IEEE
ELECTRON DEVICES SOCIETY
Newsletter

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General Election Survey

Dear EDS Members,

I am writing to seek your guidance on an important matter affecting the society.

The Members-at-Large of the Board of Governors (formerly Administrative Committee/AdCom) function as the society's main legislative body. They have full voting privileges in elections regarding society business, bylaws and constitution revisions, and for key posts such as President, Treasurer, and Secretary.

Each year, 7 or 8 new Members-at-Large are elected to replace those whose terms are ending. Currently, it is only the sitting Members-at-Large and the EDS Officers who are able to vote in this election. However, EDS is considering having a selected number of Member-at-Large positions voted on directly by the General membership.

To help us determine if such an activity is in the best interest of the society, we have sent a brief survey to all EDS members to gauge the level of interest in such an election and to determine if this is an effort that will benefit EDS. The survey will remain open until May 15, 2013. Please do take the time to complete the survey.

If you have additional comments or need the survey link sent again, please feel free to email me through the EDS Executive Office at eds@ieee.org.

Sincerely,
Paul Yu, EDS President

2013 IEEE Photovoltaic Specialists Conference (PVSC)

TAMPA CONVENTION CENTER

We invite you to join us for the 39th IEEE Photovoltaic Specialists Conference (PVSC), being held June 16–21, 2013, in Tampa, Florida. Since our first meeting in 1961, the PVSC has established itself as the world's leading technical event for scientists, engineers and decision-makers across the full spectrum of PV technologies. What can you expect from our 39th meeting? We're glad you asked.

39th IEEE PVSC Highlights

Tutorials

As always, the week will begin with a series of educational sessions on PV technologies and markets. These 10 tutorials offer valuable insights for everyone from industry newcomers—"Photovoltaics 101"—to veterans looking to expand their understanding in new areas—multi-junction cell technology, challenges and opportunities in distributed generation, etc.

Technical Program

Above all, the PVSC is renowned for its one-of-a-kind technical program, where the world's leading voices in PV present their latest

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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

2013	Term	2014	Term	2015	Term
A. Escobosa	(1)	Z. Celik-Butler	(1)	Daniel Camacho	(1)
J. J. Liou	(1)	M. Chan	(1)	Subramanian S. Iyer	(2)
M. Ostling	(1)	S. Chung	(1)	Meyya Meyyappan	(2)
M.K. Radhakrishnan	(1)	S. Deleonibus	(2)	Arokia Nathan	(2)
R. M. Todi	(2)	F. Guarin	(2)	Michael Shur	(2)
A. Z.H. Wang	(1)	T.L. Ren	(1)	Doug Verret	(1)
X. Zhou	(1)	S. Saha	(2)	Bin Zhao	(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

2013 Symposium on VLSI Technology

The 33rd Annual Symposium on VLSI Technology will be held from June 11–13, 2013, at the Rihga Royal Hotel Kyoto, Kyoto, Japan. This symposium is jointly sponsored by the IEEE Electron Devices Society (EDS) and the Japan Society of Applied Physics (JSAP), and is well recognized as one of the premiere international conferences on semiconductor technology. One of the unique aspects of this conference is that it is held jointly with the Symposium on VLSI Circuits (June 12–14) at the same location. A single registration fee covers both the events. The overlap in the symposia schedules and location promotes interactions between technologists and circuit/system designers in an open forum.

Research results presented at the Symposium on VLSI Technology span a broad spectrum of VLSI technology topics, including:

- New concepts and breakthroughs in VLSI processes and devices including Memory, Logic, I/O, RF, Analog, Mixed-Signal, High-Voltage, Imager, and MEMS.
- Advanced materials, gate stacks, and interconnects in VLSI processes and devices
- Advanced lithography and fine-patterning technologies for high-density VLSI
- New functional devices beyond CMOS with a path for VLSI implementation
- Packaging of VLSI devices including 3D-system integration
- Advanced theory, fundamentals, characterization, analysis, modeling, and reliability for VLSI devices
- New concepts and technologies for VLSI manufacturing

Kyoto, Japan

- Heterogeneous integration of non-Si materials/devices on large Si substrates

In recent years, the Symposium on VLSI Technology has placed a strong emphasis on **Design Enablement** (how new devices, process and materials technologies impact VLSI circuit design and their implications for product performance and cost).

In 2013, the conference will offer joint Technology and Circuits focus sessions comprising of invited and contributed papers in the following two areas of interest:

- Design Enablement, including co-optimization and BEOL RC.
- SRAM: Scaling, cell layout with 3D-transistors, SNM and V_{min} improvement, low voltage operation.

In addition, two technology focus sessions comprising of invited papers will cover the following special areas of interest:

- 3D-system and packaging
- Emerging Memory: novel RAM and NVRAM technologies

One of three rump sessions to be held in the evening of June 12th will be on "**SOC vs. 3D IC in the More-than-Moore Era**." This is one topic of interest to both the technologists and the circuit designers. This joint rump session will complement the two other technology rump sessions covering key issues of interest to the VLSI technical community.

The innovative technical work presented at the conference will be preceded by a one-day short course on "**Technology enablers for the Future Smart Society**" given by experts from academia and industry on June 10. This course offers an excellent opportunity to learn about the latest advances in the FinFET device, interconnect, lithography, sensors and NV memory technology.

Two satellite workshops will be held before the conference. The first workshop on "Silicon Nanoelectronics" will be held on June 9–10, 2013. This workshop is sponsored by the IEEE Electron Devices Society. The second workshop on "Spintronics for LSI" will be held on June 10, 2013. This workshop is supported by the Japanese government.

Other unique features of the Symposium on VLSI Technology are its spirit of international collaboration

and its informal atmosphere, which promotes discussion and debate on new ideas and technology directions. The Symposia location alternates between the United States and Japan, giving it a true international setting. Over 450 participants from around the world attended the 2012 Symposium on VLSI Technology in beautiful Honolulu, Hawaii, US.

The 2013 venue in Kyoto, Japan offers many attractive aspects of Japanese culture, such as natural scenery, temples, shrines, towns and homes intermingling with a poignant historical beauty. A banquet hosted by the symposia offers attendees an opportunity to enjoy various Japanese foods and tradition. The Rihga Royal Hotel Kyoto, located near Kyoto station, offers both a traditional and modern style hotel stay and is convenient to go anywhere in Kyoto. The hotel is easily accessible by 10-minute walk or by shuttle bus from Kyoto station.

For further information, please visit the symposia website at http://www.vlsisymposium.org or contact the following conference secretariats:

Secretariat for VLSI Symposia (Japan)
c/o ICS Convention Design, Inc.
Chiyoda Bldg. 1-5-18 Sarugakucho
Chiyoda-ku, Tokyo 101-8449, Japan
Tel: +81 3 3219 3541
Fax: +81 3 3219 3626
E-mail: vlsisymp@ics-inc.or.jp

Secretariat for VLSI Symposia (USA)
Widerkehr and Associates
19803 Laurel Valley Place
Montgomery Village, MD 20886 USA
Tel: +1 301 527 0900, ext. 2
Fax: +1 301 527 0994
E-mail: vlsi@vlsisymposium.org

We cordially invite you to attend the 2013 Symposium on VLSI Technology to learn about recent state-of-the-art advancements in semiconductor technology and to take advantage of the opportunities for technical interactions and cultural exchange offered by the Symposium!

Hitoshi Wakabayashi (Japan)
Symposium Chairman
Sony Corporation

Klaus Schruefer (Germany)
Symposium Co-Chairman
Intel Mobile Communications

Toshiro Hiramoto (Japan)
Program Chairman
University of Tokyo

Raj Jammy (USA)
Program Co-Chairman
SEMATECH

2013 IEEE International Interconnect Technology Conference (IITC)

The IEEE-sponsored International Interconnect Technology Conference (IITC) will be held in Kyoto, the cultural capital of Japan, this year. IITC is the semiconductor industry's premier interconnect conference and is dedicated to the advancement of interconnect solutions, featuring technical presentations on all aspects of interconnections for device, circuit- and system-level applications. Scheduled for June 13–15, 2013, at the Kyoto Research Park in Kyoto, Japan, the IITC is expected to draw professionals in semiconductor design, processing and manufacturing technology from industry, academia, and equipment suppliers around the world. IITC will be held in a location near to the IEEE VLSI Technology Symposium, which will also be held in Kyoto (June 10–13).

Golden Pavillon

Recognizing the industry's need to look at disruptive interconnect solutions in the long term, the 16th annual IITC will feature sessions dedicated to carbon-based interconnects and 3D integration. Other important topics for IITC 2013 include material enhancements for performance and reliability, the integration of large scale interconnect systems, aggressive pitch scaling options, and copper barrier technology.

IITC 2013 continues to address fundamental interconnect performance issues, with presentations in the areas of process integration (for logic and/or memory); reliability; advanced interconnects and systems interconnections; through-silicon vias and 3D integration; packaging; novel materials and concepts;

process modeling, and all back-end materials and unit processes associated with interconnect technology, including in-depth explorations of related manufacturing issues.

The IITC rotates its location between Asia, the US, and Europe. In 2012, IITC was held in San Jose, USA. In 2011, IITC was held in conjunction with Materials for Advanced Metallization (MAM) conference in Dresden, Germany. The 2014 IITC will be held in San Jose.

Oral and poster presentations at IITC 2013 will include the following topics:

Materials and Unit Processes
- Dielectric materials and associated deposition
- Metal deposition, planarization and patterning processes/equipment
- Novel or improved tools for interconnect metrology

Carbon-based Interconnects
- Carbon nanotube vias
- Carbon-nanotube and grapheme interconnects

3D Processes and TSV
- Materials, process integration, 3D with memory, interactions with packaging, reliability

Process Integration and Chip Package Interactions
- Multilevel interconnect processes, novel interconnect structures, contact/via integration, metal barrier and materials interface issues
- Integration processes and issues specific to logic or memory
- Novel non-volatile, interconnect embedded memories

Process Modeling
- CMP, metal/dielectric deposition and etching processes

Reliability
- Metal electromigration and stress voiding, dielectric integrity, thermal effects, passivation issues, interconnect reliability prediction/modeling.

Back-End Memories
- Memory Materials like Phase Change Memory (PCM), Resistive RAM (RRAM), Conductive Bridge RAM (CB-RAM) and Magnetoresistive RAM (MRAM).

Interconnect Systems
- Interconnect performance modeling and high frequency characterization
- Interconnect system integration, novel architectures and advanced interconnect concepts

Novel Materials and Concepts
- Optical interconnects, other new materials for interconnects.

Supplier Exhibits and Seminars

Supplier exhibits and seminars are included as an integral part of the IITC technical program. Held on the first and second days of the conference, the supplier seminars offer additional learning and networking opportunities, and provide alternative forums to address specific technological challenges.

The IITC conference website is http://www.ieee.org/conference/iitc. For additional information and inquiries regarding supplier exhibits and seminars, please contact Andrew McKerrow, Sponsorship Chair at Andrew.McKerrow@lamresearch.com.

