics: circuit/device interactions, energy harvesting, biomedical devices, power devices, magnetics and spintronics
Globalfoundries CEO to give luncheon address

The world's best microelectronics scientists and engineers from industry, academia and government will gather in San Francisco, California, this coming December for the Electron Devices Society's annual technical conference, the IEEE International Electron Devices Meeting. There they will enjoy a technical program of more than 200 presentations along with panels, special sessions, Short Courses, IEEE/EDS award presentations and other events spotlighting more leading work in more areas of the field than at any other conference.

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Save the Dates!

EDS AdCom Series
December 8–9, 2012
San Francisco, California, USA

ELECTRON DEVICES SOCIETY

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EDS AdCom
Elected Members-at-Large
Elected for a three-year term (maximum two terms) with 'full' voting privileges

2012	Term	2013	Term	2014	Term
R. Huang	(2)	A. Escobosa	(1)	Z. Celik-Butler	(1)
S.S. Iyer	(1)	J. J. Liou	(1)	M. Chan	(1)
M. Meyyappan	(1)	M. Ostling	(1)	S. Chung	(1)
H.S. Momose	(2)	M.K. Radhakrishnan	(1)	S. Deleonibus	(2)
A. Nathan	(1)	R. M. Todi	(2)	F. Guarin	(2)
M. Shur	(1)	A. Z.H. Wang	(1)	T.L. Ren	(1)
B. Zhao	(1)	X. Zhou	(1)	S. Saha	(2)
				E. Sangiorgi	(1)

NEWSLETTER EDITORIAL STAFF

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 http://eds.ieee.org/eds-newsletters.html. The archive contains issues from July 1994 to the present.

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Upcoming Technical Meetings

2012 IEEE Semiconductor Interfaces Specialists Conference (SISC)

The 43rd IEEE Semiconductor Interface Specialists Conference (SISC) will be held December 6–8, 2012, at the Catamaran Resort Hotel in San Diego, California, immediately prior to the IEEE International Electron Devices Meeting (IEDM). An evening Tutorial session, free to all registered SISC attendees, will be held December 5th.

The SISC is a workshop-style conference that provides a unique 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. Emphasis is on transistor and memory devices incorporating high-k gate dielectrics and metal gate electrodes on silicon and on high-carrier-mobility substrates. The conference alternates between the East and West Coasts, and meets just before the IEDM to encourage the participation of IEDM attendees. The SISC is sponsored by the IEEE Electron Devices Society.

An important goal of the conference is to provide an environment that encourages interplay between scientific and technological issues. 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 the lush Catamaran Resort Hotel grounds with colorful fish and tropical birds, just steps from the Pacific Ocean. San Diego boasts Balboa Park, an expansive campus of museums, parks, and possibly the premier zoo in North America; the Old Town, with preserved buildings and icons of the Spanish heritage of San Diego; the upscale coastal community La Jolla; and Sea World. In December, San Diego typically has fabulous weather.

The Catamaran Resort Hotel, San Diego, California

Conference Focus

The program includes about 70 presentations from all areas of MOS science and technology. The topics evolve with the state-of-the-art, and include:

- **SiO_2** and **high-k 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 dielectrics 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
- Dielectrics on **nanowires, nanotubes, and graphene**
- **Oxide electronics** and multiferroics
- **Interfaces in photovoltaics**, e.g. Si passivation

Invited Presentations

This year's invited presentations will include:

- **Prof. Valery Afanas'ev**, University of Leuven, Belgium
  Internal photoemission at Ge/oxide and III-V/oxide interfaces
- **Prof. Sanjay Banerjee**, University of Texas at Austin, USA
  Graphene BISFETs
- **Dr. Gennadi Bersuker**, Sematech, USA
  Mechanism of RRAM operation

- **Dr. Eduard Cartier**, IBM, USA
  Reliability of high-k oxide stacks
- **Prof. J. Raynien Kwo**, National Tsing Hua University, Taiwan
  Physics and chemistry of high-k gate stacks
- **Prof. Serge Oktyabrysky**, University at Albany, USA
  III-V MOSFETs
- **Dr. Guillaume Saint-Girons,** Ecole Centrale de Lyon, France
  Integration of III-V semiconductors on Si via oxide buffers
- **Prof. Robert Wallace**, University of Texas at Dallas, USA
  XPS studies of oxides on III-V

Wednesday Evening Tutorial – Free to all Registered SISC Attendees

- **Dr. Dirk Wouters**, imec, Belgium
  Resistive switching devices and materials for future memory applications

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 presentations. A Best Student Presentation award is given 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.

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 San Diego attractions On Friday evening the conference hosts a banquet and awards ceremony, complete with the now-famous (and always riotous) 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 look forward to seeing you at SISC 2012!

Michel Houssa
2012 SISC General Chair
KU Leuven, Belgium

Chadwin Young
2012 SISC Program Chair
Sematech, USA

Alex Demkov
2012 SISC Arrangements Chair
University of Texas at Austin, USA

2012 IEEE International Electron Devices Meeting (IEDM)

(continued from page 1)

The 58th IEDM will take place at the San Francisco Hilton Union Square hotel December 10–12, 2012, preceded by a full day of Short Courses on Sunday, December 9th and 90-minute afternoon tutorial sessions on emerging topics on Saturday, December 8th. This year the IEDM will feature an increased emphasis on circuit/device interactions in recognition of the interdisciplinary nature of the field, as well as special focuses on energy harvesting, biomedical devices, power devices, and magnetics and spintronics.

Ajit Manocha, CEO of Globalfoundries, will give the IEDM luncheon address on Tuesday, December 11th.

Saturday Tutorials

On the heels of their initial success last year, the IEDM once again will hold two 90-minute Saturday tutorial sessions on emerging topics, this year on December 8th. Today's research and industrial environments feature an increased emphasis on cross-disciplinary work and technological integration, and these tutorials are intended to help attendees bridge the gap between textbook knowledge and the leading-edge research presented during the IEDM conference. Specific topics offered this year will include:

- High-Mobility Channel CMOS Transistors – Beyond Silicon
- Spintronics for Embedded Non-Volatile Electronics
- Scaling Challenges of Analog Electronics at 32 nm and beyond
- 2D semiconductors – Fundamental Science and Device Physics
- Beyond Charge-Based Computing

Short Courses
There will be two day-long Short Courses on Sunday, December 9th. One course will focus on emerging technologies for post-14 nm CMOS, while the other will explore circuit/technology interaction.

Evening Panel Sessions
There will be two evening panel sessions on Tuesday, December 11th, designed to foster discussion and debate on important technical and industry issues. One is on the topic Will Future Non-Volatile-Memory Contenders Disrupt NAND, while the other will delve into the topic, The Mighty Little Transistor: FinFETs to the Finish or Another Radial Shift?

Emerging Technology Focus
IEDM 2012 will feature an Emerging Technology session with invited speakers from academia and industry, who will discuss the challenges and prospects of spin-based devices.

Technical Program
Original papers will be presented in the following technical areas:

- Circuit and Device Interaction
- Characterization, Reliability and Yield
- Displays, Sensors and MEMS
- Memory Technology
- Modeling and Simulation
- Nano Device Technology
- Power and Compound Semiconductor Devices
- Process technology

Further Information
For registration and other information, visit the IEDM 2012 home page at www.ieee-iedm.org or contact the Conference Office at 19803 Laurel Valley Place, Montgomery Village, MD 20886, USA; tel. (301) 527-0900, ext. 2; fax (301) 527-0994; or e-mail: iedm@his.com.

Follow the IEDM on Twitter and Facebook at the following links to receive updates:

- Twitter: http://twitter.com/ieee_iedm
- Facebook: http://www.facebook.com/pages/IEDM/131119756449

The San Francisco area provides many attractions for visitors and we encourage attendees to explore them in the off hours of the conference. The IEDM committee members look forward to seeing you in December.

Tzu-Ning Fang
2012 IEDM Publicity Chair
Spansion, Inc.
Sunnyvale, CA, USA

Ken Rim
2012 IEDM Publicity Vice-Chair
IBM Corp.
Hopewell Junction, NY, USA

Spotlight On: EDS Launches Open-Access Journal of the Electron Devices Society

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design, performance, and reliability of electron and ion integrated circuit devices and interconnects, involving insulators, metals, organic materials, micro-plasmas, semiconductors, quantum-effect structures, vacuum devices, and emerging materials with applications in bioelectronics, biomedical electronics, computation, communications, displays, microelectromechanics, imaging, micro-actuators, nano-devices, optoelectronics, photovoltaics, power IC devices, and micro-sensors. Tutorial and review papers on these subjects will also be published.

Dr. Renuka Jindal, University of Louisiana, has been named the journal's first editor-in-chief. A Fellow of the IEEE, Jindal was formerly Vice-President of publications for IEEE EDS for eight years and editor-in-chief of *IEEE Transactions on Electron Devices* for ten years prior to that. Jindal will spend the next several months assembling an editorial board and developing guidelines and procedures for prospective authors to follow.

If you wish to be placed on the alert list for news and updates about J-EDS, please e-mail eds@ieee.org, and title your request, Sign me up for J-EDS Info Alerts!

Society News

June 2012 AdCom Meeting Summary

Fernando Guarín
EDS Secretary

The 2012 mid-year meeting of the IEEE Electron Devices Society Administrative Committee (AdCom) took place in the historic city of Leuven, Belgium on June 2–3, 2012.

President's Report – The meeting was opened by our new President Paul Yu who thanked past President, Renuka Jindal for his hard work, leadership and many accomplishments during his tenure. The motion to approve the proposed list of 2012 committee member appointments was approved unanimously. EDS membership numbers are holding steady despite declining numbers for IEEE and most other societies. We continue to leverage the Distinguished Lecturer & Mini-Colloquia (DL/MQ) program to attract new members. The new online event registration tool, launched in May 2012, has received positive volunteer feedback and will be useful in gathering feedback from event attendees.

Paul Yu highlighted that the J-MEMS revitalization has begun and indicated that the Open Access Publication: J-EDS Phase 1 was passed in February 2012 and phase 2 was passed in June 2012 with the target launch date as January 1, 2013. Renuka Jindal will be EIC of this open access journal. The webinar program continues to gain strength. Dr. Subramanian (Subu) Iyer's recent webinar on orthogonal scaling was a great success. EDS plans to expand the amount of video content behind the member firewall, including the IEDM short course videos. In June 2013, the mid-year AdCom meeting will be held in Hong Kong in conjunction with EDSSC, which is an important devices conference for Region 10.

Review of ExCom – Albert Wang provided a review of the EDS ExCom meeting that took place on Saturday, June 2, 2012. Despite budgetary challenges our meetings and conferences are doing well. There has been a big effort by Joachim Burghartz, who is leading the effort to complete the EDS History Book. The 2013 Mid-year AdCom Meeting will be held in Hong Kong and the 2014 Mid-year AdCom Meeting is expected to be held in Region 8, hopefully in conjunction with a conference

Division 1 Director's Report – Cor Claeys began by providing an overview of the IEEE Organization. The Director and Delegate of Region 8 is Dr. Marko Delimar. The Division 1 (Circuits & Devices) Director is Cor Claeys. Division 1 consists of 3 societies (Electron Devices Society, Solid State Circuits Society, Circuits and Systems Society) and 2 councils (CEDA, NANO).

Historic Town Hall, Leuven

EDS is the largest society in Division 1. Societies are crucial to IEEE, and care needs to be taken to ensure that societies work together and engage in joint activities. It is important to have strong ties to the local regions as well. Division 1 Chapters in Region 8 are distributed as follows: CAS 28, EDS 48, SSC 27.

The IEEE Board is responsible for the management of IEEE including strategic planning, publications, education, fellows, awards, appointments, finance and legal strategy. Currently there are over 400,000 IEEE members and revenue of $200,000,000.

Secretary's Report and EDS ETC Program – Fernando Guarín

The motion to approve the December 2011 AdCom meeting minutes was approved unanimously. Fernando provided an overview of the Engineers Demonstrating Science: an Engineer Teacher Connection (EDS-ETC) program. EDS-ETC is designed to be a "hands on" approach to engage young students in the field of electron devices. Fernando encouraged all attendees to utilize the program and provided great examples of the work of several chapters (Brazil, Egypt, Colombia, Russia and the United States) their work with local schools has been very successful. This year's program will include the revolutionary QAMA calculator. It only provides an answer once a suitable estimate is provided. "The calculator that thinks only if you think too."

Treasurer's Report – Albert Wang presented for Ravi Todi, EDS Treasurer. Currently, the 2012 revenue forecast is $6533K with an operating margin of $-321K. The financial status of our publications was reviewed. EDL is doing well this year and T-ED is only slightly down from 2011, but all other

journals are losing money. The 2012 Quarter 1 forecast for publications net income is $876K, which is down from $939K in 2011. Conference revenues are down slightly over projections for 2012. Proceedings revenue is down by nearly $230K. The 2011 IEDM netted $102K in surplus and the 2011 PVSC netted $241K in surplus, which is about 80K more than what was expected.

Executive Office and IEEE Administration expenses: IEEE warehouse and support fees have increased significantly this year, as usual. The IEEE fees are based on the number of EDS members and staff. The increase in the number of pages published is hurting our bottom line. We are predicting a $300K deficit in 2012.

Meetings and Conferences Report – Bin Zhao reported that in 2011 we sponsored 15 conferences, and had 4 million dollar revenue with $500K surplus. EDS sponsors or co-sponsors about 108 conferences. There were 11 Financially Sole or Co-sponsorships, 11 alternate support between Financial and Technical Co-Sponsorships and about 86 were Technically Co-Sponsored (TCS). EDS will financially sponsor or co-sponsor 16 conferences in 2012. There is an initiative to increase conference Return on Investment (ROI) – currently, the average rate of return over the past five years is around 10%. This initiative will help to incentivize conferences to commit to returning a 20% surplus to EDS and share revenue with conferences, improve relationships with conferences and keep them motivated to perform financially. The program is to be piloted with IEDM and PVSC.

Technical Activities Report – Joachim Burghartz provided an overview of the EDS technical activities and Technical Committee Chairs and was pleased to report that the EDS Anniversary book is well underway. Many Technical Committee Chairs are involved in the content preparation. Joachim gave an overview of the book's design and table of contents. The color coded historic time line runs throughout the entire book; this feature really sets it apart from other reference books. The timeline includes EDS history and historical milestones.

The books will be ready for shipment in 2013. The goal is to have samples on display at the December 2012 IEDM.

The book is being published by Wiley-IEEE. Royalties are waived for the editor and co-authors; they will each receive a free copy of the book. The lump sum contribution from EDS will be $5K, with a minimum bulk purchase of 200 copies. Each copy of the book is worth $75, but in 2012 and 2013 the book will be $25 for EDS members.