General Co-Chairs of IITC 2013
Shinichi Ogawa
AIST

Azad Naeemi
Georgia Institute of Technology

Andreas Klipp
BASF Electronic Materials

2013 IEEE Photovoltaic Specialists Conference (PVSC)

(continued from page 1)

findings and offer forward-looking insights on the future of the industry. For the 39th meeting, we have combed through more than 1,000 submissions to bring you an unparalleled educational experience across 11 core areas:

Area 1: *Fundamentals and New Concepts for Future Technologies*
Area 2: *Chalcogenide Thin Film Solar Cells and Related Materials*
Area 3: *III-V and Concentrator Technologies*
Area 4: *Crystalline Silicon Photovoltaics*
Area 5: *Thin Film Silicon-based PV Technologies*
Area 6: *Organic Photovoltaics*
Area 7: *Space Technologies*
Area 8: *Characterization Methods*
Area 9: *PV Modules and Terrestrial Systems*
Area 10: *Reliability of PV*
Area 11: *PV Velocity Forum*

As you might have noticed, the committee has added a new area to our program for 2013: Reliability of PV. As the global market continues to mature, long-term system reliability is becoming an increasingly important discussion point. We are excited to delve into this area and look forward to learning

more from the experts who know it best.

We also offer our strongest authors the opportunity to earn global recognition for their accomplishments in one of the industry's leading peer-reviewed outlets, the *IEEE Journal of Photovoltaics.*

The William R. Cherry Award

Each year, the PVSC honors an individual who has dedicated his or her career to advancing the science and technology driving PV toward widespread adoption. In 2012, the Cherry Committee recognized Dr. Sarah Kurtz, a principal scientist and group manager with the National Renewable Energy Laboratory, for her significant contributions in the areas of multi-junction solar cells and PV systems reliability. Who will take home our top prize in 2013? Stay tuned.

Student and PV Jobs Programs

Each year, we welcome budding young PV scientists and engineers from around the world to experience the PVSC in a unique way. Graduate students are invited to check out our assistant program, which offers a behind-the-scenes conference experience with our planning committee supported by travel stipends. Additionally, outstanding student presentations will be honored with high-profile awards—an excellent addition to any CV. Speaking of CVs, students preparing to enter the professional world will benefit greatly from our PV Jobs program, which offers opportunities to connect with representatives from global organizations eager to meet the next generation of industry leaders.

Ryne Raffaelle, General Chairperson, 39th IEEE PVSC

Exhibition Opportunities

We've taken care to design our hall space in the Tampa Convention Center to maximize opportunities for PVSC exhibitors. Is your company looking to showcase its latest technology or service to decision-makers from across the industry? If so, this is the place for you.

Social Program

While we're always excited to reconnect with peers and share our latest research at the PVSC, we also value this week as an opportunity to spend some quality time with our loved ones, away from home. Our robust social program offers friends and families of PVSC delegates the chance to experience Tampa in all its glory, from guided tours to tasty restaurants to zoo and aquarium packages. Come prepared for a week of fun in the sun!

Travel and Hotel Accommodations

PVSC attendees can take advantage of discounted rates on airport shuttle services and local hotel stays during their time in Tampa. Previous years have shown that these spots will fill quickly, so we recommend planning ahead.

As you can see, we are truly excited for the 39th edition of the Photovoltaic Specialists Conference. Ready to register? We offer a variety of participation options, including one-day passes and special rates for students and companions. Early-bird rates end on April 30, so take advantage before it's too late. See you in Tampa!

For more information on the 39th IEEE PVSC, please visit www.ieee-pvsc.org.

Ryne Raffaelle
General Chairperson
39th IEEE PVSC
Vice President
Rochester Institute of Technology

Are you a student or recent graduate attending the PVSC?

If so, come to the PVSC Student Mixer, sponsored by the IEEE Electron Devices Society GOLD (Graduates of the Last Decade) Committee. Join us for an informal reception with a brief presentation about EDS, followed by a mixer with free food. It is a great opportunity to get to know fellow students and recent PV graduates just as the conference kicks off. Visit Student Central (http://www.ieee-pvsc.org/PVSC39/pages/student-central-mixer.php), on the PVSC website for location and time updates. **See you there!**

Society News

December 2012 BoG Meeting Summary

Fernando Guarin
EDS Secretary

The 2012 end of year meeting of the IEEE Electron Devices Society Board of Governors (BoG), took place in San Francisco on December 8 and 9, 2012. The Agenda and motions passed were as follows:

Agenda

- Welcome & President's Report: Paul Yu
- ExCom Realignment: Albert Wang
- Division 1 Director's Report: Cor Claeys
- Secretary's Report: Fernando Guarin
- Treasurer's Report: Ravi Todi
- Meetings & Conferences Report: Bin Zhao
- Technical Activities Report: Joachim Burghartz
- Regions & Chapters Report: Juin Liou
- Educational Activities Report: Meyya Meyyappan
- IEDM General Chair's Report: Veena Misra
- EDS GOLD Update: Daniel Camacho
- Membership Report: Jamal Deen
- Publications Report: Samar Saha
- Awards Report: Marvin White
- Nominations & Elections Report: Renuka Jindal
- Region 10 SRC Report: Joe Zhou
- IEEE Sensors Council Representative's Report: Zeynep Celik-Butler
- EDL Editor-in-Chief Report: Amitava Chatterjee
- T-ED Editor-in-Chief Report: John Cressler
- J-EDS Editor-in-Chief Report: Renuka Jindal
- T-SM Editor-in-Chief Report: Sean Cunningham
- Semiconductor Manufacturing Committee Report: Rajendra Singh
- Closing Remarks: Paul Yu

Motions

President's Report

To approve the proposed list of 2013 committee appointments. MOTION APPROVED UNANIMOUSLY

To endorse the creation of an Ad-Hoc Committee to review the consistency and alignment of the EDS Bylaws and Constitution. MOTION APPROVED UNANIMOUSLY

Secretary's Report

To approve the June 2012 AdCom meeting minutes. MOTION APPROVED UNANIMOUSLY

Meetings and Conferences Report

To approve the EDS financially sponsored or co-sponsored conferences on the 2014 Repeat conferences financial list. MOTION APPROVED UNANIMOUSLY

To approve the following EDS position on Establishing Fees for Technical Co-sponsorship: *"Because of the high possibility in IP loss and negative financial impact, EDS opposes universally charging conferences, particularly those of high quality and long history with IEEE, for Technical Co-sponsorship."* MOTION APPROVED by majority (one against)

Closing Remarks

To adjourn the meeting. MOTION APPROVED UNANIMOUSLY

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

Celebrated Member Leo Esaki with EDS Colleagues

A Message from the Outgoing Editor-in-Chief

Ninoslav D. Stojadinović

As the outgoing Editor-in-Chief (EIC) of the EDS Newsletter, it is my privilege and opportunity to address you for a last chance and update you on the status of our Newsletter. As some of you may recall, I replaced Prof. Krishna Shenai in 2002 and I have served as the EIC since then. It has been a great pleasure to work with all of you in various capacities in the past years of my service. Our Newsletter has been subjected to major changes in the meantime to improve its look and visibility, and we have also done our best to maintain good practices, such as increased coverage of chapters and reporting on EDS activity around the world, making the Newsletter the primary vehicle for members to keep in touch with society news and events. I have enjoyed my work a great deal and I am certain that our new EIC, Dr. M.K. Radhakrishnan, will provide you even better service and dedication in the coming years. As I depart, I want to thank all EDS members and volunteers for their sustained support, as well as Christopher Jannuzzi and his staff at the EDS Executive Office for their outstanding service over the years.

Ninoslav D. Stojadinović
Faculty of Electronic Engineering
University of Niš
Serbia

Celebrated Member – Leo Esaki

Leo Esaki was born in Osaka, Japan in 1925. Esaki completed work for a B.S. in Physics in 1947 and received his Ph.D in 1959, both from the University of Tokyo. Esaki was an IBM Fellow and engaged in semiconductor research at the IBM Thomas J. Watson Research Center, Yorktown Heights, New York, from 1960 to 1992. Prior to joining IBM, he worked at the Sony Corp. where his research on heavily-doped Ge and Si resulted in the discovery of the Esaki tunnel diode; this device constitutes the first quantum electron device. Since 1969, Esaki had, with his colleagues, pioneered semiconductor superlattices and resonant tunneling, exploring a new quantum regime in the frontier of semiconductor physics.

The Nobel Prize in Physics (1973) was awarded in recognition of his pioneering work on electron tunneling in solids. Other awards include the Nishina Memorial Award (1959), the Asahi Press Award (1960), the Toyo Rayon Foundation Award for the Promotion of Science and Technology (1960), the Morris N. Liebmann Memorial Prize from IRE (1961), the Stuart Ballantine Medal from the Franklin Institute (1961), the Japan Academy Award (1965), the Order of Culture from the Japanese Government (1974), the American Physical Society International Prize for New Materials (1985), the IEEE Medal of Honor (1991), the Japan Prize (1998) and also the Grand Cordon of the Order of the Rising Sun, First Class from the Japanese Government (1998).

Dr. Esaki was elected a Fellow of the American Academy of Arts and Sciences (1974), a member of the Japan Academy (1975), a Foreign Associate of the National Academy of Science (1976) and the National Academy of Engineering (1977), a member of the Max-Planck-Gesellschaft (1989), and a foreign member of the American Philosophical Society (1991), Russian Academy of Sciences (1994), and Italian National Academy of Science (1996).

After returning to Japan, he assumed the position of President, University of Tsukuba from 1992 to 1998, President, Shibaura Institute of Technology from 2000 to 2005, President, Yokohama College of Pharmacy from 2006, and also President, Science Academy of Tsukuba from 2000.

He suggests a list of "five don'ts" which anyone with an interest in realizing his or her creative potential should follow. Who knows, it may even help you win a Nobel Prize. Rule number one: Don't allow yourself to be trapped by your past experiences. Don't hold on to your preconceived notion. You should be a free spirit. Looking back at history, most laureates have received the Nobel Prize for work done during their thirties. Esaki was 32 years old when he discovered the "Esaki tunnel diode." Because of their candor, younger people are able to look at things with a clearer vision, one that is not clouded by social conventions and past history. Rule number two: Don't allow yourself to become overly attached to any one authority in your field—the great professor, perhaps. By becoming closely involved with the great professor, you risk losing sight of yourself and forfeiting the free spirit of youth. Although the great professor may be awarded the Nobel Prize, it is unlikely that subordinate researchers will ever receive it. Rule number three: Don't hold on to what you don't need. The information-oriented society facilitates easy access to an enormous amount of information.

The human brain, however, has not really changed much since ancient times. Therefore, we must constantly be inputting and deleting information and we should save only truly vital and relevant information. Rule number four: Don't avoid confrontation. At times, it is necessary to put yourself first and to defend your own position. The point is that fighting is sometimes unavoidable for the sake of self-defense. Rule number five: Don't forget your spirit of childhood curiosity. It is the most vital component of imagination.

Celebrated Member – Chih-Tang Sah

Chih-Tang Sah is the Academician Professor in the Physics Department of Xiamen University, Xiamen, China since April 2010. He has been studying silicon diodes and transistors for 70 years since 1942, when a lightening fireball passed over his head and burnt open the 100-foot-long radio antenna of the Xiamen University Radio Physics Laboratory in Changting, Fujian, China.

He taught at two American Universities for 50 years from 1961 to 2010, and directed 50 doctoral and 35 MS theses in Physics and in Electrical and Computer Engineering. He also directed the research of 50 industrial and academic post-doctoral associates. With his graduate students and research associates, he published about 300 journal articles, and gave about 150 keynotes and invited talks in China, Europe, Japan, Singapore, Taiwan and the United States, on transistor physics, technology, and evolution history.

He was listed in a survey released in 1981 by the Institution of Scientific Information (ISI) of Philadelphia as one of the world's 1000 most cited scientists during 1965–1978. Professor Sah published a 3-volume best-seller textbook (1991, 1993, 1996) on transistor electronics for college sophomores and juniors, which are still in use today, titled Fundamentals of Solid-State Electronics. Sah has also edited about ten monographs on compact transistor models and integrated circuit invention history, published in the World Scientific Publishing Company series, ASSET (Advances in Solid- State Electronics and Technology), which he founded in 1991. Tang Sah and his late younger brother, Chih-Han (Han) Sah were brought over to the United States in 1949 by the late William and Dorothy Everitt to start their college education at the University of Illinois in Urbana-Champaign (UIUC). In June 1953, Tang received two BS degrees (Physics and Electrical Engineering) from UIUC. He then went to Stanford and received the MS (1954) and PhD (1956) degrees, on the external circuit traveling tubes, under the tutelage of Karl Spangenberg. Tom Sah's industrial career in solid-state electronics began (1956–1959) under William Shockley. With Robert N. Noyce, they published a most cited, seminal paper on silicon diodes and transistors (Sah, Noyce, Shockley, *Proc IRE* 45:1228, 1957). He continued (1959–1964) at the R&D Laboratory of Fairchild Semiconductor Corporation with Noyce and Gordon E. Moore, where he helped hire, direct and manage a transistor Physics and Technology team of 64 members who developed the first generation manufacturing technology of silicon bipolar and MOS field-effect transistors and integrated circuits.

While at the universities, Tom Sah continued to help the semiconductor manufacturing companies (including IBM, Intel, and TSMC) by giving technology advices to his former graduate students who were running their companies. He also served as a consultant to several US government agencies while teaching at UIUC. For contributions in transistor physics, in integrated circuit manufacturing technology, and in bringing up his graduate students and associates who have advanced the silicon integrated circuit industry, Chih-Tang Sah has been recognized six times by the IEEE Electron Devices Society (EDS): the Browder J. Thompson best paper prize for an author under thirty (1962); a Fellow (1969); a Life Fellow (1995); the J. J. Ebers (1981) and Jack Morton (1989) Awards; and the EDS Celebrated Member (2012) to serve as a role model. He was also elected (1971) a Fellow of the American Physical Society for completing five Physics PhD theses. For these efforts, he was given the Franklin Institute Certificate of Merit on MOS technology (1975), and recognized by the two Industry Associations, the first Achievement Award in High Technology (1984) from the Asian American Manufacturing Association in San Jose, California and the fourth University Research Award (1998) from the United States Semiconductor Industry Association (US SIA).

He was conferred the Doctor Honoris Causa (1975) by K. Universiteit de Leuven, Belgium, the honorary doctorate (2003) by Taiwan Chao-Tung University, and the National Honorary Doctorate of China (2010) nominated by Xiamen University. He has been appointed an Honorary Professor by three Universities in China, Peking (2002), Tsinghua (2003) and Xiamen (2004). He was given the first Pioneer Recognition Award (2002) by US Committee-100, and the second annual Distinguished Lifetime Achievement Award (2003) by the Asian American Engineer of the Year (AAEOY), nominated by the Chinese

Institute of Engineers (CIE/USA). He was elected a member of the US National Academy of Engineering (1986), Academia Sinica in Taipei (1998) and Chinese Academy of Sciences in Beijing (2000). Tom was married to the late Linda Su-Nan Chang (1959–2003). They have two children, Dinah and Robert. Tang is the eldest son of the late American educated (1922–1928) Chinese Physicist Adam Pen-Tung Sah and the late three-record-breaking (1930) Chinese Olympian and American college mathematics professor Susan Shu-Sheng Huang.

The IEDM Entrepreneurs Lunch

Sponsored by IEDM and EDS Women in Engineering

The IEDM Entrepreneurs Lunch, held each December at the IEEE International Electron Devices Meeting, features inspiring talks by innovators in the electron devices field. We were extremely fortunate to have Weili Dai, co-founder of Marvell, as our most recent speaker, with Thuy Dao, from Freescale Semiconductor, as the moderator.

Weili Dai is one of the most successful women entrepreneurs in the world today. Widely considered a technology visionary, she is the only woman co-founder of a global semiconductor company, and since it began in 1995, she has helped Marvell's rise to become one of the top semiconductor companies in the world. Ms. Dai's business acumen, strategic thinking, product leadership, endless passion and personal network have contributed greatly to Marvell's fast rise to success. Her close relationship with her customers and the foundation of the trust shared pivotal role in creating some of the Company's most important strategic partnerships and under her leadership Marvell's technology has become an integral component of many of the world's most important products in enterprise, communications, mobile computing, consumer and emerging markets. She has also become a driving force in expanding access to technology in the developing world and an ambassador of opportunity between the US and China, particularly in the arenas of education and green technology. Ms. Dai has become a powerful advocate for the better use of technology to improve the human condition.

For her contributions to technology and society, Newsweek named Ms. Dai one of the "150 Women Who Shake the World" and was recently profiled by CNN International for the Leading Women Series: Leading the Female Tech Charge, Leading Women Principles Fair and Care, Educating for Future Success, and Leading Women Inspire Others. Additionally, Forbes Magazine lists Ms. Dai as one of the World's 100 Most Powerful Women.

Ms. Dai has held a number of significant positions within Marvell since she co-founded the Company: she has served as Chief Operating Officer, Executive Vice President, and General Manager of the Communications Business Group. She has also been a Director of Marvell Technology Group Ltd. and Corporate Secretary of the Board. Prior to co-founding Marvell, Ms. Dai was involved in software development and project management at Canon Research Center America, Inc. Ms. Dai holds a Bachelor of Science degree in Computer Science from the University of California at Berkeley.

Report from IEEE EDS Technical Committee on Semiconductor Manufacturing

Rajendra Singh
EDS SMTC Chair

The objective of this committee is to chart future directions for the Electron Devices Society in the field of semiconductor manufacturing. For 2013, the committee consist of following individuals:

Committee Chair
Rajendra Singh, Clemson University, USA

Committee Members
Sean Cunningham, Intel Corporation, USA

Alain Diebold, Albany University, USA

Mohammed Fakhruddin, Xilinx, USA

Dale L. Hetherington, Sandia National Laboratories, USA

Hidetoshi Koike, Toshiba Corporation, Japan

Bo Lojek, ATMEL Corporation, USA

Lothar Pfitzner, Fraunhofer Institute, Germany

Klaus Schuegraf, Cymer Inc., USA

Krishna Shenai, Argonne National Laboratory, USA

David Seller, National Institute of Standards and Technology., USA

Thomas Skotnicki, ST Microelectronics, France

Geoffrey Yeap, Qualcomm, USA

Zhiping Yu, Tsinghua University, China

During the IEEE EDS BoG meeting held in conjunction with the IEDM in San Francisco, Californa in December 2012, the chair presented the past and planned activities of the committee. The general mode of operation of the committee consists of conference calls, face-to-face meeting at the IEDM each year, and routine e-mails and phone calls.

Three members of the committee (Rajendra Singh, Klaus Schuegraf and Alain Diebold), Luigi Colombo and Robert Doering of Texas Instruments, Inc., are contributing authors of "Chapter 10: Semiconductor Manufacturing" of the *Guide to State-of-the-Art Electron Devices*, Joachim Burghartz, Ed., that will be published in 2013 by Wiley.

Semiconductor manufacturing is at a critical stage of innovation. At the present time 22 nm technology node based products are in widespread use and in the near future the industry will start manufacturing products based on 14 nm technology node. For sub-10 nm technology node, increased R &D cost, decreasing average selling price (ASP), and sustained profitability are main innovation challenges. The "bottom up" approach of self-assembly (popularly known as "Nano World," "Post Moore's Law," and "Post Silicon CMOS," etc.) has not delivered any path that can be adopted in semiconductor manufacturing. Failure to manufacture sub-10 nm products will have catastrophic effects on increased human productivity and global economic growth. In order to address this challenge, in conjunction with SEMI Advanced Semiconductor Manufacturing Conference, ASMC 2013, May 14–16, 2013, Rajendra Singh and Klaus Schuegraf are planning to organize a Workshop on Semiconductor Manufacturing below 10 nm node.

Committee members Hidetoshi Koike and Mohammed Fakhruddin are planning a special session at the next International Symposium on Semiconductor Manufacturing (ISSM) and a special issue of IEEE Transaction on Semiconductor Manufacturing (TSM) on Green Manufacturing. The topics to be covered in green manufacturing are greenhouse gas (GHG) emission reduction and control, waste reduction, material conservation, energy conservation, low-power IC manufacturing, easily recycle IC, bio degradable materials, reuse semiconductors, and socially responsible IC manufacturing.

A sub-committee chaired by Krishna Shenai has been formed to accelerate the manufacturing of semiconductor products based on wide band gap semiconductors, including silicon carbide (SiC) and III-Nitrides, particularly gallium nitride (GaN). After nearly three decades of R&D, these semiconductors are ripe for high-volume applications in power electronics, communication, sensors, solid-state lighting, and photovoltaics. Collectively, the global annual market for these semiconductor devices is about 100 billion US dollars. There are still daunting challenges in materials and packaging technologies. For example, crystallographic defect densities in both SiC and GaN are several orders of magnitude higher compared to silicon (< 1 defect per square centi-meter). These material defects, which are predominantly dislocations and stacking faults, critically control manufacturing yield and cost; additionally they may have deleterious impact on product reliability and performance, especially when used in power electronics switching applications. The key manufacturing challenges therefore stem from starting material quality and cost. In order to address this challenge in a vertically integrated manner—from materials to systems—Krishna Shenai organized two industry-university-government workshops. The first workshop was held at the Argonne National Laboratory in Chicago, Illinois on September 11, 2012; and, the second workshop was held at the University of Maryland, College Park, Maryland on October 23, 2012, with support from CALCE Reliability

Center. These workshops were attended by more than 100 industries and universities with representation from major federal agencies. The general consensus was that a vertically integrated national effort focused on improving the manufacturing of SiC and GaN power semiconductor devices is imminently needed in order to drive down the cost while delivering reliable products. To continue the momentum developed at these Workshops, Krishna Shenai has organized an International Advisory Committee to explore and advance the WBG power semiconductor initiative world-wide. He has also founded an annual symposium on this topic that is being sponsored currently by the *Electrochemical Society*, Pennington, New Jersey; the second edition of this symposium was recently held in Honolulu, Hawaii in October 2012. The goal is to develop integrated teams to address the challenges identified in these workshops, and to rapidly commercialize WBG power semiconductor technology. A request for co-sponsorship of this ECS Symposium from IEEE EDS will be prepared. A special issue of IEEE TSM on Wide Bandgap Semiconductor Manufacturing is also being planned in order to promote and address the key manufacturing challenges in this growing field of importance.

The EDS Semiconductor Manufacturing Committee also unanimously approved the motion to institute a new Technical Sub-Committee on Semiconductor Manufacturing at forthcoming IEDM conferences. This request has been forwarded to IEDM for consideration.