Educational Activities Report – Meyya Meyyappan reported the EDS webinar program has been very successful so far. The most recent webinar by Dr. Subramanian (Subu) Iyer was held in conjunction with SSCS, and received very positive feedback from attendees. In the future, webinars will be hosted at different times during the day so that attendees in all regions can be better accommodated.

The online event registration tool, launched in May 2012, has received positive volunteer feedback and will be useful in gathering feedback from Mini-Colloquia attendees. Outreach efforts to all Mini-Colloquia will begin soon. The goal is for all MQs to utilize the online event registration tool in 2013. This tool allows for easier outreach out to attendees, and a calendar snapshot of upcoming events.

There was a comment from the audience that all Distinguished Lecturers should list a topic on the DL listing so that event organizers know which speakers they would like to host. Also, they would like to see the percentage of DL invitations that the DL declines. Another request was to list the DL travel plans on the EDS website.

Regions & Chapters Report – Juin Liou provided an overview of the EDS chapters formed in 2011, potential chapters for 2012 and the Region 8 SRC Chairs with their mentor assignments. Chapter subsidy budget: $40K total (each chapter received 75% of its requested amount). SRC budget: $21K total ($4.4K for R8, compared to $5K in 2011). MQ budget: $50K total ($121K requested). Fourteen MQs out of 28 requested were funded based on the factors of geography, MQ history, and local needs.

Update on Region 9 Student Paper Award – Jacobus Swart spoke on the Region 9 best student paper award, which is given biannually. Until the 1990s, Region 9 was isolated. Recently, more local scientific societies have flourished.

Members of EDS AdCom

The Region 9 Student Paper Award is an opportunity to promote EDS in Region 9. The award consists of a certificate and a check for up to $1500, and is given at a Region 9 conference. In order to increase nominations to the award the following changes were approved by AdCom:

- Remove the IEEE and EDS membership requirements
- Add up to three years of complimentary IEEE and EDS student membership
- Add a requirement that a minimum of five nominations be received in order for the award to be administered for that year

EDS Constitution and Bylaws Changes – Cor Claeys.

In order to more appropriately reflect the volunteer-led, volunteer-driven nature of the Electron Devices Society, Renuka proposed to change the name of the chief governing body from "EDS Administrative Committee (AdCom)" to the "EDS Board of Governors (BOG)." All roles and responsibilities of this body will remain as presently described in the EDS Constitution and Bylaws. Only the name will change.

Publications Report – Samar Saha presented an overview of EDS Publication activities and awards. T-ED and EDL submission and acceptance rates remain level. These journals continue to be main sources of revenue despite large overruns in 2011 due to increase in manuscripts. Immediate and long term solutions for T-ED page count issues were discussed. T-DMR continues to face challenges and has a decreased submission rate for 2012. On a scale of 1–5, the average score for overall satisfaction with our publications is high, EDL: 4.2, T-ED: 4.1, T-DMR: 4.3. Average of all answers is also high, EDL: 4.4, T-ED: 4.2, T-DMR: 4.3 and J-PV acceptance and submission rates are both up in 2012 compared to 2011.

EDS Paul Rappaport Award recipients: Tibor Grasser, Ben Kaczer, Wolfgang Goes, Hans Reisinger, Thomas Aichinger, Philipp Hehenberger, Paul-Jürgen Wagner, Franz Schanovsky, Jacopo Franco, María Toledano Luque, and Michael Nelhiebelfor for *The Paradigm Shift in Understanding the Bias Temperature Instability: From Reaction-Diffusion to Switching Oxide Traps.*

EDS George Smith Award Recipients: Mallory Mativenga, Min Hyuk Choi, Jae Won Choi, and Jin Jang for *Transparent Flexible Circuits Based on Amorphous-Indium–Gallium–Zinc–Oxide Thin-Film Transistors.*

EDS open access journal: Journal of Electron Devices Society (JEDS): Phase 1 was approved by TAB on February 18, 2012. Phase 2 was approved by TAB in June 2012. Editor-in-Chief will be Prof. R. P. Jindal.

Fellow Evaluation Chair's Report

The 2012 Fellows Committee is chaired by Ilesanmi Adesida, and consists of the following committee members: Guido Groeseneken, Renuka Jindal, Leda Lunardi and Hisayo Momose.

The 2012 EDS Fellows Committee Meeting was held on Saturday, June 2, 2012. Fifty-one Fellow nominations were reviewed by 28 EDS Evaluators (including committee members). Typically there are 15 valuators per nominee, or about 23 evaluations per evaluator. The newly elected IEEE Fellows will be announced shortly after the November IEEE Board of Directors meeting.

Before ending the session the following additional items were presented:

PELS & EDS Conference Collaboration – Presented by John Shen

Compound Semiconductor Devices & Circuits Committee Report – Presented by Giovanni Ghione

Update on the 2013 Mid-year AdCom Series – Presented by Mansun Chan, Paul Yu and Juin Liou. The 2013 mid-year AdCom Series will take place in Hong Kong, June 1–2. It is being held in conjunction with EDSSC, which is taking place at the Hong Kong Polytechnic University, June 3–5.

Christopher Jannuzzi closed the session with the **EDS Website Update**.

On behalf of all the attendees we would like to extend our sincere gratitude to Cor Claeys and his team for their hospitality and planning. They were truly kind and generous hosts.

Fernando Guarín
EDS Secretary
IBM Microelectronics
Hopewell Junction, NY, USA

Announcement of Newly Elected AdCom Members

On December 4, 2011, the EDS AdCom held its annual election of officers and members-at-large. The following are the results of the election and brief biographies of the individuals elected.

OFFICERS

The following individuals were elected as Officers beginning January 1, 2012:

PRESIDENT-ELECT

ALBERT WANG received a BSEE from Tsinghua University and his Ph.D. from State University of New York at Buffalo. He is a Professor at University of California. His research covers Design-for-Reliability, RF/analog ICs and SoCs, CAD and Modeling, Nano Devices and Circuits, etc. He has published one book and 160+ papers. Professor Wang has been on the editorial board for IEEE *Electron Device Letters, Transactions on Circuits and Systems II, Journal of Solid-State Circuits, Transactions on Circuits and Systems I* and *Transactions on Electron Devices*. He is a Distinguished Lecturer and former Membership Vice-President for the IEEE Electron Devices Society. He is a Fellow of IEEE and AAAS.

SECRETARY

FERNANDO GUARIN is a Senior Engineer/Scientist at the IBM Microelectronics Semiconductor Research Development Center in Fishkill New York. He received his BSEE from the "Pontificia Universidad Javeriana," in Bogotá, Colombia, the M.S.E.E. degree from the University of Arizona, and the Ph.D. in Electrical Engineering from Columbia University, New York. His doctoral research concentrated on the Molecular Beam Epitaxial growth of Silicon based alloys for device applications. He has been actively working in microelectronic reliability for 30 years in the reliability physics and modeling of Advanced Bipolar, CMOS and Silicon Germanium technologies. Dr. Guarín is an IEEE Fellow and EDS Distinguished Lecturer.

TREASURER

RAVI M. TODI received his masters and doctoral degree in Electrical Engineering from the University of Central Florida. His graduate research work was focused on gate stack engineering, with emphasis on binary metal alloys as gate electrode and on high mobility Ge channel devices. His research interest includes semiconductor process integration and device technology for non-conventional CMOS scaling. Since 2007, he is working as Advisory Engineer/Scientist at Semiconductor Research and Development Center at IBM Microelectronics Division focusing on high performance eDRAM integration on 45 nm and 22 nm SOI logic platforms. Ravi is former Editor-in-Chief for *IEEE Potentials*, Chair of the EDS GOLD Committee, and is an IEEE EDS Distinguished Lecturer. He has also served on the IEEE-USA Board of Directors, the IEEE-Region 1 Board and the IEEE Publications Board.

ADCOM MEMBERS-AT-LARGE

A total of eight persons were elected to three-year terms (2012–2014) as members-at-large of the EDS AdCom. Three of the eight individuals were re-elected for a second term, while the other five were first-time electees. Their backgrounds span a wide range of professional and technical interests.

SECOND TERM ELECTEES

SIMON DELEONIBUS, received his Ph.D. from Paris University (1982), started his career with Thomson Semiconducteurs (1981–1986), joined CEA- LETI in 1986. He was Director of the Electronic Nanodevices Laboratory till 2008 and is Chief Scientist since. Editor of *IEEE Transactions on Electron Devices*, European Physical Journal – EPJ AP, ECS Trans-ULSI Process Integration, 1 book (WSPC), a Special issue of SSE, published more than 550 papers, and 10 book chapters. A member of ITRS, European Research Council, Board of Governors of Nanosciences Foundation and IEEE EDS, as well as 10 International Conferences Program Committees. He is an IEEE Fellow, EDS Distinguished Lecturer, CEA Research Director, "Chevalier de l'Ordre National du Mérite," "Chevalier de l'Ordre des Palmes Académiques," Grand Prix de l'Académie des Technologies" 2005 Laureate.

FERNANDO GUARIN (SEE 1ST COLUMN)

SAMAR K. SAHA received the M.S degree in Engineering Management from Stanford University, USA and Ph.D. degree in Solid State Physics from Gauhati University, India. Currently, he is the Director of Compact Modeling at SuVolta and an Adjunct Professor in Electrical Engineering Department at Santa Clara University, California. Since 1984 he has worked in various positions for

National Semiconductor, LSI Logic, Texas Instruments, Philips Semiconductors, Silicon Storage Technology, Synopsys, Silterra, and the University of Colorado at Colorado Springs, Southern Illinois University at Carbondale, and Auburn University, Alabama. Dr. Saha is a senior member of IEEE and Distinguished Lecturer of the Electron Devices Society (EDS). He is the Vice-President of EDS Publications and Editor-In-Chief of *IEEE EDS QuestEDS*. He has served as the guest-editor of *IEEE Transactions on Electron Devices* Special Issues, EDS Newsletter Regional Editor, Chair of EDS Compact Modeling Technical Committee, SRC-NAW, and ED Santa Clara Valley Chapter.

FIRST-TIME ELECTEES

ZEYNEP CELIK-BUTLER received dual B.S. degrees in electrical engineering and physics from Bogaziçi University, Istanbul, Turkey, in 1982. She received the M.S. and Ph.D. degrees in electrical engineering in 1984 and 1987, respectively, from the University of Rochester. She served in various IEEE committees including IEEE-IEDM Technical Committee (1988–89), EDS Technical Committee on Electronic Materials (1998–2001), EDS National Membership Committee (1998–2006), EDS Education Award Committee (2009–2011), Vice-Chair (2006–09) and Chair (2010–present) of EDS North America West Regions/Chapters Subcommittee. She was a Distinguished Lecturer for EDS 1998–2010. She is currently the Chair of the EDS Dallas Chapter and an editor for *IEEE Transactions on Electron Devices*. Prof. Çelik-Butler has received several awards including the IEEE-Dallas Section Electron Devices Society Outstanding Service Awards (1995, 1997), IEEE-Electron Devices Society, Service Recognition Award (1995, 2009), IEEE-Electron Devices Society, Distinguished Lecturer Appreciation Award (2006). Dr. Çelik-Butler is a Fellow of IEEE, lifemember of Eta Kappa Nu, and member of the American Physical Society.

MANSUN CHAN received his MS and Ph.D. from the University of California at Berkeley. He is currently a Professor at the Department of Electronic and Computer Engineering of the Hong Kong University of Science and Technology (HKUST). His main research covers novel silicon device fabrication and modeling. In particular, he is one of the key developers of the BSIM model series that have been selected to be the industrial standard models for conventional and SOI MOSFETs used by the semiconductor industry worldwide. Prof. Chan has served IEEE in various capacities and he is currently a Distinguished Lecturer of IEEE EDS.

STEVE S. CHUNG received his Ph. D. degree from the University of Illinois at Urbana-Champaign, in Electrical Engineering in 1985. Currently, he is an NCTU and UMC Chair Professor at the National Chiao Tung University, where he served as Dean of the International Office, Department head of an EECS honors program, CEO of a government-funded Top-University program. He was also the consultant to TSMC and UMC, a Visiting Scholar with Stanford, and visiting professor at University of California, Merced. His current research areas include CMOS devices technology, flash memory technology, and reliability. He has published more than 200 papers, one textbook, 20 patents, and given more than 20 presentations at the IEDM and VLSI.

Dr. Chung is an IEEE Fellow, AdCom member (04–09), Distinguished Lecturer, Regions/Chapters Vice-Chair, and Editor of EDL. He has served on the Technical Program Committees of the VLSI Technology Symposium, IEDM, IRPS, etc. The ED Taipei Chapter was awarded the 2002 EDS Chapter of the Year Award under his leadership as the Chapter Chair. Among those awards, he received 3 times outstanding Research Awards, NSC Fellow, Distinguished EE Professor, and Engineering Professor in Taiwan.

TIAN-LING REN received his Ph.D. from Tsinghua University. He is a Professor at Institute of Microelectronics, Tsinghua University. He has been a Visiting Professor of Electrical Engineering Department, Stanford University (2011–2012). His research is focused on new material based micro/nano electronic devices, including Memories, MEMS/NEMS, Energy Devices, Flexible Electronics, and Biomedical Devices. He has published 300 journal and conference papers and 40 patents. He is a Distinguished Lecturer, and Regions and Chapters Committee Member of the IEEE Electron Devices Society. He is also a Council Member of Chinese Society of Micro/Nano Technology.

ENRICO SANGIORGI received the Laurea degree from the University of Bologna in 1979. He has been a Visiting Scientist at Stanford University and Bell Laboratories, Murray Hill, New Jersey. In 1993, he was appointed Full Professor of Electronics at the University of Udine, Italy. In 2002, he joined the University of Bologna, where he is now Director of the EE Department "Guglielmo Marconi." He has been Editor of *IEEE Electron Device Letters*, on the editorial board for the *IEEE Transactions on Electron Devices* and *IEEE*

Journal of Photovoltaics. His research covers device modeling. Enrico Sangiorgi is a Distinguished Lecturer and a Fellow of the IEEE; he has been Chairman of the EDS TCAD Technical Committee, member of the Cledo Brunetti Award and Education Award Committees of the EDS.

Cor Claeys
Past EDS Nominations and Elections Chair, IMEC
Leuven, Belgium

View the Latest EDS Webinar, Organic Electronics – Where Are We, Where Do We Go?

Karl Leo

Launched in 2011, EDS's webinar series delivers members live lectures with luminaries from the field of electron device engineering…. streaming right to your desktop!

Our most recent webinar, *Organic Electronics – Where Are We, Where Do We Go*? presented by Karl Leo of the Fraunhofer-Institution for Organics, Materials and Electronic Devices and the Institut für Angewandte Photophysik Technische Universität, both located in Dresden, Germany, was an outstanding success. Our sincere thanks to Karl for devoting his time and expertise to the Society.