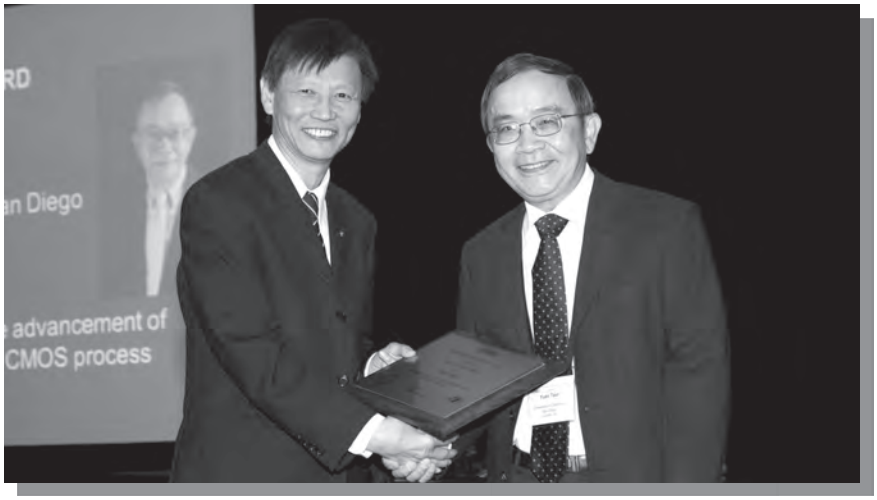
Rajendra Singh
EDS Semiconductor Manufacturing
Technical Committee Chair
Clemson University
Clemson, SC, USA

2012 EDS J.J. Ebers Award Winner

The 2012 J. J. Ebers Award, the prestigious Electron Devices Society award for outstanding technical Contributions to electron devices, was presented to Professor Yuan Taur of The University of California, San Diego, California at the IEEE International Electron Devices Meeting in San Francisco, Californa, on December 10, 2012. This award recognizes Professor Taur "For contributions to the advancement of several generations of CMOS process technologies."

Yuan Taur was born in Nanchang, Jiangxi, China. He earned the highest score in the unified university entrance exam in Taiwan in 1963. Yuan received the B.S. degree in physics from National Taiwan University in 1967, and the Ph.D. degree in physics from University of California, Berkeley, in 1974, with thesis "Josephson junctions as microwave heterodyne detectors." From 1975 to 1979, he worked at NASA, Goddard Institute for Space Studies, New York, on Josephson junction millimeter-wave mixers. From 1979 to 1981, he worked at Rockwell International Science Center, Thousand Oaks, California, on II–VI semiconductor devices for infrared sensing.

In 1981, Yuan joined the Silicon Technology Department of IBM Thomas J. Watson Research Center, Yorktown Heights, New York. He experimentally demonstrated latch-up free 1 um CMOS—a vital step toward the adoption of CMOS technology in mainstream VLSI systems. Later, Yuan led a group at IBM Research Center and developed self-aligned silicide on shallow junctions, dual n+/p+ polysilicon gates, and shallow trench isolation to enable low voltage, high density 0.5 um and 0.25 um CMOS technologies. In 1993, he published the seminal paper on 0.1 um CMOS with 1.5 V supply voltage, by scaling the gate oxide into the tunneling regime. In 1997, Yuan wrote a landmark paper in IEEE Proceedings on scaling CMOS devices to their limits, in which he quantified gate oxide scaling limits from chip standby power considerations, and analyzed active power versus performance trade-off in terms of the power supply and threshold voltage choices. His other notable works



Professor Yuan Taur (right) receiving the J. J. Ebers Award from EDS President, Professor Paul Yu at the 2012 IEDM

include "shift and ratio" method for channel length extraction, "super-halo" design for suppression of short-channel effects, and "generalized scale length theory" for MOSFET scaling.

In 2001, Yuan took a professor position in the Department of Electrical and Computer Engineering, University of California, San Diego. In 2004, he published an analytic potential model for double-gate MOSFETs, which became the de facto standard for compact modeling of multi-gate devices, including FinFETs. Over the past few years, he and his students developed a distributed bulk-oxide trap model, and a new methodology for applying the full interface-state model to III-V MOS devices.

Dr. Yuan Taur was elected a Fellow of the IEEE in 1998, "for outstanding contributions to advanced CMOS technology." He has served as the Editor-in-Chief of IEEE Electron Device Letters from 1999 to 2011, during which period the number of annually published papers was doubled, while the time from submission to publication was reduced to a third. He has also served as General Chairman for the Symposium on VLSI Technology.

Dr. Yuan Taur has authored or co-authored 175 journal and conference papers and holds 14 U.S. patents. He received ten Technical and Invention Achievement Awards over his IBM career. He co-authored a book with Dr. Tak Ning of IBM, "Fundamentals of Modern VLSI Devices," published by Cambridge University Press in 1998. It has been widely circulated among the engineers in the industry and adopted in many major universities in the US and worldwide as a textbook in solid-state electronics. It has been translated into Japanese. The 2nd edition was published in 2009.

Yuan and his wife Katie live in San Diego. They play golf and travel in their leisure time. Recently, they spent three months in Belgium during Yuan's sabbatical to IMEC.

Jayant Baliga
EDS J. J. Ebers Award Chair
North Carolina State University
Raleigh, NC, USA

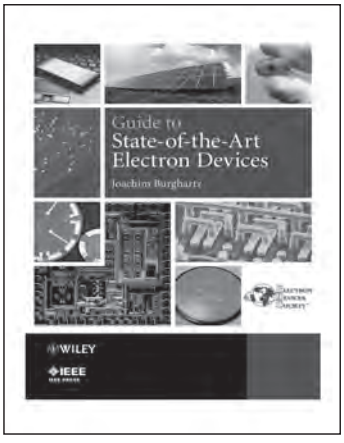
2013 EDS J.J. Ebers Award Call For Nominations

The IEEE Electron Devices Society invites the submission of nominations for the 2013 J.J. Ebers Award. This award is presented annually for outstanding technical contributions to electron devices. The recipient(s) is awarded a plaque and a check for $5,000, presented in December at the IEEE International Electron Devices Meeting (IEDM).

The J.J. Ebers Award nomination form is available on the EDS website, at https://adobeformscentral.com/?f=aJOHjIzBYOF-3K0Rs4BKg.

The deadline for submission of nominations for the 2013 award is July 1, 2013.

If you have any questions or need further information on this award, please do not hesitate to contact Laura Riello of the EDS Executive Office at l.riello@ieee.org.



EDS Guide to State-of-the-Art Electron Devices

To commemorate EDS's 35th Anniversary the IEEE Electron Devices Society has published the *EDS Guide to State-of-the-Art Electron Devices*. This comprehensive full-color publication, edited by EDS Vice-President of Technical Activities, Joachim Burghartz, contains 21 chapters by 70 contributors. A historic timeline runs throughout the book, highlighting three key time periods/eras in the electron device field.

Foreword by Nobel laureate George E. Smith

Look for more information soon, on the EDS website, http://eds.ieee.org/ or contact the EDS office at eds@ieee.org.

Special discounts will be offered at EDS sponsored conferences and through EDS chapters.

2012 EDS Distinguished Service Award

The IEEE Electron Devices Society is extremely proud of the services that it provides to its members. Its members generate the premier new developments in the field of electron devices and share these results with their peers and the world at large by publishing their papers in EDS journals and presenting results in its meetings. This is a global activity that is effective because of the efforts of numerous volunteers. Many of these volunteers labor in relative obscurity, with their only reward being the satisfaction that they receive in being an important part of a successful organization, namely of the IEEE Electron Devices Society. One means of thanking these volunteers is to recognize their contributions through the EDS Distinguished Service Award. This award for 2012 was presented to Douglas P. Verret at the IEEE International Electron Devices Meeting in San Francisco, California, on December 9, 2012.

Douglas Verret was born in Thibodaux, Louisiana. He received a B.S. in Physics, Summa Cum Laude, from Spring Hill College, Mobile, Alabama in 1969, where he was a member of the Phi Eta Sigma Honor Society and was awarded the President's Medal for Achievement in Physics. He received an M.S. in Physics from Purdue University, West Lafayette, Indiana in 1974 as a National Science Foundation Fellow and a Ph.D. in Solid State Physics from the University of New Orleans, New Orleans, Louisiana in 1978 where he was honored with an award for Outstanding Graduate Research from the local chapter of Sigma Xi, the Scientific Research Society of North America. His specialty was in the optical properties of metals wherein he conducted original research measuring the low temperature total hemispherical emissivity of electro-polished refractory metals, the data from which demonstrated the failure of the Drude Model.

In 1974 he joined the faculty of Xavier University, New Orleans, Louisiana as an Instructor and then later as an Assistant Professor of Physics and Pre-engineering. In 1979 he joined Texas Instruments Inc. In Houston, Texas where his first assignment was to help develop a double-level metal (DLM) process for Low Power Schottky TTL devices. As a result of this work TI shipped its first DLM device, an LS245 tri-state octal bus transceiver. In 1982 he was appointed Manager of Bipolar and BiCMOS Development in which job he introduced polysilicon emitter, deep trench isolation and planarized metal technologies into TI which were used to manufacture PALs and PLAs. Work on electroplated Cu interconnects and amorphous Si anti-fuses were not successful and were not commercialized at that time. His team also developed digital BiCMOS devices for use in a BCT family of TTL interface logic devices which were the first commercial BiCMOS devices in TI and among the first in the industry.

EDS President, Paul Yu (left) with Douglas Verret, 2012 EDS Distinguished Service Award recipient

In 1988 he was assigned to SEMATECH, a consortium of fourteen US semiconductor companies and the U.S. Government residing in Austin, Texas. In his position as Director of Manufacturing Techniques and Standards he guided the development of SEMATECH's 0.5 um CMOS technology. Upon returning to TI in 1991 he became Productization Manager for TI's 0.8 um FPGA technology in partnership with IP owner Actel Corporation of Mountain View, California. Later he was named as Technical Manager of TI's 0.8 um embedded flash technology targeted for use in automotive products. In 2003 he was named Program Manager of TI's 130 nm embedded flash technology for high temperature, high reliability applications, then in 2007 Manager of its 65 nm technology followed in 2012 by Manager of its next generation embedded flash technology which is not yet publicly announced. The 65 nm technology was the first and still is the only 65 nm embedded flash technology in the automotive and safety markets.

During his career he has served as an SRC Industrial Mentor at the Universities of Florida and Michigan; founding co-chairman of Design Rule and Process Architecture FTAB at SEMATECH; member Baylor University College of Engineering and

Computer Science Board of Advocates; member Fort Bend Business Partners in Education Council; Board Member Fort Bend Education Foundation and Advisory Committee member of the K.V. Hightower HS Magnet School for Engineering.

He is a Texas Instruments Fellow, an IEEE Fellow, a member of the American Physical Society and Sigma Xi and past member of the American Institute of Physics and American Association of Physics Teachers. He holds sixteen patents. He was honored as a distinguished alumnus of Spring Hill College. Doug is married to Ellen Verret, Ph.D., who is Lead Psychologist in Fort Bend Independent School District and they are the proud parents of Sybil Lincecum, Au.D and Laurence Verret, MBA. In his spare time Doug is a student of comparative mythology and alternates between playing the guitar badly and the trumpet miserably.

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

2012 EDS Education Award Winner

The EDS Education Award recognizes an IEEE/EDS Member from an academic, industrial, or government organization with distinguished contributions to education within the fields of interest of the IEEE Electron Devices Society. The 2012 award was presented to Jesús A. del Alamo at the IEEE International Electron Devices Meeting in San Francisco, California, on December 9, 2012. The award cites Professor del Alamo "For pioneering contributions to the development of online laboratories for microelectronics education on a worldwide scale."

Jesús del Alamo is Donner Professor, MacVicar Faculty Fellow and Professor of Electrical Engineering in the Department of Electrical Engineering and Computer Science, Massachusetts Institute of Technology.

He holds degrees from Polytechnic University of Madrid (Telecommunications Engineer, 1980), and Stanford University (MS EE, 1983 and PhD EE, 1985). From 1985 to 1988 he was with NTT LSI Laboratories in Atsugi (Japan). He joined MIT in 1988.

At MIT Prof. del Alamo is currently engaged in research on the use of III-V compound semiconductors to enable a new generation of deeply scaled transistors with the goal of extending Moore's law beyond where Si can reach. He is also investigating the reliability of GaN transistors for high-power RF and high-voltage switching applications.

Prof. del Alamo is the founder and principal investigator of the iLab Project at MIT that is investigating the technology and pedagogy of online laboratories ("iLabs") for science and engineering education. iLabs are real experimental facilities that can be accessed through the internet from a regular web browser. This project has developed several laboratory set ups for electrical engineering education that have been used by thousands of students from around the world to carry out a variety of device and circuit characterization assignments. The iLab project has also created the MIT iLab Architecture, an open-source toolkit of reusable modules and a set of standardized protocols to facilitate the rapid development and effective managements of iLabs on a worldwide scale. In collaboration with three Sub-Saharan universities, the MIT iLab team has been exploring the unique potential of iLabs in developing countries.

Prof. del Alamo teaches undergraduate and graduate-level courses in electronics and advanced semiconductor device physics. He has received several awards at MIT: the Baker Memorial Award for Excellence in Undergraduate Teaching (1992), the H. E. Edgerton Junior Faculty Achievement Award (1993), the Louis D. Smullin Award for Excellence in Teaching (2001), the Class of 1960 Innovation in Education Award

Presentation of the 2012 EDS Education Award to Jesús del Alamo (right)

(2001, 2008), the Amar Bose Award for Excellence in Teaching (2002). In 2003, he was named a MacVicar Faculty Fellow. In 2007, he was appointed Donner Professor.

From 1991 to 1996, Prof. del Alamo was an National Science Foundation Presidential Young Investigator. In 1999 he was elected a corresponding member of the Royal Spanish Academy of Engineering. In 2005, he was elected a Fellow of the IEEE. For his research on III–V transistors he was awarded the 2012 Intel Outstanding Researcher Award in Emerging Research Devices and the SRC 2012 Technical Excellence Award.

Among other activities, Prof. del Alamo is Editor of IEEE Electron Device Letters and Associate Director of the Microsystems Technology Laboratories at MIT.

Jesús and Sophie, his wife, live in Lincoln, Massachusetts, and attempt to keep up with their six young-adult children while trying to enjoy travel, cooking and the art scene in the Boston area.

Mark Lundstrom
2012 EDS Education Award Chair
Purdue University
West Lafayette, IN, USA

IEEE 2013 EDS Education Award
Call For Nominations

The IEEE Electron Devices Society invites the submission of nominations for the EDS Education Award. This award is presented annually by EDS to honor an individual(s) who has made distinguished contributions to education within the field of interest of the Electron Devices Society. The recipient(s) is awarded a plaque and a check for $2,500, presented at the IEEE International Electron Devices Meeting (IEDM).

The nominee must be an EDS member engaged in education in the field of electron devices, holding a present or past affiliation with an academic, industrial, or government organization. Factors for consideration include achievements and recognition in educating and mentoring students in academia or professionals in the industrial or governmental sectors. Specific accomplishments include effectiveness in the development of innovative education, continuing education programs, authorship of text books, presentation of short-courses at EDS sponsored conferences, participation in the EDS Distinguished Lecturer program, and teaching or mentoring awards.

Since this award is solely given for contributions to education, the nomination should exclude emphasis on technical contributions to engineering and physics of electron devices.

Nomination forms can be found on the EDS web site at http://eds.ieee.org/education-award.html.

The deadline for the submission of nominations for the 2013 award is September 1, 2013.

2012 EDS Chapter of the Year Award

The EDS Chapter of the Year Award is presented annually to recognize an EDS Chapter for the quality and quantity of the activities and programs implemented during the prior July–June period.

On February 12, 2013, at the EDS Spain Mini-Colloquia (in Valladolid, Spain), the ED Spain Chapter received the EDS Chapter of the Year Award, which included a plaque and check for $1,000. The award was received from Prof. Juin J. Liou by Professor Benjamin Iñiguez, Region 8 Vice-Chair, on behalf of the chapter chair. Prof. Iñiguez presented the award to the ED Spain Chapter Chair, Prof. Josep Pallarès, during the Spanish Conference on Electron Devices on February 13th, in Valladolid.

The chapter has promoted EDS membership (and in particular, student membership) by means of communication to researchers in Spain working in the field of electron devices. The chapter has a database of researchers in the field that is regularly updated. They held training events especially addressed to students and young professionals with free or reduced registration fees and hosted many distinguished lecturers and mini-colloquia.

Juin Liou
EDS Vice-President of Regions/Chapters
University of Central Florida
Orlando, FL, USA

2012 EDS Early Career Award Winner

The EDS Early Career Award recognizes an IEEE/EDS GOLD (Graduate of the Last Decade) member who has made outstanding contributions in an EDS field of interest.

The 2012 EDS Early Career Award was presented to Dr. Jin-Woo Han of the NASA Ames Research Center at the EDS GOLD Event held in conjunction with the IEEE International Electron Devices Meeting in San Francisco, California, on December 9, 2012.

Daniel Camacho, the incoming EDS GOLD Chair, presenting the Award to Jin-Woo Han

Jin-Woo Han received the B.S. degree with highest honor from Inha University, Korea, in 2004, and the Ph. D. degree with highest honor from Korea Advanced Institute of Science and Technology (KAIST), Korea, in 2010.

He is currently a Research Scientist at NASA Ames Research Center, California, where he is developing beyond-CMOS devices such as exploratory transistor/memory, THz devices, and sensors.

His research covers design, simulation, layout, process integration, fabrication, characterization, and modeling of multiple-gate MOSFET and unified memory devices. He led a research team responsible for developing Unified-RAM (URAM) devices (IEDM 2007, IEDM 2008, VLSI 2002), Fin Flip-flop Actuated Channel Transistor (FinFACT, IEDM 2009) and gateless NPN nanowire device Bistable Resistor (Biristor, VLSI 2010). Currently, he is developing nanoscale vacuum channel transistor, paper electronic devices and sensor for electronic noses.

Jin-Woo Han received the Gold Prize from Samsung humantech paper award in 2006, the Best Dissertation Award from KAIST in 2010, Ames Honor Award from NASA in 2012. He has authored or coauthored one book chapter, 60 peer-reviewed journal papers, 30 conference proceedings papers and holds 11 patents.

Albert Wang
EDS Early Career Award Chair
University of California
Riverside, CA, USA

CALL FOR NOMINATIONS
2013 IEEE EDS
Early Career Award

Description: Awarded annually to an individual to promote, recognize and support Early Career Technical Development within the Electron Devices Society's field of interest.

Prize: An award of US$1,000, a plaque; and if needed, travel expenses not to exceed US$1,500 for a recipient residing in the US and not to exceed US$3,000 for a recipient residing outside the US to attend the award presentation.

Eligibility: Candidate must be an IEEE EDS GOLD (Graduate of the Last Decade) member and must have received his/her first professional degree within the 10th year defined by the August 15 nomination deadline and has made contributions in an EDS field of interest area. Nominator must be an IEEE EDS member. Previous award winners are ineligible.

Selection/Basis for Judging: The nominator will be required to submit a nomination package comprised of the following:

- The nomination form that is found on the EDS web site, containing such technical information as the nominee's contributions, accomplishments and impact on the profession or economy and a biographical description.
- A minimum of two and a maximum of three letters of recommendation from individuals familiar with the candidate's technical contributions and other credentials, with emphasis on the specific contributions and their impacts.

The basis for judging includes such factors as: the demonstration of field leadership in a specific area; specific technical contribution(s); impact on the profession or economy; originality; breadth; inventive value; publications; honors; and other appropriate achievements.

Schedule: Nominations are due to the EDS Executive Office 15 August each year. The candidate will be selected by the end of September, with presentation to be made in December.

Presentation: At the annual GOLD Lecture that is held in conjunction with the International Electron Devices Meeting (IEDM) in December. The recipient will also be recognized at the December EDS AdCom Meeting.

Nomination Form: Complete the online nomination form by August 15, 2013. All endorsement letters should be sent to l.riello@ieee.org by the deadline.

For more information contact: l.riello@ieee.org or visit: http://eds.ieee.org/early-career-award.html

25 EDS Members Elected to the IEEE Grade of Fellow Effective 1 January 2013

Ramachandra Achar, Carleton University, Ottawa, ON, Canada
for contributions to interconnect and signal integrity analysis in high-speed designs

Carter Armstrong, L-3 Communications, San Carlos, CA, USA
for technical leadership in the development of high power microwave and millimeter-wave radiation sources, especially their power modules

Farrokh Ayazi, Georgia Institute of Technology, Atlanta, GA, USA
for contributions to micro-electromechanical resonators and resonant gyroscopes

Mansun Chan, Hong Kong University of Science and Technology, Clear Water Bay, Hong Kong
for contributions to CMOS device modeling

David Cumming, University of Glasgow, Glasgow, UK
for contributions to integrated sensors and microsystem technology

Suman Datta, Penn State University, University Park, PA, USA
for contributions to high-performance advanced silicon and compound semiconductor transistor technologies

Takatomo Enoki, Nippon Telegraph and Telephone Corporation, Atsugi-shi, Kanagawa, Japan
for contributions to compound semiconductor high speed integrated circuits for optical and wireless communication systems

David Esseni, University of Udine, Udine, Italy
for contributions to quasi-ballistic transport technology in metal oxide silicon transistors

Gerard Ghibaudo, IMEP, Grenoble, France
for contributions to electron device characterization and modeling

Kenneth Goodson, Stanford University, Stanford, CA, USA
for contributions to thermal management of electronic packaging

Kenneth Hansen, Freescale Semiconductor, Inc., Lago Vista, TX, USA
for technical leadership in wireless communications

Guifang Li, CREOL, University of Central Florida, Orlando, FL, USA
for contributions to all-optical signal processing and high-capacity fiber-optic transmission

Carlos Mazure, SOITEC, Bernin, France
for leadership in the field of silicon on insulator and memory technologies

Gaudenzio Meneghesso, University of Padova, Padova, Italy
for contributions to the reliability physics of compound semiconductors devices

Subhasish Mitra, Stanford University, Stanford, CA, USA
for contributions to design and test of robust integrated circuits

Arthur Morris, wiSpry, Inc., Raleigh, NC, USA
for development and commercialization of CMOS radio frequency micro electro-mechanical systems

Masaaki Niwa, University of Tsukuba Frontier Science, Tsukuba Ibaraki, Japan
for contributions to CMOS technology using high dielectric constant materials and metal gate

David Perreault, Massachusetts Institute of Technology, Cambridge, MA, USA
for contributions to design and application of very high frequency power electronic converters

Kameshwar Poolla, University of California, Berkeley, Berkeley, CA, USA
for contributions to system identification, robust control, and applications to semiconductor manufacturing

John Robertson, Cambridge University, Cambridge, UK
for contributions to the understanding of high-k dielectrics and metal gate electrodes for CMOS technology

John Spargo, Northrop Grumman Corporation, Redondo Beach, CA, USA
for leadership in superconducting electronics and related technologies

Randhir Thakur, Applied Materials, Fremont, CA, USA
for leadership in development and implementation of single-wafer technology in semiconductor manufacturing

Thomas Theis, IBM T.J. Watson Research Center, Yorktown Heights, NY, USA
for leadership in the development of semiconductor technologies

Peide Ye, Purdue University, West Lafayette, IN, USA
for contributions to compound semiconductor MOSFET materials and devices

Chen-Hua Yu, Taiwan Semiconductor Manufacturing Company (TSMC), Hsin-Chu County, Taiwan
for leadership in development of interconnect technology for integrated circuits

Leda Lunardi
2013 EDS Fellows Chair
North Carolina State University
Raleigh, NC, USA

Status Report from the 2012 EDS Masters Student Fellowship Winners

Meyya Meyyappan
EDS Vice-President of Educational Activities

Agis Iliadis
EDS PhD & Masters Student Fellowship Chair

The EDS Masters Student Fellowship program is designed to promote, recognize, and support Masters level study and research within the Electron Devices Society's Fields of Interest.