Abstract
Organic semiconductors with conjugated electron system are currently being intensively investigated since they offer the possibility for novel, flexible, low-cost, ubiquitous electronics. Possible applications are for logic and memory devices and for optoelectronic devices such as organic light-emitting diodes (OLED) and organic solar cells.

In this talk I discussed recent progress in this field. I began with a discussion of basic properties of organic semiconductors, leading to differences to inorganic semiconductors related to the molecular structure of organic semiconductors. The main effect is that mobilities are many orders of magnitude below silicon or GaAs. Second, I discussed device applications. For logic devices, a real breakthrough of organic electronics has not been achieved, partly due to the fact that the low mobility has limited organics to low-performance applications. For optoelectronic devices, however, organics have been a great success: Displays based on organic LED are already a multibillion market. OLEDs for lighting applications have also entered the market. Organic solar cells have recently made much progress and have passed the 10% efficiency limit, but need further advances.

To learn more about future webinars, please visit the Education Section of the EDS Website. While you're there, be sure to watch replays of past EDS Webinars:

- FinFET Webinar with Chenming Hu
- Introduction to Physics and Technology of Solar Cells with Vikram Dalal
- Physics and Technology of Advanced Solar Cells with Vikram Dalal
- From Deep Trenches to Skyscrapers – Orthogonal Scaling with Subramanian S. Iyer

EDS Joins in Recognizing the Contributions of IEEE 50 Year Members

IEEE was formed on January 1, 1963, through the merger of the Institute of Radio Engineers (IRE) and the American Institute of Electrical Engineers (AIEE). So 2012 is our 50th year, and the IEEE History Center would like to recognize all those who have been loyal members since the beginning.

The 50 Year Member First-Hand Histories is a special collection of First-Hand Histories submitted by these members.

If you are a 50 year member and would like to contribute a First-Hand History, please see the First-Hand History creation instructions on the IEEE History Center website, at http://www.ieeeghn.org/wiki/index.php/Help:Creating_a_First_Hand_History.

Once your First-Hand History is completed, your contribution will be marked with a graphic replica of the First 50 Year Member pin as shown above.

Quoted by permission from the IEEE Global History Network www.ieeeghn.org, IEEE History Center, New Brunswick, NJ, U.S.A.

Announcing the IEEE Journal of Electron Devices Society

IEEE Electron Devices Society (EDS) has been at the fore-front of technology facilitating its creation and deployment. More than half a century ago, we launched the IEEE Transactions on Electron Devices (T-ED). IEEE Electron Device Letters (EDL) followed in 1980. Next, came the more focused IEEE Journal of Photovoltaics (J-PV) in 2011. All of these three publications follow the "traditional" journal production method by printing paper copies of the articles. However, with rapid posting on the web, these publications now mimic their all-electronic cousins rather well, while at the same time preserving the charm of a hard copy at your desk. None-the-less, the added cost of production remains.

Who pays for these technical masterpieces? Sometimes it is the authors who honor a voluntary page charge through their research contracts or through their company. An alternate source of revenue is the subscribers ranging from individuals to mega corporations. Over the last decade, due to regulatory authority pressures, this financial model along with its high cost of production is being increasingly questioned. A new financial model based on "Open Access" has been gaining momentum. In this scenario, it is the author who pays for the cost of publishing. This cost has been dramatically reduced due to advances in data processing technology and electronic dissemination via the world-wide-web. In June 2012, EDS secured approval to launch its very own "all electronic" Open Access IEEE Journal of Electron Devices (J-EDS).

As the word "Open Access" implies, articles published in J-EDS will be available to all professionals worldwide for the asking without any strings attached in terms of IEEE / EDS membership or a paid subscription. Furthermore, they can be freely posted and shared among researchers so long as the source is property cited. The pros of this approach include a wider readership and citation of the work. The flip side of the coin is that the author must have financial resources to be in the game.

EDS Authors Have Choices

So now researchers in the field of Electron Devices have both options. They can either choose to follow the traditional publication path of EDL and T-ED depending upon the length of the contribution. Or, they can opt for the new venue of J-EDS irrespective of length. In either case the readers are assured of a high quality output which they have come to expect of the IEEE Electron Devices Society. As an EDS author you will need to make a decision upfront whether to submit your paper in EDL, T-ED or J-EDS. Once the decision is made the review process will take over with an outcome about the publication of the manuscript. A detailed discussion regarding transfer of manuscripts between EDL, T-ED and J-EDS appears elsewhere.

How does an Author Choose Between EDL, T-ED, and J-EDS?

The question begs answering how does an author pick between the three publications for submitting a manuscript. The first question that one must consider is if an Open Access publishing medium is mandated by your research sponsor or whether funds are available to support a wider dissemination via J-EDS. A mandatory publication charge of US$1350 applies for all manuscripts up to and including 8 published pages. Beyond 8 pages there is an additional charge of US$120 per page. Exceptions apply to manuscripts submitted for research conducted in and authored by economically disadvantaged countries. If Open Access is not mandated or cannot be afforded, then EDL and T-ED would be a more cost-effective route to follow. Please note that in case of EDL, a maximum of 3 published pages is a requirement. Also T-ED is targeting an average page length of 6 published pages.

As former Editor-in-Chief of T-ED and past Vice-President of publications for EDS my commitment is spread due equally among the three publications. As the first Editor-in-Chief of J-EDS let me say a few words. First of all, the choice is yours. J-EDS website http://eds.ieee.org/journal-of-the-electron-devices-society.html will be open for business as of October 1, 2012 to serve our authors who are our customers. The editorial board of J-EDS is committed to helping the authors publish their best work in a well referred forum upholding the highest level of quality that EDS readers expect of us. I welcome you to the world of J-EDS, pronounced as "Jeds".

I personally look forward to your contributions.

Renuka Jindal
Editor-in-Chief, IEEE Journal of Electron Devices

IEEE Journal of Electron Devices Society

IEEE Journal of Electron Devices Society (J-EDS):
Fully electronic;
Open Access;
Author pays publication charge;
Free, universal access to all content;

***

Editor-In Chief:
Prof. Renuka P. Jindal
University of Louisiana, Lafayette, Louisiana, USA

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First Issue:
Scheduled January 2013

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Manuscript Central Open for Submission:
Scheduled October, 2012

The **IEEE Journal of Electron Devices** (J-EDS) is a peer-reviewed, **open-access**, fully electronic scientific journal publishing papers ranging from fundamental to applied research that are scientifically rigorous and relevant to electron devices.

Please submit your manuscripts for the consideration of publications in J-EDS at http://mc.manuscriptcentral.com/jeds**.** The inaugural issue of the J-EDS is scheduled to be published in early 2013.

The J-EDS publishes original and significant contributions relating to the theory, modelling, design, performance, and reliability of electron and ion integrated circuit devices and interconnects, involving insulators, metals, organic materials, micro-plasmas, semiconductors, quantum-effect structures, vacuum devices, and emerging materials with applications in bioelectronics, biomedical electronics, computation, communications, displays, microelectromechanics, imaging, micro-actuators, nanodevices, optoelectronics, photovoltaics, power IC's, and micro-sensors. Tutorial and review papers on these subjects are, also, published.

The open access publication, J-EDS is intended to provide the electron devices community:

- Faster speed of publication;
- Free access to readers worldwide;
- Wide audience;
- Increased dissemination;
- Higher impact factor (IF),
  - Articles can be cited sooner;
  - Articles potentially cited more frequently.

Publication charge for authors:
US $1350 per article up to eight published pages;
US $120 per page, over eight published pages.

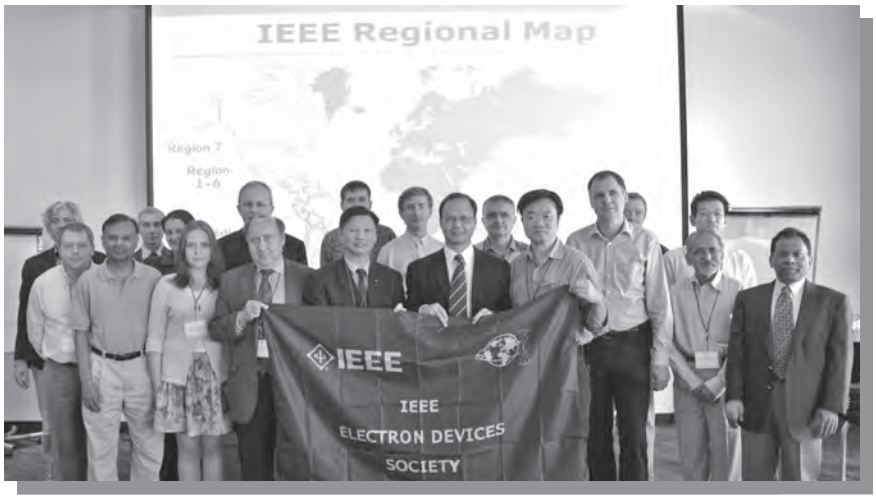
For more information, please visit:
www.ieee.org/eds

IEEE
Advancing Technology for Humanity

June 2012 Region 8 Chapters Meeting

Juin J. Liou
EDS Vice-President of Regions & Chapters

On Saturday, June 2, 2012, the biannual EDS Region 8 (Africa, Europe, Middle-East) Chapters Meeting took place in Leuven, Belgium. Presiding over this meeting were EDS President, Paul Yu, and EDS Vice President of Regions & Chapters, Juin Liou.



Region 8 Chapter Meeting Attendees in Leuven, Belgium

Paul opened the meeting with words of gratitude for Cor Claeys, EDS Sr. Vice President, for his efforts in organizing the meeting series in beautiful Leuven. Attendees were reminded about the successful new webinar program, and advised that future webinars will be broadcasted at different times so that more regions could be accommodated at once. He suggested a Region 8 webinar, and asked for topics to be sent to Meyya Meyyappan, EDS Vice President of Educational Activities.

Juin followed Paul's opening remarks with an overview of EDS Chapters. In 2011, nine new EDS chapters were formed, and there are many potential chapters for 2012. He reviewed the 2012 chapter subsidy information and the Distinguished Lecturer & Mini Colloquia statistics. For 2012, $40K was distributed for chapter subsidies. Each chapter received 75% of the amount requested. Out of the $121K requested for Mini-Colloquia, $50K was distributed. Fourteen Mini Colloquia out of the 28 requested were funded based on the factors of geography, MQ history, and local needs. The funding distribution was as follows: 6 in Region 10 (14 requested), 1 in Region 9 (2 requested), 4 in Region 8 (7 requested), 1 in Region 7 (1 requested), and 2 in Regions 1-6 (4 requested).

After Juin's overview, attendees were provided with updates on local chapter programs and events from the following chapter representatives:

- ED/SSC Bulgaria Chapter – Ivan Buliev
- ED Benelux Chapter – Jurriaan Schmitz
- EDS National Research Univ. of IT, Mech. and Optics Student Branch Chapter – Maria Osipova
- ED/AP/MTT/EMC Tomsk Chapter – Oleg Stukach
- ED Israel Chapter – Gady Golan
- ED/MTT Moscow Chapter – Vadim Kaloshin
- EDS IRE NASU-Kharkiv Student Branch Chapter – Illia Fedorin
- EDS Republic of Georgia Chapter – Tamar Gogua
- ED/AP/MTT/AES/GRS/NPS/EMB East Ukraine Chapter – Kostyantyn Ilyenko
- ED Spain Chapter – Benjamin Iniguez

Following the chapter updates was an open forum discussion about strategies to overcome financial and communication challenges. The main topics discussed included: MQ/DL Program Effectiveness, Expansion of the EDS Chapter of the Year Award, Chapter Subsidy Allocation, and SRC Fund Allocations. Juin suggested that chapters become engaged with their local sections since they are able to provide more financial resources than EDS.

The EDS Chapter of the Year Award has been expanded. The award will now be given to a chapter in each of the following regions: 1–7, 8, 9, and 10. Each winning chapter will receive $500 and will be recognized at an EDS conference or chapter meeting.

To close the meeting, Fernando Guarin, EDS Secretary, presented information about the successful *Engineers Demonstrating Science: an Engineer Teacher Connection (EDS-ETC)* program, and encouraged chapters to utilize the program to engage students in the field of electron devices.

From the presentations at this meeting, it is easy to see that EDS has a number of active chapters being led by enthusiastic and committed leaders. Many thanks to all who devote their time and energy to EDS Chapter related activities.

Juin J. Liou
EDS Vice President of Regions & Chapters
University of Orlando
Orlando, FL, USA

EDS Membership Fee Subsidy Program (MFSP)

Jamal Deen
Incoming EDS Vice-President of Membership

The EDS Membership Fee Subsidy Program (MFSP) enables chapters in low income geographical areas to increase their membership or help launch new IEEE EDS chapters.

We are once again offering the IEEE e-Membership option to compliment the EDS program. With IEEE e-Membership, all memberships and subscriptions are electronic. The rules for the EDS MFSP are as follows:

- This program is available for new and current IEEE/EDS members of your chapter. Please note, if a member benefited from the EDS MFSP in the past their request for free membership will be denied.
- Each new member's per capita Gross Domestic Product (GDP) cannot exceed US$13,800 or equivalent (per United Nations Guidelines) for basic membership or US$15,000 for e-Membership.
- IEEE and EDS membership is free for all members covered under this program (EDS will cover the cost of IEEE and EDS membership for up to 15 new/existing members per chapter).
- Five of the fifteen members each year must be new IEEE/EDS members.

For more information, please visit the EDS membership page, http://eds.ieee.org/membership-fee-subsidy-program.

Jamal Deen
Incoming EDS Vice-President of Membership McMaster University
Ontario, Canada

2011 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 close to 600 articles that were published in 2011. The article is entitled, "The Paradigm Shift in Understanding the Bias Temperature Instability: From Reaction-Diffusion to Switching Oxide Traps." This paper was published in the November, 2011 issue of the *IEEE Transactions on Electron Devices*, and was authored by Tibor Grasser, Ben Kaczer, Wolfgang Goes, Hans Reisinger, Thomas Aichinger, Philipp Hehenberger, Paul-Jürgen Wagner, Franz Schanovsky, Jacopo Franco, María Toledano Luque, and Michael Nelhiebel. The award will be presented at the EDS Administrative Committee Meeting to be held in early December 2012, in San Francisco, California. 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.

Tibor Grasser is a professor at TU Wien where his research interests are centered on semiconductor device reliability issues such as bias temperature instabilities and hot carrier degradation. He is a senior member of IEEE and serves as a Distinguished Lecturer of the Electron Devices Society. He has received Best Paper Awards at IRPS and ESREF.

Ben Kaczer is a Principal Scientist at IMEC, Belgium. He received the M.S. degree in Physical Electronics from Charles University in 1992 and the M.S. and Ph.D. degrees in Physics from Ohio State University in 1996 and 1998, respectively. He joined IMEC's front-end reliability group in 1998.

Wolfgang Goes received the Diplomingenieur degree in technical physics and the doctorate degree in technical science from the Technische Universität Wien in 2005 and 2011, respectively. He currently holds a post-doc position at the Institute of Microelectronics, where he is

working on reliability issues of semiconductor devices.

Hans Reisinger received the Diploma degree in physics and the Ph.D. degree from the Technical University of Munich, Munich, Germany, in 1979 and 1982, respectively. In 1983, he was with the IBM T. J. Watson Research Center, Yorktown Heights, New York. His topics of research were electronic properties of 2-D space-charge layers on Si and III–V semiconductors. In 1986, he joined the Semiconductor Department, Siemens (now Infineon Technologies). His work was focused on the study of thin dielectrics and interfaces in DRAMs and NVMs, including film fabrication and optical and electrical characterization. He is currently with the Infineon Central Reliability Department, Infineon Technologies, Villach, Austria and works on the threshold instabilities of metal–oxide–semiconductor field-effect transistors with SiO_2 and high-k dielectrics.

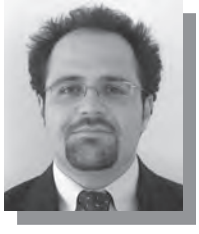
Thomas Aichinger was born in Austria in 1983. He received his Masters degree in physics from the Karl-Franzens University of Graz (2007) and his Ph.D. degree from the Technical University of Vienna (2010). He is currently a post-doc at Penn State University focusing on electrically detected magnetic resonance in semiconductor devices.

Philipp Hehenberger was born in Vienna, Austria, in 1980. He received the Dipl.-Ing. degree in technical physics and the Ph.D. degree in

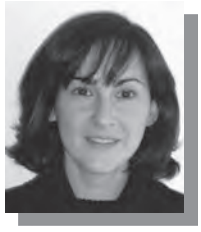
technical sciences from the Vienna University of Technology, Vienna, Austria, in 2006 and 2011, respectively. His research interests include the experimental measurement methods and device modeling of BTI.

Paul-Jürgen Wagner was born in Vienna, Austria, in 1979. He studied electrical engineering at the Technische Universitaet Wien, where he received the degree of Diplomingenieur in 2007. Since then he is with the Institute for Microelectronics, working towards his doctoral degree.

Franz Schanovsky received the Diplomingenieur degree in microelectronics from the Technische Universität Wien, Vienna, Austria, in 2008. He is currently working toward the Ph.D. degree at the Institute for Microelectronics, Technische Universität Wien. His research interests include atomistic modeling in the context of semiconductor device reliability and electronic structure methods.



Jacopo Franco received his B.Sc. (2005) and M.Sc. (2008) in Electronic Engineering from University of Calabria, Italy. He is working toward his Ph.D. degree with the Device Reliability group at IMEC and ESAT, KU Leuven, Belgium. He has co- authored more than 50 papers. He is the recipient of the IEEE Ed Nicollian Award (SISC, 2009) and EDS Ph.D. Student Fellowship (2012).



María Toledano Luque was born in Madrid, Spain, in 1980. She received the M.Sc. degree in electrical engineering, the M.Sc. degree in physics, and the Ph.D. degree from the Universidad Complutense de Madrid (UCM), Madrid, Spain, in 2003, 2009, and 2008, respectively. In 2003, she became a member of the Thin Films and Microelectronics Research Group, UCM. In 2007, she joined the Department of Applied Physics (Electronics), UCM, as an Assistant Professor. She is currently a Post-doctoral Researcher at IMEC, Leuven, Belgium, working in the field of advance electrical characterization.

Michael Nelhiebel received his M.S. and Ph.D. degrees in physics from Technische Universität Wien and Ecole Centrale Paris, respectively. In 1999 he joined Infineon Technologies Austria. As a principal engineer, he currently focuses on reliability research – from MOS interface defects to thermo-mechanical degradation of power devices – at the Infineon-held competence center KAI.

Samar Saha
EDS Vice-President of Publications
SuVolta, Inc.
Los Gatos, CA, USA

2011 George E. Smith Award

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 paper winning the 2011 George E. Smith Award was selected from among 500 articles that were published in 2011. The article is entitled "Transparent Flexible Circuits Based on Amorphous-Indium–Gallium–Zinc–Oxide Thin-Film Transistors." This paper appeared in the February 2011 issue of *Electron Device Letters* and was authored by Jin Jang, Mallory Mativenga, Min Hyuk Choi and Jae Won Choi. The award will be presented at the IEEE International Electron Devices Meeting (IEDM) to be held in early December 2012, in San Francisco, California. 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.

Mallory Mativenga received the M.Sc. degree in information display engineering in 2010 from Kyung Hee University, Seoul, Korea, where he is currently working toward the Ph.D. degree in information display. His current research interests include amorphous oxide semiconductor-based thin-film transistors for use in display and X-ray detector applications.

Min Hyuk Choi received the M.Sc. degree in information display from Kyung Hee University, Seoul, Korea, in 2010. He has been working at Samsung Mobile Display (SMD) since 2004. His current research interests include circuit design and simulation for active-matrix organic light-emitting diode (AMOLED) televisions.

Jae Won Choi received the M.Sc. degree in information display in 2006 and the Ph.D. degree in information display in 2010 from Kyung Hee University, Seoul, Korea. He is currently working at Samsung Mobile Display (SMD) specializing in the design of active-matrix organic light-emitting diode (AMOLED) display backplanes.

Jin Jang received the Ph.D. in physics from Korea Advanced Institute of Science and Technology, Seoul, Korea, in 1982. He is currently a distinguished Professor of information display with Kyung Hee University, Seoul. His current research interests include thin-film transistors, solar cells, and sensor devices with organic, oxide, and silicon semiconductors.

Samar Saha
EDS Vice-President of Publications
SuVolta, Inc.
Los Gatos, CA, USA

Announcement of the 2012 EDS Masters Student Fellowship Winners

Meyya Meyyappan
EDS Vice-President of Educational Activities

Agis Iliadis
EDS PhD & Master Student Fellowship Chair

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 two winners of the 2012 EDS Masters Student Fellowship. Brief biographies

of the recipients appear below. Detailed articles about each Masters Student Fellowship winner and their work will appear in forthcoming issues of the EDS Newsletter.

Tao Yu received the B.S degree from Peking University, Beijing, China, in 2011. He is currently working toward the M.S. degree at Massachusetts Institute of Technology, Cambridge, Massachusetts.

Since 2011, Tao Yu has been working on III-V heterostructure based steep-subthreshold-slope devices at the Microsystems Technology Laboratories of MIT. He has authored and co-authored over 10 papers for the IEDM, the *IEEE Transactions on Electron Devices*, etc. His research interests also include nanoscale MOS device structure design and fabrication.

Mr. Yu is the recipient of the 2009 National Scholarship by the Ministry of Education, China.

Teruyuki Ohashi was born in Shizuoka, Japan, in 1988. He received the B.S. degree in electrical and electronic engineering from Tokyo Institute of Technology, Tokyo, Japan in 2011. He is currently working toward the M.S. degree in physical electronics at Tokyo Institute of Technology.

His research interests include fabrication, characterization, and modeling of nanoscale CMOS devices. He has studied the deformation potential at MOS interface as well as electron mobility model in extremely-thin SOI MOSFETs as his Master thesis project.

Meyya Meyyappan
EDS Vice-President of Educational Activities
NASA Ames Research Center
Moffett Field, CA, USA

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

CALL FOR NOMINATIONS
2013 IEEE Electron Devices Society
Masters Student Fellowship

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/Mid-East/Africa, Asia & Pacific. Only one candidate can win per educational institution.

Prize: US$2,000 and a plaque 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, accomplishments and graduation date. 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
- One letter of recommendation from an individual familiar with the student's research and educational credentials. Letters of recommendation cannot be from the nominator.

Timetable

- Complete nomination packages are due at the EDS Executive Office no later than **April 15, 2013**
- Recipients will be notified by June 15, 2013
- 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.
- A complete hard copy of all nomination packages must be received by mail at the EDS Office no later than the April 15 deadline in order to be eligible for the award.

Send Completed Package to: IEEE Operations Center
EDS Executive Office – Masters Student Fellowship Program
445 Hoes Lane, Piscataway, NJ 08854 USA

For More Information Contact: edsfellowship@ieee.org
Visit the EDS Website: http://eds.ieee.org/eds-masters-student-fellowship-program.html

Announcement of the 2012 EDS PhD Student Fellowship Winners

Meyya Meyyappan
EDS Vice-President of Educational Activities

Agis Iliadis
EDS PhD & Master Student Fellowship Chair

The Electron Devices Society PhD Student Fellowship Program was designed to promote, recognize, and support PhD 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 EDS PhD Student Fellowship winners for 2012. Brief biographies of the recipients appear below. Detailed articles about each PhD Student Fellowship winner and their work will appear in forthcoming issues of the EDS Newsletter.

Bin Gao (S'08) received the B.S. degree in physics from Peking University, Beijing, China, in 2008, where he is currently working towards the Ph.D. degree in microelectronics.

From October 2010 to January 2011, he was a Visiting Student with Nanyang Technological University, Singapore. From March 2012 to June 2012, he was a Visiting Student with Stanford University, USA. He is the author and co-author over 40 papers, including 7 IEDM and VLSI papers. The total citation of his work is over 200. He is a frequent reviewer of EDL, TED, APL, JAP, and Nanotechnology, etc. His current research interests include Resistive switching Random Access Memory (RRAM) design, fabrication, characterization, modeling and simulation, and novel application.

Jacopo Franco received his B.Sc. and M.Sc. degrees in Electronic Engineering from the University of Calabria,

Italy, in 2005 and 2008 respectively. He is currently working in the CMOS Device Reliability group of IMEC, Leuven, Belgium, and in collaboration with the ESAT Dept. of KU Leuven toward his Ph.D. degree on the topic "Interface Stability and Reliability of Ge and SiGe transistors for future CMOS applications." He has authored or co-authored more than 50 publications in international journals and conferences proceedings, and he holds one international patent. In 2009 Mr. Franco received the IEEE Ed Nicollian Award for Best Student Paper at the Semiconductor Interface Specialists Conference.

Shimeng Yu (S'10) received the B.S. degree from Department of Microelectronics, Peking University, China, in 2009, and the M.S. degree from De-

partment of Electrical Engineering, Stanford University, USA, in 2011, where he is currently working toward the Ph.D. degree under the supervision of Prof. H.-S. Philip Wong.

He has been working on the fabrication, characterization, and modeling of the emerging resistive switching memory and its applications for neuromorphic computation system since 2008. He has first-authored one book chapter, and 5 IEDM papers, and tens of papers on this topic appearing in IEEE Trans. Electron Devices, IEEE Electron Device Lett., Appl. Phys. Lett., Nanotechnology, Phys. Rev. B etc. His papers have been cited more than 200 times in the past three years with H-index 9.

He had a summer internship in IMEC, Belgium, in 2011, and a summer internship in IBM T.J. Watson Research Center, USA, in 2012. He was awarded the Stanford Graduate Fellowship 2009-2012, IEEE Electron Devices Society Masters Student Fellowship 2010, and IEEE Electron Devices Society Ph.D. Student Fellowship 2012.

Meyya Meyyappan
EDS Vice-President of
Educational Activities
NASA Ames Research Center
Moffett Field, CA, USA

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

EDS Members Named Recipients Of The 2012 IEEE Medals & Recognitions

Marvin White
EDS Vice-President of
Awards

IEEE Edison Medal

Michael F. Tompsett

Michael F. Tompsett of TheraManager LLC, has been named the recipient of the 2012 IEEE Edison Medal. His citation states, "*For pioneering contributions to imaging devices, including CCD imagers, cameras, and thermal imagers.*"

Michael F. Tompsett's development of the charge-coupled device (CCD) for imaging provided the major technology behind high-quality digital imaging in cameras, and his contributions to night-vision and thermal imaging devices have led to important applications for the military, fire-fighting, and medicine. Dr. Tompsett joined Bell Labs in 1969 with the goal of developing solid-state imaging devices. Dr. Tompsett advanced the charge-coupled concept of Willard Boyle and George E. Smith at Bell Labs by exploiting its potential for imaging applications. Dr. Tompsett and his team were able to capture images with simple linear devices in 1971, and then went on to develop a series of CCD cameras, the first of which captured the first discrete-pixel CCD color image in 1973. Dr. Tompsett led the development of the first full television-resolution CCD camera in 1976. One of the components of Dr. Tompsett's original patent still serves as the basis for today's astronomical and nuclear event imagers. Prior to his groundbreaking CCD research, Dr. Tompsett had made important advances to thermal and night-vision technology working in the United Kingdom from 1966 to 1969. He first invented the uncooled pyroelectric vidicon camera tube to provide electronic scanning at room temperature, replacing large, slow, and low-resolution single-pixel scanners cooled by liquid nitrogen. At the same time Dr. Tompsett invented the first uncooled solid-state thermal imager, which serves as the basis for today's devices used for night vision, fire-fighting, to see through smoke, and for medical imaging. He also has helped

revolutionize the video analog-to-digital converters used today in cameras and mobile phones. An IEEE Fellow, Dr. Tompsett is currently Founder and Executive Director of TheraManager, LLC, Murray Hill, New Jersey.

IEEE Jun-Ichi Nishizawa Medal

Mark Thomas Bohr

Robert S. Chau

Tahir Ghani

Mark Thomas Bohr, Robert S. Chau and Tahir Ghani, of Intel Corp., have been named the recipients of the 2012 IEEE Jun-Ichi Nishizawa Medal. The citation states, "*For sustained leadership in developing innovative transistor technologies for advanced logic products.*"

Mark T. Bohr, Robert S. Chau, and Tahir Ghani have played key leadership roles at Intel Corp. in developing the three biggest changes in transistor technology over the past decade. Their work has allowed the continued shrinking of transistor technology resulting in smaller, faster, and more energy-efficient microprocessors. The first revolutionary change in transistor technology was the team's development of silicon germanium strained-silicon transistors, first described by Dr. Ghani in 2003. Applied in Intel's 90-nm technology node, these transistors were the first material innovations implemented to improve transistor performance without increasing current leakage. This method improves electron and hole mobility in a transistor, providing faster on-off switching and resulting in faster microprocessors. Intel began volume production of the 90-nm transistors in 2003. The team's second contribution to the continued scaling of chips was the high-k metal gate transistor that permitted scaling to the 45-nm generation. This technology overcame the performance and leakage limits presented by not being able to scale the gate dielectric in previous nodes. Intel replaced traditional silicon dioxide materials with a novel high-k dielectric and special metal gate electrode to achieve record-setting transistor performance with dramatically reduced current leakage. Intel began high-volume production of 45-nm microprocessors in 2007. The team's third innovation was the tri-gate transistor featured in Intel's 22-nm processors announced in 2011. Utilizing three sides of tall and narrow silicon fins to provide better gate control of current compared to traditional planar devices, these transistors provide significantly lower operating voltage, lower current leakage, and more "on state" current. This invention allows transistors that are smaller, faster, and use less power than ever before. An IEEE Fellow, Mr. Bohr is currently an Intel Senior Fellow and director of process architecture and integration at Intel Corp., Hillsboro, Oregon, where he has worked since 1978.