The 2012 EDS Masters Student Fellowship winners were: **Tao Yu** from the Massachusetts Institute of Technology and **Teruyuki Ohashi** from the Tokyo Institute of Technology. The following are brief progress reports provided by the award winners.

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, in 2011. He is currently working toward the M.S. degree in physical electronics with Tokyo Institute of Technology.

His research interests include nanoscale CMOS devices fabrication, characterization, simulation and calculation. He and his colleagues investigated about deformation potential in ETSOI MOSFETs and developed the mobility modeling of MOSFETs.

In the past year, Teruyuki has published his works in IEDM 2011, INC-8 2012, SSDM 2012, and the 222nd ECS Meeting. He received the Best Poster Award at **G-COE PICE International Workshop 2011** and the IEEE EDS Japan Chapter Student Award.

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 I*EEE 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.

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 PhD Student Fellowship

Description: One year fellowships awarded 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.

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

Prize: US$5,000 to the student and if necessary funds are also available to assist in covering travel and accommodation costs for each recipient to attend the EDS Administrative Committee meeting for presentation of the award plaque. The EDS Newsletter will feature articles about the EDS PhD Fellows and their work over the course of the next year.

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

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

Nomination Package:

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

Timetable:

- Nomination packages are due at the EDS Executive Office no later than **May 15, 2013**
- Recipients will be notified by July 15, 2013
- Monetary awards will be given by August 15, 2013
- Formal award presentation will take place at the EDS Administrative Committee Meeting in December 2013.
- A hard copy of all nomination packages must be received by mail at the EDS Office no later than the May 15 deadline in order to be eligible for the award.

Send completed package to: IEEE Operations Center
EDS Executive Office – PhD 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-phd-student-fellowship-program.html

Congratulations to the 54 EDS Members Recently Elected to IEEE Senior Member Grade!

Deji Akinwande
Stephen Bart
Jesus Batista Linares
M. R. Bravaix
Daren Bridges
Ralf Buengener
Geoffrey Burr
Tsu-His Chang
Yogesh Chauhan
Erik Daniel
Ross Dettmer
Sandro Di Giacomo
Kuanghann Duh
Sasan Fathpour
Jeffrey Gealow
Kiran Gupta
Shu-Jen Han
Gruber Hermann
J. Heaton
Malgorzata Jurczak
Matthias Kauer
Dae Hwan Kim
Mitsuhiko Kitagawa
Roza Kotlyar
Hung Kuo
Katsuo Kurabayashi
Pei-Wen Li
Zhenqiang Ma
Witold Maszara
Carl Mccants
Kiyoshi Miyashita
Afshin Momtaz
J. Nambi
Edward Nowak
Hidetoshi Onodera
Tomas Palacios
Anantha Prabhakar
Chris Rea
Kern Rim
Venkat Selvamanickam
Stewart Smith
Sameer Sonkusale
Rao Tatavarti
Alberto Valdes-Garcia
Petrus Venter
Richard Wachnik
Mark Wadsworth
Pingshan Wang
Zheyao Wang
Chung-Chih Wu
Yo Yamaguchi
Fu Liang Yang*
Levent Yobas
Hong Yu

* Individual designated EDS as nominating entity.

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Report on the Joint 35th WIMNACT in Singapore and 36th WIMNACT in Penang

The Joint 35th Workshop and IEEE EDS *Mini-colloquium* (MQ) on NAnometer CMOS Technology (WIMNACT) in Singapore and the 36th WIMNACT in Penang, Malaysia were successfully held on November 29 and 30, 2012, respectively. The two half-day events were co-organized by the Rel/CPMT/ED Singapore Chapter and the ED/AP/MTT/SSC Penang Chapter, with financial support from the EDS Asia-Pacific Subcommittee for Regions/Chapters (SRC-AP). Four Distinguished Lecturers (DLs) participated in the Singapore-MQ: Prof. Chun-Yen Chang of National Chiao Tung University, Prof. Hiroshi Iwai of Tokyo Institute of Technology, Prof. Tian-Ling Ren of Tsinghua University, and Prof. Hei Wong of City University of Hong Kong. It was co-hosted by the NOVITAS—Nanoelectronics Center of Excellence, School of EEE, Nanyang Technological University (NTU). The Director of NOVITAS, Prof. Geok Ing Ng, gave a welcome address and introduced the Center's activities to the delegate, followed by the opening address by Prof. Xing Zhou of NTU, SRC-AP chair and the joint-MQ organizer. The four DL talks covered a wide range of topics: "*The First Mesa Type Blue Light VCSEL and Droop Solutions*" by Prof. Chang, "*Evolution of Si CMOS Technologies to Sub-10 nm Generation*" by Prof. Iwai, "*New Material Based Micro/Nano Devices*" by Prof. Ren, and "*Nano CMOS Gate Dielectric Engineering*" by Prof. Wong. Prof. Zhou presented tokens of appreciation to the DLs and hosted lunch and dinner for the delegate on behalf of the Singapore chapter.

On the second day, the four DLs and Prof. Zhou flew to Penang and gave the Penang-MQ to an enthusiastic audience mostly from industries. The Penang chapter chair, Mr. Jagadheswaran Rajendran, gave a welcome address, followed by Prof. Zhou introducing EDS and DL/MQ programs to the participants. The same four talks were given by the respective DLs, followed by the DL talk "*A Unified Compact Model for Generic*

Singapore-MQ: (front row, from left) Hei Wong, Xing Zhou, Chun-Yen Chang, Hiroshi Iwai, Tian-Ling Ren

Penang-MQ: (front row, 4th from left) Hiroshi Iwai, Chun-Yen Chang, Hei Wong, Tian-Ling Ren, Xing Zhou

Heterostructure HEMTs" by Prof. Zhou. Dr. Boon Leng Lim, the chapter vice-chair, presented tokens of appreciation to the DLs at the conclusion and hosted a dinner with the chapter committee members for the delegate.

The joint 35th/36th WIMNACT was organized by inviting DLs from the region, prior to their attending the international conference EDSSC in Bangkok on December 3–5, such that the DLs international travel expenses were borne by the DLs. With support from the SRC-AP budget for the DLs' Singapore-Penang (budget) airfare and one-night hotel as well as full support from the Singapore chapter (two-night hotel and local hospitality), the joint-MQ event proved to be a very successful one, and it sets a good example in leveraging resources for promoting EDS activities and serving our members. The joint MQ information as well as complete WIMNACT series can be found at the following website: http://www.ntu.edu.sg/eee/eee6/conf/WIMNACT12.htm.

Xing Zhou
EDS SRC-AP Chair and Joint WIMNACT Organizer

Yeow Kheng Lim
Rel/CPMT/ED Singapore Chapter Chair

Jagadheswaran Rajendran
ED/AP/MTT/SSC Penang Chapter Chair

EDS-ETC

Engineers Demonstrating Science: an Engineer Teacher Connection

Report from the ED VIT University Student Chapter

By Partha S. Mallick and K. Sivasankaran

The ED VIT University Student Chapter organized a National Workshop on Electronics Circuits using Snap Kits for school student, November, 3–4, 2012, at VIT University Vellore, India. Partha Mallick, and Bala Krishna Tirumala, explained the program to the workshop attendees and how the snap kits were donated by the IEEE Electron Devices Society. This workshop was conducted to help school students explore the field of electronic circuits. The workshop was organized with the theme of learning electronics through Hands-on practice. The lab sessions were conducted with the help of snap kits. This was a fully sponsored program by IEEE EDS with 60 participants from various schools in India completing 40 electronics projects using the snap kits. The program was received overwhelmingly by school students and the feedback was very positive enthusing the students about electronics.

Participants of Snap Kits Project at ED VIT Student Chapter

The workshop was followed by a technical talk for the faculty members and PG students of VIT University on *"Robotics and Digital Control"* by Prof. Amos, Libneitz University, Germany.

Regional and Chapter News

USA, Canada & Latin America (Regions 1-6, 7 & 9)

ED Santa Clara Valley

–by Toshishige Yamada

The chapter organized three seminars during the last months of 2012, all held at TI auditorium, Santa Clara, with their courtesy and elected new officers for 2013: T. Yamada, Chapter Chair; S. Bahl, Vice-Chair; S. Sonkusa, Treasurer and V. Cao, Secretary.

In August, Dr. K. Ahmed (Applied), was invited to give his talk entitled, "Nanoscale CMOS Contacts: Science and Technology."

The chapter co-sponsored the 4th Annual IEEE-SCV Soft Error Rate Workshop, in October and also invited Dr. R. Rogenmoser, SuVolta, to speak on "Device Consideration for Low Power VLSI circuits," in which he explained to reduce transistor variability and lower power we have to move from a doped transistor channel to an undoped channel. Dr. Rogenmoser's talk provided a brief overview of SuVolta's Deeply Depleted Channel™ technology, and then focused on how the technology can be leveraged using circuit design techniques to lower IC power consumption.

The following month, members of the chapter enjoyed hearing Dr. A. Bergemont (Maxim), speak on "Analog and Mixed-Signal Technologies," which reviewed state of the art analog BCD processes and highlighted what major components are required to pursue scaling. The need for various embedded was discussed as well as the importance of emerging packaging technologies such as WLP, embedded SIP and TSVs.

For further information on previous held and upcoming events, please visit the chapter website at http://www.ewh.ieee.org/r6/scv/eds/index.html.

Dr. Ahmed presenting at the ED Santa Clara Valley Chapter seminar

2013 RFIC

–by Jacques C. Rudell, Lawrence Kushner and Bertan Bakkaloglu

Please join us at the 2013 IEEE Radio Frequency Integrated Circuits (RFIC) Symposium, which will take place in Seattle, WA, on 2–4 June 2013. Our Symposium is held in conjunction with the IEEE Microwave Theory and Technology Society's (MTT-S) International Microwave Symposium (IMS) and opens Microwave Week 2013, the largest worldwide RF/microwave meeting of the year, with three days focused exclusively on RFIC technology.

The 2013 RFIC Symposium will open on Sunday, June 2 with a full lineup of 13 half-day and full-day workshops covering a wide array of topics with presentations from experts in their respective fields. The Plenary Session will then be held on Sunday evening with keynote addresses given by two renowned industry leaders from the Pacific Northwest. The first speaker, Neville Ray CTO of T-Mobile, will discuss some of the exciting system developments from the cellular

The Seattle skyline

carrier perspective. The second speaker is Barrie Gilbert, who will share his insight on the history of RF and wireless transceivers and present his vision of the future of RF IC design. The regular paper sessions will be held on both Monday and Tuesday. On both of these days the conference will feature lunchtime panel sessions that traditionally draw lively debate among the panelist and stimulating interaction between the attendees and panelists.