IEEE Ernst Weber Engineering Leadership Recognition

Tetsuya Iizuka of THine Electronics, Inc., has been named the recipient of the 2012 IEEE Ernst Weber Engineering Leadership Recognition. The citation states, "*For pioneering de facto standard video chips for moving images and nurturing entrepreneurship in Japan.*"

Tetsuya Iizuka's vision and guidance have driven the development of high-speed video processing chips required for today's demanding flat-panel display applications. Dr. Iizuka founded THine Microsystems in 1991 to concentrate on advancing the video-signal interface technology needed for computers and television displays. Overcoming the many challenges of establishing a start-up venture in Japan, his company has developed breakthrough solutions for low-cost and compact video-signal handling that have become the standards for high-definition moving images. The technology pioneered by Dr. Iizuka has fueled the success of digital video devices including laptops, tablets, and 3D televisions. Under Dr. Iizuka's guidance, THine advanced existing low-voltage differential signaling (LVDS) technology to introduce 10-bit LVDS, in 2003. The 10-bit LVDS chip as a television's internal interface supports 1 billion colors compared to 8-bit LVDS' 16 million colors and was widely accepted as the new value for image quality in television displays. THine also developed the V-by-One HS chip. Considered the next-generation interface for flat-panel displays, this technology can realize 3D television through eight pairs of internal video interface cables compared to the 48 pairs required with LVDS. Dr. Iizuka founded the Japanese Semiconductor Venture Association to improve opportunities for entrepreneurs in Japan and Asia through collaboration with the Global Semiconductor Alliance (GSA). He has played a key role at the GSA as a member of its Asia-Pacific Leadership Council. Dr. Iizuka was also instrumental in Japan's adoption of a new income tax incentive for early stage investments in 2008. An IEEE Senior Member, Dr. Iizuka is currently chief executive officer of THine Electronics, Inc., Tokyo, Japan.

Marvin White
EDS Vice-President of Awards
Ohio State University
Columbus, OH, USA

Report on the IEEE EDS WIMNACT-33 Held in Manipur, India

Manipur, a state in northeast India, has been an isolated place until very recently, when new academic and technical institutes such as the National Institute Technology, Manipur, were established. On April 30 and May 1, 2012, the first EDS Mini-Colloquium (MQ), and 33rd WIMNACT (Workshop and IEEE EDS Mini-Colloquium on NAnometer CMOS Technology) was held at the National Institute of Technology (NIT), Manipur, India. The event was co-sponsored by NIT, Manipur, the IEEE ED Calcutta and Madras Chapters, Tokyo Institute of Technology (TIT), Yokohama, Japan and the National Chiao Tung University (NCTU), Hsinchu, Taiwan.

The MQ began with a welcome address given by Dr. L. Dorendro Singh, Assistant Registrar, NIT Manipur, followed with speeches by Shri. K. Moses Chalai, Ias, and Commissioner, Higher Education and Health & FW, Government of Manipur, Shri K. H. Rajchandra Singh, Controller of Technical Education Manipur Govt. of Manipur. Professors H. Iwai of TIT, Ed. Y. Chang of NCTU, C. K. Sarkar of Jadavpur University, Calcutta, India, and N. Mohankumar of SKP Engineering College, Thiruvannmalai, India, each gave short opening remarks explaining the EDS MQ on behalf of the Society. A welcome speech followed, given by the MQ Chair, Dr. K. H. Manglem Singh, Associate Professor, Department of Computer Science & Engineering, NIT Manipur, Imphal. The opening session ended with a vote of thanks given by Dr. Y. Rohen Singh, Assistant Professor (Mathematics), NIT Manipur.

The theme of the mini-colloquium was "The recent future of Nanoelectronics." Professor Iwai presented an extensive talk starting from the basic to recent developments and highlighted on how future advanced devices would be used in forthcoming integrated circuit technology. Professor Chang spoke on compound semiconductors for the new generation of VLSI technology. Professor Sarkar shared information on recent developments of non-volatile memories considered to be very important for mobile and computer devices. Finally, Professor Mohankumar delivered a talk on advanced CMOS devices in a simple and basic manner, which was very much appreciated. In summary, the MQ provided an exposure of nanoelectronics from very basic to high level development. This was quite beneficial for the knowledge of the 150 participants, especially the young lecturers and students in attendance. A special Question and Answer session on May 1st was very active, with so many questions that it ran over time by more than 30 minutes.

To conclude, the event was very well accepted by the Manipur people and exposed them to the objectives of the IEEE and its chapters. The present MQ program was a real success in establishing IEEE's mission to spread knowledge to all corners of the world, such as remote regions of northeast India in places like Manipur, for the welfare of the local people.

Hiroshi Iwai
Member of EDS Regions/
Chapters Committee
Tokyo Institute of Technology
Yokohama, Japan

C. K. Sarkar
EDS Calcutta Chapter Chair
Jadavpur University
Kolkata, India

Attendees of WINMACT-33 held at the National Institute of Technology, Manipur

IEEE EDS Distinguished Lecturer Visits Kolkata, India

The ED Calcutta Chapter invited Dr. Hiroshi Iwai, an EDS Distinguished Lecturer, to give a talk at the Institute of Engineering and Management (IEM), Kolkata, India, May 28, 2012. Dr. Satyajit Chakrabarti, Vice Chancellor of IEM, delivered the opening remarks about Dr. Iwai's lecture entitled, "*Past and Future of Micro/Nano-Electronic Devices.*" Closing remarks were delivered by Dr. Deepak Chatterjee, Principal. The lecture was expertly prepared and well accepted by the audience of 150 attendees. The DL presented by Dr. Iwai highlighted state-of-the-art nanoelectronics, with mention on future devices such as NANOFET and also on the recent status of High k dielectric materials. Dr. Iwai is a well-known expert on high K. The audience at IEM expressed their gratitude for his excellent talk and extended their invitations to him for future meetings.

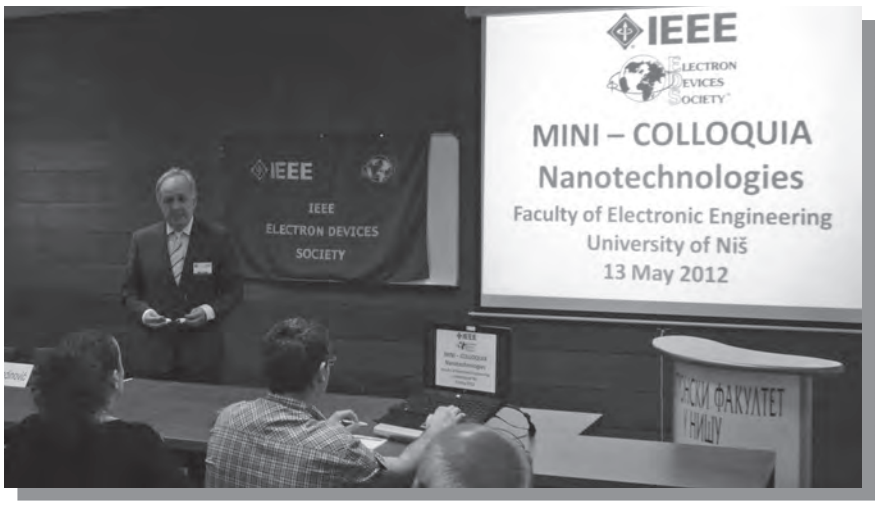
C. K. Sarkar
Jadavpur University
Calcutta, India

Attendees of Dr. Hiroshi Iwai's Distinguished Lecture at the Institute of Engineering and Management (IEM), Kolkata, India

Report on the IEEE EDS Mini-Colloquium Held at the University of Niš, Serbia

An EDS sponsored Mini-Colloquium (MQ) was held on Sunday, May 13, 2012, at the Faculty of Electronic Engineering, University of Niš, Serbia. This Mini-Colloquium was organized in conjunction with 28th International Conference on Microelectronics - MIEL 2012. Detailed information on the EDS MQ can be found: http://miel.elfak.ni.ac.rs/Mini_coloquia_on.htm. The objective of the MQ was to present the topics on nanotechnologies and nanodevices.

The event started with a welcome and opening address by Ninoslav Stojadinović, ED/SSC Chapter Chair for the IEEE Serbia and MontenegroE Section. The opening address was followed by five presentations given by leading experts in the field, including these IEEE EDS Distinguished Lectures: "Quantum Transport in Nanowires and Nanographene" (Vijay Arora, Wilkes University, Pennsylvania, USA), "Challenges of Electrostatic Discharge (ESD) Protection in Silicon Nanowire Technology" (Juin Liou, University of Central Florida, Orlando, Florida, USA), "Quantum Computers: Registers, Gates and



Professor Ninoslav Stojadinović addressing the audience at the IEEE EDS Mini-Colloquium

Professor Juin Liou gives introductory presentation about IEEE and EDS

Algorithms" (Paul Hagouel, Optelec, Thessaloniki, Greece), "Spatial Statistics for Micro/Nanoelectronics and Materials Science" (Enrique Miranda, University of Barcelona, Spain), and "Development of Biomedical Applications of Non-equilibrium Plasmas and Possibilities for Atmospheric Pressure Nanotechnology Applications" (Zoran Petrović, Institute of Physics, Belgrade, Serbia). The event included a coffee break, lunch and welcome cocktail.

The MQ was very well received by the audience of about 55 people, in terms of organization, technical quality of the contributions and opportunities for discussion. All presentations were interactive with active participation by the attendees. The attendance was mainly MIEL 2012 Conference participants and local students and professors. In particular, the students very much enjoyed the possibility to interact with the EDS Distinguished Lecturers.

Ninoslav Stojadinović
ED/SSC Serbia & Montenegro
Chapter Chair
University of Niš
Serbia

Congratulations to the 24 EDS Members Recently Elected to IEEE Senior Member Grade!

Costin Anghel
Eugene Chow
Ravinder Dahiya
Gilles Dambrine
Peter Davies
Takuya Futase
Marc-Alexis Gretillat
Siddhartha Ghosh*
Max Helix
Kenichi Horiguchi
Mona Jarrahi
Gregg Jessen
Kangwook Lee
Yue Liang
Carmen Lilley
Denis Mamaluy
Jose Mazariegos
Katsunori Onishi
Seiji Samukawa*
Doris Schmitt-Landsiedel
Patrick Schuh
Augusto Tazzoli
Katsunobu Yoshimura
Xiaojun Yu

** 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/seniormembers/status.html

To apply for senior member status, fill out the on-line application: http://www.ieee.org/organizations/rab/md/smelev.html. Please remember to designate the Electron Devices Society as your nominating entity!

Report on the IEEE EDS Mini-Colloquium Held in Tokyo, Japan

The first IEEE EDS Mini-Colloquium held in Japan since the Great East Japan Earthquake and Tsunami Disaster on March 11, 2011, and the subsequent Fukushima Nuclear Accident, was held at Tokyo Tech Front (or Koramae Kaikan in Japanese) in Tokyo, October 4–5, 2011. Two hundred attendees from 10 countries got together to encourage a quick recovery to the Japanese electron devices community.

The MQ titled "G-COE PICE International Symposium and IEEE EDS Mini-Colloquium on Advanced Hybrid Nano Devices," was organized with the support of the Electron Devices Society (EDS), Tokyo Institute of Technology (TIT) and the European FP7 NEMSIC Project. On October 4th, the MQ began with a welcome remark by TIT president, Prof. K. Iga, followed by a speech from the ED Japan Chapter Chair, Dr. S. Kimura, who expressed his appreciation for the great support given to Japan from all over the world. The following gave lectures on future advanced hybrid nano-devices: Dr. Tak Ning, (IBM), Dr. Akira Nishiyama (Toshiba), Dr. Carlos Diaz (TSMC), Akira Nishiyama (Toshiba), Prof. Dim-Lee Kwong (IME), Dr. Simon Deleonibus (LETI), Prof. Cor Claeys (IMEC), Dr. Hiromichi Ohashi (AIST), Dr. Hitoshi Wakabayashi (Sony), Prof. Ken Uchida (TIT), and Prof. Hiroshi Iwai (TIT). Following the lectures, the attendees enjoyed almost 60 presentations given by young researchers and students, providing a good opportunity for all to interact with the invited world-famous distinguished lecturers.

On October 5th, other lectures given by Prof. Hiroyuki Fujita (U. Tokyo), Dr. Joost Van Beek (NXP), Prof. Kazuya Masu (TIT), Prof. William Milne (Cambridge Univ.), Prof. Shunri Oda (TIT), Prof. Adrian Prof. Ionescu (EPFL), Prof. Hiroshi Mizuta (Southampton Univ.), Dr. Julia Pettine (IMEC-NL), Dr. Sorin Cotofana (Delft Univ. Tech.), Dr. Daniel Bertrand (Hiqscreen), Dr. Eric Ollier (CEA-LETI; substituted by Dr. Simon Deleonibus), and Dr. Cornel Cobianu (Honeywell), were followed by a 45 minute poster session featuring the same students as the day before.

The MQ commenced with a panel discussion on Advanced Hybrid Nano Devices, and the presentation of best poster awards. This was really a very good opportunity for scientists and engineers to visit Japan after the disaster to communicate encouragement to the Japanese electron devices community, especially the young researchers and students.

Hiroshi Iwai
IEEE Fellow
Tokyo University of Technology
Yokohama, Japan

Shin'ichiro Kimura
ED Japan Chapter Chair
Hitachi, Ltd.
Tokyo, Japan

Participants of WIMNACT held in Tokyo, Japan

EDS Senior Member Program

Jamal Deen
Incoming EDS
Vice-President of
Membership

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 for 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/membership_services/membership/senior/index.html. To apply for Senior Member grade, please complete an application form, which is available at http://www.ieee.org/membership_services/membership/senior/senior_application.html, (you will need to use your IEEE login to access the application form).

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

Thank you for supporting IEEE and EDS.

Jamal Deen
Incoming EDS Vice-President of Membership
McMaster University
Ontario, Canada

IEEE EDS Mini-Colloquium held at the ED Bhubaneswar Chapter

The IEEE EDS Bhubaneswar Chapter organized a mini-colloquium on "*CMOS Technology*" at the Gandhi Institute of Technology and Management (GITAM), Bhubaneswar, April 7, 2012. It was held in conjunction with the IEEE EDS South Asia Chapters Meeting at the same venue. The Mini-Colloquium program consisted of four talks and began with a welcome speech by Dr. C. D. Panda, Chairman of GITAM.

The MQ began with a presentation on IEEE and EDS by EDS Jr. Past-President and Professor at the University of Lousiana at Lafayette, USA, Dr. Renuka Jindal. Dr. Jindal also gave the first technical talk of the program on the topic "*Millib-*

DL Speakers and participants of the MQ at Bhubaneswar. Sitting, from left: Dr. Partha Sarkar, ED Bhubaneswar Chapter Chair; Dr. M. Madheswaran, ED India Council Chapter Chair; Dr. Ramgopal Rao, ED Region 10 SRC Vice-Chair; Dr. Renuka Jindal, ED Jr. Past-President; Dr. M. K. Radhakrishnan, ED Region 10 SRC Vice-Chair and Dr. Bhardwaj Amurtur, ED Bangalore Chapter Chair

its to Terrabits – 60 years of Communication." This was followed by a lecture from EDS Region 10 SRC Vice-Chair, Dr. Ramgopal Rao of IIT Bombay on, *Bio-Nano Devices Development and Applications*. The third talk, by Dr. M. K. Radhakrishnan, EDS Region 10 SRC Vice-Chair, was titled "*Interface Physics Studies in Silicon Nanodevices.*" The last talk given by Prof. Bharadwaj Amrutur of Indian Institute of Science (IISc), Bangalore, was on "*Ultra Low Voltage Operation: Challenges and Opportunities.*" More than 100 participants from various institutions in Bhubaneswar attended and interacted with the speakers.

Partha Sarkar
ED Bhubaneswar Chapter
Jadavpur University
Bhubaneswar, India

M. K. Radhakrishnan
ED Region 10 SRC Vice-Chair
NanoRel
Koramangla, India

QuestEDS is an important benefit of being an EDS member. Interested in knowing why it's not possible to measure the built-in voltage of a PN junction using a voltmeter? Do you need to understand the best way to derive an expression for the average thermal velocity of an electron? Or are you curious about what quantum dots and wires are? The answers to these questions and more are available through the QuestEDS Question and Answer page.

To ask a question not already addressed on the Q&A page, visit www.ieee.org/go/questeds. Technical experts answering the questions posed represent academic, government and industry sectors.

Questions are grouped into five technical categories and two general ones. Technical categories cover subject areas like semiconductor and device physics, process technology, device characterization and quantum electronics. Subject areas addressed are anticipated to expand in the future. Two other categories address questions pertaining to educational activities and general inquiries about society membership. Within a two week time frame from when the question is asked, an answer is posted online. Incoming questions are handled by an editor-in-chief who ensures that they fall within the technical scope of EDS and that they are adequately answered.

For the answers to these recent submissions, visit http://eds.ieee.org/questeds/question-and-answer-page.html, sign-in with your IEEE member login and select the appropriate topic links.

Samar Saha
EDS Vice-President of Publications
SuVolta, Inc.
Los Gatos, CA, USA

Report on the IEEE EDS Mini-Colloquium held in Delhi, India

The IEEE ED Delhi Chapter organized a mini-colloquium titled "Compact Modeling Techniques for Nanoscale Devices and Circuit Analysis," at the University of Delhi South Campus, March 14–15, 2012. It was an attempt to bring together researchers, device and circuit engineers working in the area of developing compact models for emerging MOSFET structures. The objective is to create a forum for discussion among students and experts in the field as well as feedback from technology developers and circuit designers. Seven EDS Distinguished Lecturers gave talks during the two-day program.

Distinguished Lecturers with EDS ExCom members of the ED Delhi Chapter

The MQ began with a lecture by EDS Region 10 SRC Vice-Chair and Director of NanoRel, Dr. M. K. Radhakrishnan on, "*Physical Analysis Challenges and Interface Physics Studies in Silicon Nanodevices.*" EDS Vice-President of Publications and Director of Suvolta, USA, Dr. Samar Saha, gave a talk entitled, "*Advanced Compact MOS Models and TCAD Methodology for VLSI Circuit Simulation;*" Dr. Cher Ming Tan of Nanyang Technological University Singapore, gave an EDS Distinguished Lecture (DL) on "*Physics of Electromigration in Today ULSI Interconnection;*" EDS Distinguished Lecturer, Dr. Anisul Haque, Professor at East West University, Dhaka, delivered a talk on "*Extraction of interface trap densities in High-Mobility Semiconductor MOSFETs.*" The final two DLs of the program were given by EDS Region 10 SRC Chair and Professor at Nanyang Technological University, Dr. Zhou Xing, on "*Unification of MOS Compact Models with the Unified Regional Modeling Approach,*" and Dr. Souvik Mahapatra, Professor at ITT Bombay, on "*Modeling Negative Bias Temperature Instability (NBTI) of p-MOSFETs.*" More than 100 participants from various Universities and Industries attended the program.

Manoj Saxena
ED Delhi Chapter Secretary
University of Delhi
New Delhi, India

M. K. Radhakrishnan
EDS Region 10 SRC Vice-Chair
NanoRel
Bangalore, India

Speakers and attendees at the Delhi MQ program, March 14, 2012

Report on the IEEE EDS Mini-Colloquium at NIST, Berhampur

The IEEE EDS NIST Student Chapter organized a Mini-Colloquium on April 9th at NIST Campus. EDS Junior Past-President, Renuka P. Jindal, from the University of Louisiana, Lafayette, Louisiana, USA, EDS Region 10 SRC Vice-Chair, M. K. Radhakrishnan from Nanorel, Bangalore and IEEE EDS Senior. Member G. N. Dash of NIST on sabbatical from Sambalpur University, were the guests of honor of this occasion. The distinguished professors delivered a series of lectures on "Nanoelectronics" to the EDS members, EDS student members and faculties of NIST.

Dr. G. N. Dash, Dr. Renuka P. Jindal and Dr. M. K. Radhakrishnan (left to right), during the inauguration ceremony of the Mini-Colloquium

M. K. Radhakrishnan
EDS Region 10 SRC Vice-Chair
NanoRel
Bangalore, India

Participants of the IEEE ED NIST Student Chapter Mini-Colloquium

Regional and Chapter News

Europe, Middle East & Africa (Region 8)

Minister of Education and Science of the Republic of Serbia, Dr. Žarko Obradović participated at MIEL 2012, attracting the interest of the local TV media

2012 MIEL

–by Ninoslav Stojadinović

The 28th International Conference on Microelectronics (MIEL 2012) was held on May 13–16, 2012, at the Faculty of Electronic Engineering, University of Nis, Serbia. The conference was organized by the IEEE Serbia and Montenegro Section - ED/SSC Chapter in cooperation with the Faculty of Electronic Engineering (University of Niš), Ei-Holding Co., and National Society for ETRAN, under co-sponsorship of the IEEE Electron Devices Society, in cooperation with the of IEEE Solid-State Circuits Society, and under auspices of Serbian Ministry of Education and Science, Serbian Academy of Science and Arts, Academy of Engineering Sciences of Serbia and City Assembly of Nis.

The Mini-Colloquium (http://miel.elfak.ni.ac.rs/Mini_coloquia_on.htm) held on May 13th attracted a good deal of interest of foreign participants. It was an excellent introduction to the main technical program of MIEL Conference, which consisted of nine regular sessions: Device Physics and Technologies, Power Devices and ICs, Microsystem Technologies, Nanotechnologies, Modeling and Simulation, Reliability Physics, Circuit Design and Testing, Opto and Microwave Devices and System Design. The attendees, 47 domestic and 55 foreign, came from 22 different countries. The total of 8 keynote invited papers and 83 regular contributions (51 in oral sessions and 32 posters) were presented. The conference proceedings (438 pages) were published through the IEEE Conference Publication Program.

The keynote invited speakers were: J. Lutz (Chemnitz University of Technology, Germany), A. Lakhtakia (Pennsylvania State University, USA), S. Oda (Tokyo Institute of Technology, Japan), S. Selberherr (Technical University of Vienna, Austria), T. Grasser (Technical University of Vienna, Austria), K. Roy (Purdue University, West Lafayette, USA), R. Singh (Clemson University, USA), K. Shiraishi (University of Tsukuba, Japan).

Based on evaluation of the quality of the papers and presentations, three Best Paper Awards were presented to Z. Jaksic (Institute of Chemistry, Technology and Metallurgy, University of Belgrade, Serbia) for an oral paper "Redshifting Approach for Nanoplasmonic Enhancement of Semiconductor Infrared Detectors," to A. G. Kozlov (Physical Faculty, Omsk State University, Russia) for a poster paper "Gas Sensors on Ga_2O_3-In_2O_3 Thin Films," and to Y. R. Chen (National Sun Yat-Sen University, Taiwan, R.O.C) for a student paper "Design, Simulation, and Fabrication of a New Poly-Si Based Capacitor-less 1T-DRAM Cell." In addition, *Microelectronics Reliability* journal awarded the paper "Stress-Induced Leakage Current in Lightly Al-doped Ta_2O_5" by E. Atanassova (Bulgarian Academy of Sciences, Bulgaria).

Professor Ninoslav Stojadinović addressing the audience at MIEL 2012 Opening Session

As is among best traditions of MIEL, the social program of this year's conference issue was particularly rich, with a conference banquet and gala-dinner as highlights. Besides the high quality of presentations, MIEL conferences are generally flavored by the friendly atmosphere and great hospitality of the local people. This special charm adds to very positive impressions the participants bring from the conference, and is one of the reasons why one rarely attends MIEL just once: one who comes will almost certainly come again. So, we are very much looking forward to welcoming old and new friends at MIEL 2014.

During a regular session of the 2012 MIXDES conference

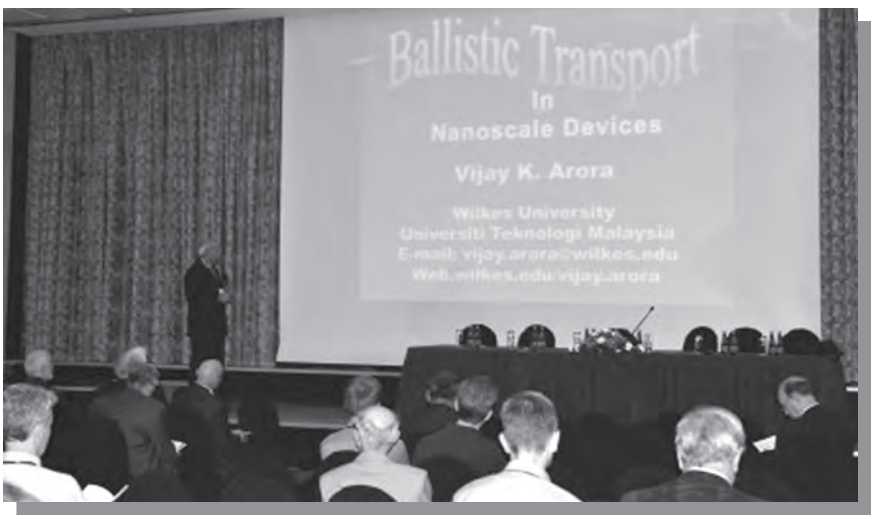
MIXDES 2012

–by Zygmunt Ciota

The 19th International Conference "Mixed Design of Integrated Circuits and Systems" – MIXDES 2012, took place, May 24–25, in Warsaw, Poland. The event was organized by the Technical University of Lodz together with the Warsaw University of Technology and Military University of Technology. This year the conference was organized in frame of the Microwave and Radar Week (MRW) together with the 19th International Conference on Microwaves, Radar and Wireless Communications MIKON-2012 and the 13th International Radar Symposium IRS-2012. The conference was co-sponsored by the IEEE Poland Section ED and CAS Societies and the Polish Academy of Sciences, Committee of Electronics and Telecommunication, Section of Microelectronics and Sections of Signals and Electronic Circuits and Systems.

The conference was attended by more than 150 scientists, coming from 26 countries. The conference program consisted of five invited and 119 regular presentations, organized into oral, poster, and special sessions.

This year the MIXDES 2012 organizing committee had the pleasure to invite five keynote speakers (3 of which are IEEE Distinguished Lecturers):



Invited presentation of IEEE Distinguished Lecturer Vijay K. Arora

- *Ballistic Transport in Nanoscale Devices*, V. K. Arora (University Tekn. Malaysia, Malaysia and Wilkes University, USA)
- *Semiconductor Nanowires for Future Electronic Devices*, H. Riel (IBM Research - Zurich, Switzerland)
- *Simulation and Modeling of Nanoscale Multiple-gate SOI MOSFETs*, B. Iñíguez (University Rovira i Virgili, Spain)
- *Transistor and Interconnect Modeling for Design of Carbon Nanotube Integrated Circuits*, A. Srivastava (Louisiana State University, USA)
- *Trends and Challenges in Micro- and Nanoelectronics for the Next Decade*, C. Claeys (IMEC, Belgium)

In addition to the regular program, four special sessions were organized:

- *Compact Modeling Support for Nanoscaled IC Technology and Design* organized by Dr. Daniel Tomaszewski (Inst. of Electron Techn., Poland) and Dr. Władysław Grabiński (GMC Suisse)
- *Especial TRAMS (Terascale Reliable Adaptive Memory Systems) Project Session* organized by Prof. Antonio Rubio (Universitat Politècnica de Catalunya, Spain)
- *Technologies towards Cognitive Transceivers – Par4CR Project* organized by Dr. Martha Suarez, Ewa Kurjata-Pfitzner and Dr. Jerzy Synka (Institute of Electron Technology, Poland)

- *xTCA for Instrumentation* organized by Dr. Dariusz Makowski (Technical University of Łódź, Poland) and Dr. Stefan Simrock (ITER, France)

Based on evaluations of the quality of the papers and presentations, twelve of the papers received the Best Paper Award. Additionally, Andriana Voulkidou from Aristotle University of Thessaloniki, Greece, received the Young Scientists Contest Award for the presentation of the paper entitled, "*A Low Noise Low Offset Current Mode Instrumentation Amplifier*." Furthermore, the paper entitled *A Novel Charge Recycling Approach to Low-Power Circuit Design* (C. Ulaganathan, C. L. Britton, Jr., J. Holleman, B. J. Blalock – The University of Tennessee, USA) received the IEEE ED Poland Section Society Special Award, presented to them by the Chapter Chairman.

The MIXDES 2013 Conference will take place in Gdynia. The Preliminary Call for Papers is available at http://www.mixdes.org/downloads/call2013.pdf. More information about the past and future MIXDES Conferences can be found at http://www.mixdes.org.