The conference will be held at the Washington State Convention Center in downtown Seattle, just a few minutes' walk from several local attractions. Conference attendees can enjoy a cup of coffee at the original Starbuck's, watch flying fish at the world-renowned Pike Place Market, or take a ride to the top of the city's iconic Space Needle. For the outdoor enthusiasts, several spectacular hiking trails can be found within an hour's drive of the downtown area.

On behalf of the RFIC Steering Committee, we would like to extend to all of you a warm welcome to attend this year's 2013 RFIC Symposium.

~ Adam Conway, Editor

Europe, Middle East & Africa (Region 8)

ED Poland

–by Mariusz Orlikowski

The ED Poland Chapter is co-organizing the 20th International Conference MIXDES 2013 "Mixed Design of Integrated Circuits and Systems," which will be held June 20–22, 2013, in Gdynia, Poland.

The following presentations are planned for the opening:

- *"A Mixed-Design Technique for Integrated MEMS using a Circuit Simulator with HDL,"* Prof. Hiroshi Toshiyoshi (The University of Tokyo, Japan)
- *"Design of ESD Resistant ICs and ESD Simulation,"* Prof. Valery Axelrad (SEQUOIA Design Systems, Inc, USA)
- *"The Art of Modeling and Predictive Simulation in Power Electronics and Microsystems,"* Prof. Gerhard Wachutka (Technische Universität München, Germany)
- *"On the Use of Compact Modeling for RF/Analog Design Automation,"* Prof. Maria Helena Fino (Universidade Nova de Lisboa, Portugal)

Also planned for the conference are two special sessions:

- *"Compact Modeling for More than Moore,"* organized by Dr. Daniel Tomaszewski (Institute of Electron Technology, Poland) and Dr. Władysław Grabiński (GMC Suisse, Switzerland)
- *"xTCA for Instrumentation,"* organized by Dr. Dariusz Makowski (Lodz University of Technology, Poland) and Dr. Stefan Simrock (ITER, France)

The paper submission deadline was February 28, 2013. More information can be found on the conference web site http://www.mixdes.org.

~ Zygmunt Ciota, Editor

IEEE ED Scotland Mini-Colloquium on Microsystems

–by Jonathan Terry

The IEEE ED Mini Colloquium on Microsystems will be held on Friday, April 19, 2013, at the Kings Buildings campus of the University of Edinburgh in Scotland. The event is being held to celebrate the establishment of the IEEE ED Scotland Chapter.

The program will cover a range of topics in the field of Microsystems material and device technology. Invited speakers will include four IEEE Electron Devices Society Distinguished Lecturers:

- Werner Weber, Infineon Technologies, Germany
- Simon Deleonibus, CEA-LETI, France
- Juin Liou, University of Central Florida, USA
- Meyya Meyyappan, NASA Ames Research Center, USA

Other expert speakers at the event will include:

- Jurriaan Schmitz, University of Twente, The Netherlands
- Richard Syms, Imperial College London, UK
- Andrew Richardson, Lancaster University, UK
- Lindsay Grant, ST Microelectronics, UK

The day-long event will also include a poster session showcasing the work of Scottish research students, which will be available to view during the refreshment and lunch breaks. These times will also afford the attendees the opportunity to discuss their views on the work of the IEEE and their respective research interests.

Those interested in attending the event can contact the organisers at jonterry@ieee.org. The full agenda and further details of the event can be found at http://ieee-ukri.org/ieee-ukri-eds-scotland-chapter/.

ED Manchester University

–by Emerson Sinulingga

The foundation of the Manchester University Electron Devices student branch chapter was approved in August 2012, the latest such chapter in the UK. This comes as a welcome addition to the well-established IEEE student branch in Manchester, which will celebrate its ten year anniversary in May. Starting life in 2003, the University of Manchester IEEE student branch has organized many electron device activities for its members with the generous support of the IEEE UK&RI MTT/ED/AP/LEO joint chapter. In order to facilitate further successful events, a group of University of Manchester student members with a keen interest in the field of electronic devices research requested the creation of the student branch ED chapter.

Since it was founded, the new student branch has already organized a number of successful events including a well-attended Matlab Workshop for electrical and electronic

Prof. Christophe Gaguiere, (far right), inaugural speaker of the ED Manchester University Seminar Series, with chapter committee members and winners of the IEEE Student Paper contest

Professor Asen Asenov, Chair of the 18th edition of SISPAD

engineering students. The ED Manchester University Seminar Series was officially started in December with two talks. The first on December 4th was given by Prof. Christophe Gaguiere of Université Lille and the Institut d'Eletronique de Microélectronique et de Nanotechnology (IEMN) in France, entitled "Characterization of Silicon Components in mm Wave Range." This was followed on December 20th by the EDS Distinguished Lecturer, Assoc. Prof. Zhou Xing of Nanyang Technological University, Singapore, who gave a talk entitled "A Unified Compact Model for Generic Heterostructure HEMTs."

Following each talk, a mini poster session was held to allow student branch members to present their work and to encourage technical discussions among researchers and students. Judging by attendee feedback, the seminars and workshops have been highly enjoyable and an enhancement to the students' study experience. Future events are being planned, details of which will be made available at http://ewh.ieee.org/sb/uk/manchester/.

Foreshortening of the River Clyde in Glasgow, Scotland, UK

2013 SISPAD in the Heart of Scotland

–by Salvatore Maria Amoroso

The 18th edition of the International Conference on Simulation of Semiconductor Processes and Devices (SISPAD) will be held on September 3–5, 2013, in the bustling city of Glasgow, vibrant commercial and industrial center of Scotland, UK. SISPAD provides an open forum for the presentation of the latest results and trends in process and device modeling and simulation. The conference is the leading forum for Technology Computer-Aided Design (TCAD) and is held annually, with the location circulating among Asia, Europe, and the USA. The main task of this edition is *'to highlight the links between technology/transistor level and circuit and system level design and simulation',* says Professor Asen Asenov, head of the Device Modeling Group at the University of Glasgow and CEO of Gold Standard Simulations (GSS), who serves as the chair of the coming edition. The authors are invited to submit their abstracts before April 1, 2013. Further information is available from the conference website http://www.sispad2013.org or by contacting the organizing committee at info@sispad2013.org.

ED Scotland

–by David Cumming

Since it was founded in the summer of 2012, the Scottish chapter of the EDS has been busy hosting a range of inaugural lectures and industrial visits.

On November 12th, Prof. Subhas Mukhapadhyay of Massey University, New Zealand, and a distinguished

Glasgow and Edinburgh University students get kitted up to tour Texas Instruments cleanroom facilities in Greenock

lecturer of the IEEE Sensors Council, gave an enlightening lecture entitled "Are WSN Assisted Homes Safer for the Elderly?" in which he described his current research on the use of sensor-rich habitation to enable the elder population to live independently for longer. On December 17th, the chapter was honoured to host a lecture entitled "Unification of MOS-compact models with the unified regional modelling approach," given by EDS Distinguished Lecturer, Assoc. Prof. Zhou Xing of Nanyang Technological University, Singapore.

ED Scotland has also organized an industrial visit that allowed engineering students from the Universities of Glasgow and Edinburgh to visit the design and fabrication centers of Texas Instruments in Greenock. A total of 20 students were selected to visit the firm in four groups. The visit started with a tour of the design facilities and interaction with designers working primarily on power regulators. This was followed by the principal attraction, a tour through the fabrication cleanroom facilities, in which high power CMOS and bipolar devices are manufactured.

The managers at the unit were very supportive and described each step involved in chip manufacturing to the students. The chapter would like to express their sincere thanks to John Gough and Karen Robbins at Texas Instruments for hosting the visits and facilitating this fantastic experience.

The chapter is planning further events for 2013, including a Mini-Colloquium on Microsystems to be held on April 19th. Further details can be found at http://ieee-ukri.org/ieee-ukri-eds-scotland-chapter.

~ Jonathan Terry, Editor

ED Italy

–by Jan Vobecky

The 3rd Edition of the Workshop on Micro and NanoElectronics was held in Roma, October 4–5, 2012. On the first day many technical talks on the state of research on non-silicon solid-state devices were given by researchers from Universities, Research Centers and Industries throughout Europe. The researchers had the opportunity to present the state of art of their activity and the perspective of development of their laboratory within the frame of national context. The following European Countries were represented: France, Belgium, United Kingdom and Italy. Contributions covered topics from photovoltaics, to flexible and organic electronics, to optical interconnects, to graphene.

The focus of the program for the second day was on the trends and perspectives of the research on semiconductors and nanoelectronics in Europe. People from the European Community, the European Electronics and Technology Platforms, together with Presidents and Directors of European Research Agencies and Associations participated in the workshop. An exciting discussion took place between General Managers and Directors of Industries, the Investment Bank and Academia. As a result, an executive board composed of representatives of the Public and Private Research on Semiconductors was born with the precise goal of establishing a continuous and fruitful collaboration with the Italian government towards

Open discussion: (left to right) M. Varasi (Finmeccanica), P. Angeletti (Mediocredito Bank), A. Cremonesi (STMicroelectronics), A. Lacaita (Politecnico di Milano)

the identification of strategic lines of industrial development and research roadmaps of interest for the country.

~ Jan Vobecky, Editor

Asia & Pacific (Region 10)

2013 ISNE

–by Wen-Kuan Yeh

The ED Tainan Chapter organized the 2th International Symposium on Next-generation Electronics (ISNE) at I-Shou University in Kaohsiung, Taiwan on February 25–26, 2013. This year's ISNE was focused on "new concepts for next generation of advanced electronic devices." The following two keynote speakers were invited to give EDS Distinguished Lectures: "Challenges of Designing Electrostatic Discharge (ESD) Protection in Modern and Emerging CMOS Technologies," by Prof. J. Juin Liou, University of Central Florida, USA, and "Mixed-Voltage I/O Design Using CMOS Process," by Prof. *Chua-Chin Wan,* Sun Yat-Sen University, Taiwan.

The ISNE program also included fifteen excellent talks from invited distinguished speakers from Taiwan, USA, Japan, Hong Kong, and Singapore. More than 250 attendees, including professors, IEEE members, students and local Taiwan professionals attended ISNE 2013. For more information on the program, please visit the ISNE website at http://isne2013.isu.edu.tw/upload/303/index.html.

ED Peking University

–by Runsheng Wang

The ED Peking University (PKU) Student Chapter held three Distinguished Lecturers (DLs) and one Mini-colloquium: Prof. Steve S. Chung of National Chiao Tung University (September 13, 2012), Prof. Tibor Grasser of Vienna University of Technology (October 28, 2012) and Dr. Simon Deleonibus from CEA-LETI (November 2, 2012), presented their recent studies on various topics, entitled "*The Variability Issues of Small Scale CMOS Devices: Process Induced Random Dopant Fluctuation;*" "*Charge Trapping in Oxides: From RTN to NBTI*;" and "*New Routes for Advanced 3D Heterogeneous Integration on Silicon,*" respectively. These topics were very much enjoyed by the attendees.