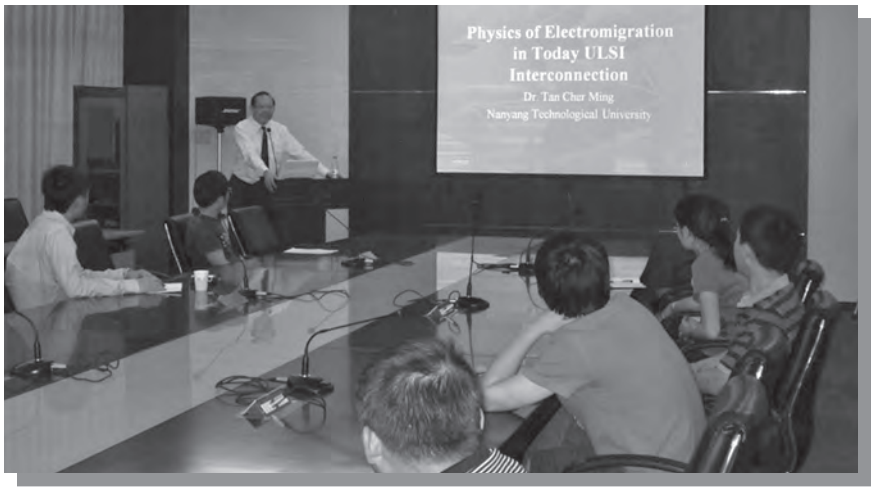
~Zygmunt Ciota, Editor

Asia & Pacific (Region 10)

ED Beijing

–by Jinjun Feng and Yinfu Hu

Prof. Tan Cher Ming, Nanyang Technological University, visited the ED Beijing Chapter and gave a lecture at IME-CAS (Institute of Microelectronics, Chinese Academy of Sciences), May 25, 2012. The lecture was titled by "Physics of Electromigration in Today ULSI Interconnection" and hosted by Prof. Ling Li from the Laboratory of Nano-Fabrication and Novel Devices Integration Technology at IME-CAS. More than 30 researchers and graduate students participated in the lecture.



In his lecture, the impact of electromigration on the reliability issue for ULSI was introduced by Prof. Tan, Cher Ming. With the advanced in technology node in integrated circuit technology, the physics of electromigration has changed, and electron wind force is no longer the sole driving force, and also the commonly used Black Equation is shown to be inaccurate. In the lecture, the basic physics of electromigration and the impact of electromigration to circuit performance were first introduced by Prof. Tan Cher Ming. The driving forces of change in electromigration were shown, using both experimental and modeling approaches. An alternative model to describe the lifetime of interconnection due to electromigration was also presented. At the end of the lecture the attendees discussed with Prof. Tan Cher Ming, the issues on new methods that employ 3D circuit models and the effect of electromigration on the basic building blocks for analog circuit, digital circuit and RF IC.

Before joining Nanyang Technological University (NTU) as a faculty member in 1996, he had 10 years of industrial experience in the Singapore and Taiwan electronics industry. He is the past chair of the IEEE Singapore Section, a Senior Member of IEEE, and a Distinguished Lecturer of the IEEE Electron Devices Society. His work includes the numerical modeling of interconnect reliability, reliability physics of solid state devices, testing methodology for solid state devices reliability, failure analysis of solid state failure, and statistical analysis of device and system reliability.

ED Hong Kong

–by Eric Ma

The IEEE ED/SSC Hong Kong Chapter and the IEEE Hong Kong Section are working together to promote engineering education to the community. In April 2012, they worked with the Creative Primary School to organize a school-based, pull-out gifted education program for students aged 9 to 12 years. The program is under the supervision of Prof. Mansun Chan of Hong Kong University of Science and Technology, along with 15 sets of Electronic Engineering Learning Kits. Funding is supported by the IEEE Hong Kong ED/SSC Chapter and the Li Ka Shing Foundation.

The objective of this program is to stimulate children's abstract and reasoning potentials with engineering (reality) – physics (abstract) exercises to construct a mode of learning in Observation → Experiment → Data Collection → Data Analysis→ Grounded Theory. The Electronic Engineering Learning kits provide children of this age a fun "reality-abstract" journey and gradually build up valuable learning approach in early ages.

In this course, the young children have opportunities to play with electronic components such as resistor, capacitor, diode, battery, switch, fuse, lamp, speaker, and IC to construct various electronic gadgets such as LED lightings, digital counter, oscillator, and electronic piano on breadboards. In addition to the fun games to stimulate the interest of young children to electronic engineering, participants are required to collect data with digital multi-meter and to search for the quantitative relationships of voltages, currents, and resistances, etc. with ultimate goal of formation of grounded theory in expression of mathematics. This is a very important life style in learning, according to Prof. Chan, for a life-long science and technology studies and research.

This program itself is a valuable experiment of other learning experience for young children in Hong Kong to escape from the exam-score driven education system into a whole new world of fun, experiential, and reasoning of knowledge and experience with consistent extension of their curiosity.

ED Taipei

–by Steve Chung

The ED Taipei Chapter held two Distinguished Lectures (DLs) during the second quarter of 2012. Prof. Shunri Oda, an EDS DL, from Tokyo Institute of Technology, Japan, gave a talk on May 3rd at the National Chiao Tung University, Hsinchu. The title of his talk, "NeoSilicon based nano-electromechanical information devices," presented more recent progress on silicon quantum dot based technologies. Prof. Oda introduced fabrication of highly integrated nanocrystalline Si dots with uniform size, non-volatile NEM memory devices with a bistable floating gate, NEM-SET hybrid transistors, and unique transport processes in multiple-coupled quantum dot systems. A variety of new applications, such as ballistic electron surface emitting display, high-efficiency

Participants, professors and students of the ED Taipei Distinguished Lecture on June 18th, the seminar host, Jen-Inn Chyi (first row, 5th from left), and EDS President and Distinguished Lecturer, Paul Yu (6th from left). (Photo on right) Shunri Oda, speaker for May 3rd DL

light-emitting devices and photovoltaic devices is possible in the future.

The second DL was given by EDS President, Professor Paul Yu, on June 18th, at National Central University (near the TPE International Airport). The title of his talk, "A Green Campus and Photovoltaic Research," gave an overview of the various campus wide green projects at the University of California, San Diego. These projects aim at higher energy saving and efficiency and involve PV panel installation, green building design, solar forecasting, and biofuel investigation using algae. Prof. Yu demonstrated novel photovoltaic and photo-electrochemical cells research based on various nanostructures, quantum wells, and nanowires, and the approaches to increase absorption efficiency.

Both of these events were well attended with 30–40 participants each, including students and professors from the local universities.

~Mansun Chan, Editor

ED Kansai

–by Michinori Nishihara

The ED Kansai Chapter held the 10th International Meeting for Future of Electron Devices, Kansai (2012 IMFEDK) at Kansai University Centenary Memorial Hall, Osaka, Japan, May 9–11, 2012, with the theme of "What's the 2nd Mainstream of Device Technology?". In order to celebrate the 10th anniversary, the meeting period was extended to 3 days with technical co-sponsorship from the SSCS Kansai Chapter. The meeting was preceded by a tutorial seminar with two distinguished lecturers: 1) "MTJ based non-volatile SRAM and low power non-volatile logic-in-memory architecture" by Prof. Tetsuo Endoh of Tohoku University; and 2) "The Future of OLED – Light Source and Display" by Prof. Junji Kido of Yamagata University. The formal program began after the tutorial session with opening remarks by the general chair, Prof. Yoichi Akasaka. The three day program featured four keynotes: 1) "Junctionless Transistors" by Dr. Jean-Pierre Colinge of TSMC; 2) "Recent Progress of Germanium MOSFETs" by Prof. Akira Toriumi of the University of Tokyo; 3) "Toward Full Fluctuation Analysis of Small FETs" by Profs. Yiming Li and Hui-Wen Cheng of NCTU and 4) "Highly reliable low power Solid-State Drives (SSDs)" by Prof. Ken Takeuchi of Chuo University. These talks were well aligned with the meeting theme directing the coming new wave in electron device technologies. There also were three special invited papers: 1) "Essence and Technology Direction of ADC Design" by Prof. Akira Matsuzawa of Tokyo Institute of Technology; 2) "Implantable CMOS Biomedical Devices" by Prof. Jun Ohta of NAIST and 3) "New Communication Paradigm by Compelling Wireless Technology" by Prof. Yuichi Kado of Kyoto Institute of Technology. They were thought provocative talks and well accepted by the audience. In addition there were four regular technical sessions with 16 papers and a poster session with 45 posters.

At the end of the meeting the following awards were presented:

- IEEE EDS Kansai Chapter IMFEDK Best Paper Award, to Hiroki Niwa, Jun Suda and Tsunenobu Kimoto of Kyoto University
- IEEE SSCS Kansai Chapter IMFEDK Student Paper Award, to Shunsuke Tanimori of Hiroshima University
- IEEE EDS Kansai Chapter IMFEDK Student Paper Award, to Takamasa Kurumi and Gota Murai (Kyoto Institute of Technology), Masashi Inoue (Ryukoku University), Yasuaki Miyoshi (Kobe University), and Norimitsu Wakama (NAIST)

IMFEDK will continue to encourage and contribute to our student members in the Kansai area by providing opportunities to present their ideas in English, hence extending their technical network to other Asian countries.

ED Tokyo

–by Akira Toriumi and Hiroshi Iwai

Prof. John Robertson, Cambridge University, United Kingdom, visited Japan in May, 2012, and gave Distinguished Lecturers at the University Tokyo, on May 21st and at Tokyo Institute of Technology (TIT), Yokohama, on May 23rd. His lecture topic at University Tokyo was on the passivation mechanism of III-V semiconductors. Prof. Robertson pointed out four essential advantages of Al_2O_3 for III-V compounds: i) avoiding oxidation, ii) low O diffusivity, iii) electron counting and iv) precursor (TMA). More than 30 people attended this lecture and learned much on the III-V interface from a fundamental viewpoint.

Prof. Robertson's lecture at TIT covered the various factors influencing passivation of Ge using La, Hf, or Al oxides or nitridation, in terms

Attendees of the Distinguished Lecture at the University of Tokyo, Tokyo, Japan, May 21, 2012

Participants of the May 23rd DL at Tokyo Institute of Technology, Yokohama, Japan

of interface bonding, band offsets, phase separation and as diffusion barriers. He suggested that LaxGeyOz and Al_2O_3 has useful properties. Many of the 40 lecture attendees were from outside of TIT and received very useful knowledge on the properties of various high-k dielectrics on Ge. The participants were so engaged that the question and answer session following the lecture exceeded the originally scheduled time.

~Kuniyuki Kakushima, Editor

ED/SSC Bangladesh

–by ABMH Rashid & Anisul Haque

Prof. Renuka Jindal, Jr. Past-President of the Electron Devices Society (EDS) and Dr. M.K. Radhakrishnan, EDS Region 10 SRC Vice-Chair visited the ED/SSC Bangladesh Chapter, April 11, 2012. They met the Chapter ExCom, volunteers and members to discuss issues related to operation of the chapters and interactions between the chapters and EDS headquarters. Two EDS DL talks were organized for this occasion at BUET, Dhaka. Prof. Jindal gave a talk titled, "*From millibits to Terabits per second and Beyond – Over 60 years of Innovation,*" and Dr. Radhakrishnan presented a talk on "*Interface Physics Studies in Silicon Nano Devices*." The distinguished lectures were attended by about 100 students and faculty members, including 40 IEEE members.

The Chapter also organized a half-day tutorial on Design Techniques and CMOS Implementation of Low Noise Amplifiers, May 18, 2012, with 40 undergraduate and graduate students, as well as 29 IEEE members participating in the tutorial.

ED Calcutta

–by Atanu Kundu & C.K. Sarkar

The IEEE ED Calcutta Chapter and ED HITK Student Chapter jointly organized a Distinguished Lecturer Program, April 10, 2012, at the Heritage Institute of Technology, Kolkata. The program was attended by Prof. Pranay Chaudhuri, Principal, HITK; Prof. B. B. Paira Director, HITK; Prof. Chandan Kumar Sarkar, ED Calcutta Chapter Chair, and also faculty members and student community of HIT. Two Distinguished Lectures were scheduled beginning with EDS Jr. Past-President Prof. Renuka P. Jindal's lecture on "From milli-bits to terra-bits per second and beyond," followed by "Engineering Evolution in Electronics – VLSI progression," by Dr. M.K. Radhakrishnan, EDS Region 10 SRC Vice-Chair. A large number of under-graduate and graduate students attended the lectures from various Engineering disciplines. The DL program was extremely successful among the students and provided them an opportunity to interact with the Distinguished Lecturers.

During the visit of Prof. Renuka Jindal and Dr. M.K. Radhakrishnan to HITK, Calcutta, the chapter organized

Profs. Renuka Jindal and MK. Radhakrishnan with the ED/SSC volunteers and participants

Prof. Renuka Jindal (first row, 5th from left), Dr. M.K. Radhakrishnan (6th from left) and Chapter ExCom members at HITK Calcutta

an interaction session with students. The session raised many interesting questions about the benefit of being an EDS member and has planned various activities which can be organized by the student community to get interested in the field. A number of graduate and undergraduate students participated in the two hour long interaction session.

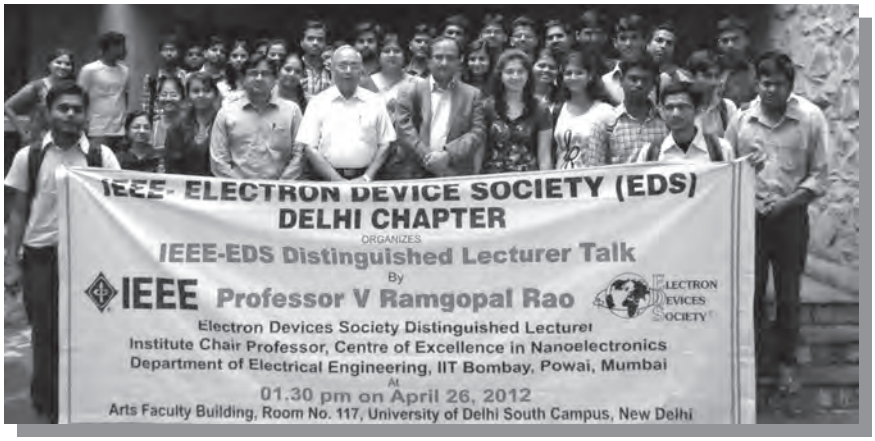
(First row, Left to Right), Dr. Subhasis Haldar, Treasurer, ED Delhi Chapter, Professor R. S. Gupta, Former Chair, ED Delhi Chapter, Professor Renuka Jindal, EDS Jr. Past-President, Dr. Mridula Gupta, Chairperson, ED Delhi Chapter and Dr. Manoj Saxena, Secretary, ED Delhi Chapter

ED Delhi

–by Manoj Saxena & Mridula Gupta

The ED Delhi Chapter organized an EDS Distinguished Lecture by Professor Renuka P. Jindal, IEEE EDS Junior Past-President, on "Nano-FET Fluctuation Physics," April 12, 2012, at the University of Delhi South Campus, New Delhi, India. Dr. Jindal discussed physical understanding of both intrinsic and extrinsic noise mechanisms in an IGFET apart from Intrinsic noise mechanisms including channel thermal noise, induced gate noise and induced substrate noise. The talk was attended by 60 students and faculty members.

On April 26, 2012, the chapter organized a DL by Professor V. Ramgopal Rao, Institute Chair Professor, Centre of Excellence in Nanoelectronics, Department of Electrical Engineering, IIT Bombay, Mumbai, India. His talk titled, "Convergence of Bio-Nano-Information Technologies in the 'More than Moore' Era," discussed usage of organic field effect transistors(OFETs) with region regular poly3-hexylthiophene(rr-P3HT) and hexafluoro-2-propanol-substituted polysiloxsane (SXFA) as an organic layer for detection of explosive vapors with very high sensitivity. More than 100 participants including students and professionals attended the lecture.



Prof. Ramgopal Rao with some of the attendees of the ED Delhi Chapter Distinguished Lecture

~M. K. Radhakrishnan, Editor

EDS MEETINGS CALENDAR
(As of 30 August 2012)

The complete EDS Calendar can be found at our web site:
http://eds.ieee.org. please visit.

01 Oct - 04 Oct 2012
2012 IEEE International SOI Conference
Conf Record :19774
Location: Napa CA , USA
Contact : Joyce Hooper
Tel : +1 818 795 3768
Fax : +1 818 855 8392
E-mail: joyce@imf.la
Deadline : 24 Aug 2012
www :
http://www.soiconference.org/

01 Oct - 05 Oct 2012
2012 23rd European Symposium on Reliability of Electron Devices, Failure Physics and Analysis - ESREF 2012
Conf Record :20004
Location: Cagliari , Italy
Contact : Gaudenzio Meneghesso
Tel : +39 0498277653
Fax : +39 0498277699
E-mail: esref2012@dei.unipd.it
Deadline : 30 May 2012
www : http://www.esref.org

14 Oct - 18 Oct 2012
2012 IEEE International Integrated Reliability Workshop (IIRW)
Conf Record :20174
Location: South Lake Tahoe CA , USA
Contact : Andrew Turner
Tel : +1 802 899 2383
Fax :
E-mail: aaturner@us.ibm.com
Deadline :
www : http://www.iirw.org

14 Oct - 17 Oct 2012
2012 IEEE Compound Semiconductor Integrated Circuit Symposium (CSICS)
Conf Record :19277
Location: San Diego CA , USA
Contact : Lisa Boyd, CMP
Tel : +1 732 562 6359
Fax : +1 732 465 6447
E-mail: l.boyd@ieee.org
Deadline :
www : http://www.csics.org/

10 Dec - 12 Dec 2012
2012 International Conference on Field-Programmable Technology (FPT)
Conf Record :20848
Location: Seoul , Korea (South)
Contact : Soo-Ik Chae
Tel : +82 2 880 5457
Fax : +82 2 880 1691
E-mail: chae@snu.ac.kr
Deadline : 20 Sep 2012
www : http://babel.ssu.ac.kr/ICFPT12/ICFPT2012.htm

10 Dec - 13 Dec 2012
2012 IEEE International Electron Devices Meeting (IEDM)
Conf Record :11148
Location: San Francisco CA , USA
Contact : Ms. Phyllis W. Mahoney
Tel : +1 301 527 0900
Fax : +1 301 527 0994
E-mail: phyllism@widerkehr.com
Deadline :
www : http://www.ieee-iedm.org

12 Dec - 14 Dec 2012
2012 Conference on Optoelectronic and Microelectronic Materials & Devices (COMMAD)
Conf Record :21338
Location: Melbourne , Australia
Contact : Assoc. Prof. Jeffrey C. McCallum
Tel : +61 3 8344 8072
Fax : +61 3 9347 4783
E-mail: jeffreym@unimelb.edu.au
Deadline : 30 Sep 2012
www :
http://commad2012.physics.unimelb.edu.au/

15 Dec - 17 Dec 2012
2012 International Conference on Emerging Electronics (ICEE 2012)
Conf Record :21188
Location: Mumbai , India
Contact : ICEE Secretariat
Tel : +91 22 2576 4435
Fax :
E-mail: icee@iitb.ac.in
Deadline : 31 Aug 2012
www : http://www.icee.org.in

22 Apr - 24 Apr 2013
2013 International Symposium on VLSI Design, Automation and Test (VLSI-DAT)
Conf Record :21321
Location: Hsinchu , Taiwan
Contact : Elodie Ho
Tel : +886 3 5919039
Fax : +886 35820420
E-mail: elodieho@itri.org.tw
Deadline : 31 Jan 2013
www : http://vlsidat.itri.org.tw/2013/General/

22 Apr - 24 Apr 2013
2013 International Symposium on VLSI Technology, Systems and Application (VLSI-TSA)
Conf Record :21322
Location: Hsinchu , Taiwan
Contact : Sherry Chu
Tel : +886 3 5914388
Fax : +886 3 582 0221
E-mail: sherrychu@itri.org.tw
Deadline : 31 Oct 2012
www : http://vlsitsa.itri.org.tw/2013/General/

14 May - 16 May 2013
2013 24th Annual SEMI Advanced Semiconductor Manufacturing Conference (ASMC)
Conf Record :30274
Location: Saratoga Springs NY , USA
Contact : Margaret Kindling
Tel : 1-202-289-0440
Fax :
E-mail: mkindling@semi.org
Deadline : 25 Apr 2013
www : http://www.semi.org/asmc2013

21 May - 23 May 2013
2013 14th International Vacuum Electronics Conference (IVEC)
Conf Record :21029
Location: Paris , France
Contact : Dr. Marinella Aloisio
Tel : +31 71 565 6704
Fax : +31 71 565 4596
E-mail: marinella.aloisio@esa.int
Deadline : 15 Mar 2013
www : http://www.ivec2013.org

15 Oct - 17 Oct 2012
2012 International Symposium on Semiconductor Manufacturing (ISSM)
Conf Record :20968
Location: Tokyo , Japan
Contact : Naoko Tani
Tel : +81335603565
Fax :
E-mail: naoko.tani@semiconportal.com
Deadline : 31 Aug 2012
www : http://www.semiconportal.com/issm/

15 Oct - 17 Oct 2012
2012 International Semiconductor Conference (CAS 2012)
Conf Record :20271
Location: Sinaia , Romania
Contact : Cristina Buiculescu
Tel : +40 21 269 07 7
Fax : +40 21 269 07 7
E-mail: cas@imt.ro
Deadline : 01 Jun 2012
www : http://www.imt.ro/cas

29 Oct - 30 Oct 2012
2012 European Microwave Integrated Circuit Conference (EuMIC)
Conf Record :20432
Location: Amsterdam , Netherlands
Contact : J.G. bij de Vaate
Tel : +31 521 595 100
Fax :
E-mail: vaate@astron.nl
Deadline : 22 Jun 2012
www : http://www.eumweek.com/2012/EuMIC.asp?id=c

31 Oct - 02 Nov 2012
2012 12th Annual Non-Volatile Memory Technology Symposium (NVMTS)
Conf Record :21218
Location: Singapore , Singapore
Contact : Rong Zhao
Tel : +65 68743385
Fax :
E-mail: zhao_rong@dsi.a-star.edu.sg
Deadline : 30 Sep 2012
www : http://www.dsi.a-star.edu.sg/sites/nvmts2012/pages/index.aspx

16 Dec - 20 Dec 2012
2012 24th International Conference on Microelectronics (ICM)
Conf Record :20979
Location: Algiers , Algeria
Contact : Rafik Bradai
Tel : +213 25 43 36 2
Fax :
E-mail: r.bradai@univ-blida.dz
Deadline : 11 Oct 2012
www : http://ieee-icm2012.org/

02 Jan - 04 Jan 2013
2013 IEEE International Nanoelectronics Conference (INEC)
Conf Record :20696
Location: Singapore , Singapore
Contact : Hong Wang
Tel : +6567904358
Fax :
E-mail: ewanghong@ntu.edu.sg
Deadline : 02 Oct 2012
www : http://www.inec2013.org/index.html

12 Feb - 14 Feb 2013
2013 Spanish Conference on Electron Devices (CDE)
Conf Record :21134
Location: Valladolid , Spain
Contact : Dr. Jose Represa Fernandez
Tel : +34 629 732878
Fax :
E-mail: jrepresa@ee.uva.es
Deadline : 11 Jan 2013
www : http://www.cde2013.es

25 Feb - 26 Feb 2013
2013 International Symposium on Next-Generation Electronics (ISNE)
Conf Record :20005
Location: Kaohsiung , Taiwan
Contact : Nai-Hsiang Sun
Tel : +886 7 6577711
Fax : +886 7 6577205
E-mail: snh@isu.edu.tw
Deadline :
www : http://

21 May - 23 May 2013
2013 IEEE Energytech
Conf Record :21305
Location: Cleveland OH , USA
Contact : Prof. Wyatt Newman
Tel : +1 216 368 6432
Fax :
E-mail: wsn@case.edu
Deadline : 01 Apr 2013
www : http://energyTech2013.org

26 May - 30 May 2013
2013 25th International Symposium on Power Semiconductor Devices & IC's (ISPSD)
Conf Record :21023
Location: Kanazawa , Japan
Contact : Dr. Katsumi Satoh
Tel : +81 92 805 3227
Fax : +81 92 805 3881
E-mail: Sato.Katsumi@cb.MitsubishiElectric.co.jp
Deadline : 10 Mar 2013
www : http://www.ispsd2013.com/

03 Jun - 05 Jun 2013
2013 IEEE International Conference of Electron Devices and Solid-State Circuits (EDSSC)
Conf Record :20930
Location: Hong Kong , Hong Kong
Contact : Mansun Chan
Tel : +852 23588519
Fax : +852 23581485
E-mail: mchan@ust.hk,edssc2013@polyu.edu.hk
Deadline :
www : http://www.polyu.edu.hk/feng/edssc2013/

16 Jun - 21 Jun 2013
2013 IEEE 39th Photovoltaic Specialists Conference (PVSC)
Conf Record :20112
Location: Tampa FL , USA
Contact : Dr. Ryne P. Raffaelle
Tel : +1 585 475 2055
Fax :
E-mail: rprsps@rit.edu
Deadline : 16 Jun 2013
www : http://www.ieee-pvsc.org/PVSC39/

05 Nov - 09 Nov 2012
2012 IEEE/ACM International Conference on Computer-Aided Design (ICCAD)
Conf Record :20718
Location: San Jose CA , USA
Contact : Kathy Embler
Tel : +1 303 530 4562
Fax :
E-mail: kathy@mpassociates.com
Deadline : 17 Aug 2012
www : http://www.iccad.com

11 Nov - 15 Nov 2012
2012 International Conference on Advanced Semiconductor Devices & Microsystems (ASDAM)
Conf Record :20460
Location: Smolenice , Slovakia
Contact : Jozef Osvald
Tel : +421 2 5922 295
Fax : +421 2 5477 581
E-mail: elekosva@savba.sk
Deadline : 15 Oct 2012
www : http:///www.elu.sav.sk/asdam/

03 Dec - 05 Dec 2012
2012 IEEE International Conference of Electron Devices and Solid-State Circuits (EDSSC)
Conf Record :20303
Location: Bangkok , Thailand
Contact : Thavatchai Tayjasanant
Tel : +66891433445
Fax :
E-mail: Thavatchai.t@chula.ac.th
Deadline : 30 Jun 2012
www : http://www.EDSSC2012.com

06 Dec - 08 Dec 2012
2012 IEEE 43rd Semiconductor Interface Specialists Conference (SISC)
Conf Record :18720
Location: San Diego CA , USA
Contact : Michel Houssa
Tel : +32 16 32 72 91
Fax :
E-mail: michel.houssa@fys.kuleuven.be
Deadline :
www : http://www.ieeesisc.org/

19 Mar - 21 Mar 2013
2013 14th International Conference on Ultimate Integration on Silicon (ULIS)
Conf Record :21357
Location: Coventry , United Kingdom
Contact : Prof. David Leadley
Tel : +44 2476524114
Fax : +44 2476150897
E-mail: d.r.leadley@warwick.ac.uk
Deadline : 07 Jan 2013
www : http://www.ulisconference.org

25 Mar - 28 Mar 2013
2013 IEEE International Conference on Microelectronic Test Structures (ICMTS)
Conf Record :21133
Location: Osaka , Japan
Contact : Tatsuya Ohguro
Tel : +81 45 776 5697
Fax : +81 45 776 4104
E-mail: tatsuya.ooguro@toshiba.co.jp
Deadline : 14 Jan 2013
www : http://www.see.ed.ac.uk/ICMTS/

12 Apr - 12 Apr 2013
2013 IEEE Workshop on Microelectronics and Electron Devices (WMED)
Conf Record :21252
Location: Boise ID , USA
Contact : Timothy M. Hollis
Tel : +1 208 954 9704
Fax : +1 208 368 3426
E-mail: thollis@ieee.org
Deadline : 08 Feb 2013
www : http://www.ewh.ieee.org/r6/boise/wmed2013/WMED2013.html

14 Apr - 18 Apr 2013
2013 IEEE International Reliability Physics Symposium (IRPS)
Conf Record :16752
Location: Monterey CA , USA
Contact : Phyllis Mahoney
Tel : +1 301 527 0900
Fax :
E-mail: phyllism@widerkehr.com
Deadline : 01 Jan 2013
www : http://www.irps.org

22 Sep - 25 Sep 2013
2013 IEEE Custom Integrated Circuits Conference - CICC 2013
Conf Record :18692
Location: San Jose CA , USA
Contact : Melissa Widerkehr
Tel : +1 301 527 0900
Fax : +1 301 527 0994
E-mail: melissaw@widerkehr.com
Deadline :
www : http://www.ieee-cicc.org

06 Oct - 09 Oct 2013
2013 IEEE Compound Semiconductor Integrated Circuit Symposium (CSICS)
Conf Record :30122
Location: Monterey CA , USA
Contact : Francois Colomb
Tel : +1 978 684 5435
Fax :
E-mail: francois_y_colomb@raytheon.com
Deadline :
www : http://www.csics.org

04 Dec - 07 Dec 2013
2013 IEEE 44th Semiconductor Interface Specialists Conference (SISC)
Conf Record :20912
Location: Arlington VA , USA
Contact : Alexander Demkov
Tel : +1 512 471 8560
Fax :
E-mail: demkov@physics.utexas.edu
Deadline :
www : http://www.ieeesisc.org/

06 Dec - 13 Dec 2013
2013 IEEE International Electron Devices Meeting (IEDM)
Conf Record :11125
Location: Washington DC ,
Contact : Ms. Phyllis W. Mahoney
Tel : +1 301 527 0900 (Ext.103)
Fax : +1 301 527 0994
E-mail: phyllism@widerkehr.com
Deadline :
www : http://

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