On October 27th, the ED PKU Chapter successfully held another IEEE EDS Mini-colloquium (MQ) named "IEEE EDS MQ on Advanced Technology of Micro & Nanoelectronics" at the new Micro & Nanoelectronics Building of Peking University,

From left to right: Prof. Te-Kuang Chiang (NUK), Prof. Wen-Kuna Yeh (Chair of ED Tainan Chapter), Prof. Yung-C. Liang (Invited speaker), Prof. C. Surya (Invited speaker), Prof. Katsu Okamoto (Invited speaker), Prof. Kow-Ming Chang (Dean of EECS in ISU), Kang-L. Wang (Invited speaker), Dr. Bao-Shuh Paul Lin (Invited speaker), Prof. Cary Evans (Invited speaker), Prof. Jei Fu. Shaw (President of ISU), Nai-Hsiang Sun (Chair of EE in ISU), Prof. Juin J. Liou (Keynote speaker), Prof. Chao-Shun Chen (Invited speaker), Prof. Po-Ying Chen (ISU), Prof. Shih-Chieh Hsieh (ISU), Prof. Ruyen Ro (ISU) and Prof. Jun-Zhe Yang (Invited speaker)

Prof. Steve S. Chung (6th from the left, front row) pictured with Prof. Ru Huang (4th from the left), the chapter advisor, Prof. Runsheng Wang (5th from the right), the chapter advisor and other members of the chapter

From left to right in the front: Prof. Ru Huang, Prof. Yu (Kevin) Cao, Dr. Chung Lam, Dr. Kin P. Cheung, Prof. Chee Wee Liu, Prof. Meng-Fan (Marvin) Chang, pictured with some members of the Chapter after the MQ event

Beijing, China. This one-day MQ was supported by the following guest lecturers: Dr. Kin P. Cheung of National Institute of Standards & Technology (NIST), Dr. Chung Lam of IBM, Prof. Meng-Fan (Marvin) Chang of National Tsing Hua University, Prof. Chee Wee Liu of National Taiwan University and Prof. Yu (Kevin) Cao of Arizona State University. The event was attended by more than 100 people, including a small group from local industry. In the morning, Prof. Huang gave the welcome address, followed by a brief introduction to IEEE EDS. The MQ began with Dr. Cheung's talk on *"Random Telegraph Noise in Advanced MOSFETs—Another Brick Wall?"* followed by Dr. Lam speaking on *"Phase Change Memory: Replacement or Transformational?"* and Prof. Chang speaking on *"Circuit Design Challenges of Next-Generation Energy-Efficient Memory."* After lunch, Prof. Liu presented the *"Planar and 3D Ge FETs,"* followed by Prof. Cao's talk on *"Circuit Reliability Modeling and Simulation for Complex SoCs."* These lectures covered a broad range of topics on current interests and produced lively and interactive discussions.

The Peking University Chapter also held many other events and detailed information can be found on the chapter's website, http://www.ime.pku.edu.cn/soi/edpku.html.

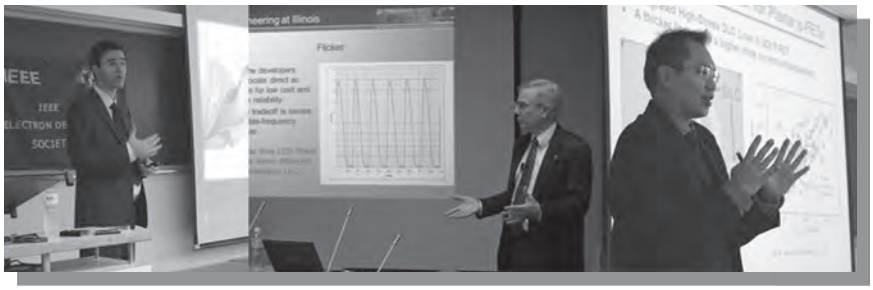
ED Taipei

–by Steve Chung

The ED Taipei Chapter held four invited talks in the fourth quarter of 2012. The kick-off event on October 4th featured Dr. Shibing Long, from the Institute of Microelectronics, Chinese Academy of Sciences (IMECAS), Beijing, who gave a talk at National Chiao Tung University, Hsinchu. Dr. Long's talk, "The Key Issues of Binary Transition Metal Oxide (BTMO) Based RRAM," presented more recent progress on the development of RRAM device, the physical understanding of the mechanism which led to the development of new models, and the solution for 3D integration. The event was attended by 40 participants, including students and professors from the local universities. Afterwards, Dr. Long and several local university professors discussed possible research collaborations.

The second talk, on November 19th, given by Peter Lemmens, General Manager of IMEC Taiwan and Director of ITIC (IMEC Taiwan Innovation Centre, located in Hsinchu Science Park), was entitled, "Aspire Invent Achieve-Disruptive technologies for the future." Peter introduced the current status of IMEC and also the role of the first research center outside of Europe to an audience of more than 120 students and several professors. He explained that with

ED Taipei October 4th, DL talk: (1st row from left) Prof. T-H. Hou (5th, the seminar host), Dr. Shibing Long (6th, speaker) and participating professors and students



ED Taipei invited talks, (left) Peter Lemmen s(speaker), (middle) Prof. Philip Krein (speaker), (right) Prof. Yee Chia Yeo (speaker)

the advantage of IMEC's microelectronics technology, he was able to introduce several important collaborations to the Taiwan community university national lab, and the National Science Council. Among those collaborations, was one in 2005 where he successfully presented a case to the local university for developing a health care kit for humans.

The third invited DL talk, on November 28th, was given by Prof. Philip Krein, an IEEE Distinguished Lecturer, from the University of Illinois at Urbana-Champaign (UIUC). Prof. Krein's talk, "Power Electronics: Driving the Energy Revolution," discussed the latest developments, challenges, and opportunities of power electronic devices for the applications of renewable energy conversion, hybrid and electric cars, low-power portable devices, and new lighting technologies.

On December 24th, Prof. Yee Chia Yeo from the National University of Singapore, wrapped up the chapter programs for 2012. His talk on "Technology options for transistor performance scaling," explained that in order to achieve a high performance transistor design, two major directions are important: improving carrier mobility so as to reduce the channel resistance, and reducing parasitic series resistance, including the contact resistance. Comprehensive strained techniques for pFET and nFET were demonstrated and shown to be promising for manufacturing. This talk stimulated a lot of interest from the more than 100 graduate students that attended.

ED Tsinghua University

–by Haiming Zhao

On October 26th, the ED Tsinghua University Student Branch Chapter invited Professor Durga Misra, a Distinguished Lecturer of the IEEE Electron Devices Society, to visit Tsinghua University. At 10:30 a.m., Beijing time, Prof. Misra gave a very impressive talk, the topic of which is "*Challenges for Nanoelectronics and Beyond: More Moore and/or More than Moore*," at the Institute of Microelectronics of Tsinghua University. The event, attended by fifteen students, was headed by Dr. Yi Yang.

Prof. Misra discussed the present-day and future of nanotechnology, especially focusing on the convergence of nanotechnology with electronics, photonics, energy and biology. Some challenges of nanoelectronics were addressed briefly to outline the scaling (More Moore) and beyond scaling (More than Moore) states of CMOS, also how stringent power requirements by the International Technology Roadmap for Semiconductors (ITRS) dictate integration of high-k metal gates and novel devices such as FINFETs in CMOS technologies. The challenges of high-k on high mobility substrate were also outlined. His talk continued with information on nano-energy generators for energy harvesting, the concept of e-nose and e-tongue with nanowires and printable and flexible electronics with nano materials.

ED Xi'an

–by Yimen Zhang

A series of EDS Distinguished Lectures and mini-colloquium (WIMNACT-34) were successfully held at Xidian University, Xi'an, China, October 28, 2012, organized by the IEEE ED Xi'an Chapter, the Innovation and Talent Introduction Base of Micro-Nano Electronics and Wide Band-gap Semiconductors at Xidian University and the National Key Discipline Laboratory of Wide Band-gap Semiconductor Technologies.

The one-day program comprised of nine distinguished speakers invited from the USA, Belgium, Austria, Hong Kong, Singapore and Taiwan and covered a wide area of microelectronics: Opportunities and Challenges for CMOS Technology Based on High-Mobility Channel Materials; ESD protection in RF integrated circuits; Compact Model for Generic Heterostructure HEMTs; Radiation hardness in Si and Ge-based technologies; Living Cells and Integrated Circuits; High mobility MOSFET from Ge to GaN; Extension of Moore's Law Via Strained Technologies; Strain Technology for High-k/Metal Gate SiGe-Channel and SiC–SiO_2 Interface and technologies. The 200+ audience of professors, IEEE members, students and local Xi'an professionals were

Prof. Durga Misra (7th from left) with attendees of Distinguished Lecture at Tsinghua University

Some of the participants and organizers of WIMNACT-34, held at Xidian University, October 2012

very interested and highly appreciative of this event.

~ Mansun Chan, Editor

2012 ICEE

–by V. Ramgopal Rao

As the first conference of its kind, the International Conference on Emerging Electronics (ICEE 2012) was held at IIT Bombay, India, December 15–17, 2012. ICEE, a biennial conference, is the brain child of the IEEE EDS South Asia Chapters Meetings, to fulfill the need of a Device's meeting in Asia to discuss the latest trends in the emerging areas. All the EDS Chapters in South Asia are the stake holders of this conference which is technically co-sponsored by the IEEE Electron Devices Society.

The program for ICEE 2012 included 13 Keynote talks, 10 invited talks and 14 oral and 40 poster presentations. The oral and poster presentations were selected by the Technical Program Committee from over 145 abstracts received.

The keynote speakers: Om Nalamasu, Applied Materials; AK Sood, IISc; Rao Tummala, Georgia Tech; R. P. Jindal, University of Louisiana at Lafayette; M. Semeria, CEA France; Vikram Dalal, Iowa State; Koshik Roy and M. A. Alam, Purdue; Thomas Thundat, University of Alberta; R. Singh, Clemson; G. Bauer, TU Delft; J. Vazi, IITB; and N. Samarth, Penn State.

Tutorials held during the event were conducted by Ed Cartier of IBM and Ben Kaczer of IMEC. Apart from these, there was a panel event held to discuss the semiconductor manufacturing trends in the South Asia region, which had panelists from the semiconductor industry such as S. S. Iyer from IBM; P.G. Nair from Indian Semiconductor Association; Ajay Kumar from the Department of Electronics and Information Technology, among others.

The conference was organized jointly by IIT Bombay and IISc, Bangalore, and attracted more than 250 participants for the three-day event. The 2014 conference is planned to be held at IISc, Bangalore.

View of Participants at ICEE 2012, at IIT Bombay, India

ED Calcutta

–by Atanu Kundu & CK Sarkar

The ED Calcutta Chapter, the ED Student Chapter at Heritage Institute of Technology (HITK) and the Institute of Radio Physics and Electronics at University of Calcutta, jointly organized a technical seminar, October 16th, on *"MOSFET and Interconnect Inductor Modeling for VLSI Design,"* by Prof. A. B. Bhattacharya, Emeritus Professor, and former Chairman of Center for Applied Research in Electronics (CARE) at IIT Delhi. The seminar was hosted by the Electronics and Communication Engineering Department of Heritage Institute of Technology. The Seminar was attended by post graduate students, research scholars and faculty members from HITK, Jadavpur University and the University of Calcutta.

ED Delhi

–by Manoj Saxena & Mridula Gupta

The ED Delhi Chapter organized a Distinguished Lecture by Dr. Rakesh Kumar, President of the IEEE Solid State Circuits Society and President of TCX Technology Connections,

A. B. Bhattacharya with organizers of the seminar at HITK

July 25, 2012, at the University of Delhi South Campus. The topic of the talk was Semiconductor Industry Trends—Challenges and Opportunities, which was attended by more than 70 people including faculty members, engineers from industries and research students.

ED Malaysia

–by P Susthitha Menon

The 2012 IEEE International Conference on Semiconductor Electronics (ICSE), held at the Grand Millenium Hotel, Kuala Lumpur, September 19–21, 2012, was organized by the ED Malaysia Chapter .

The bi-annual ICSE conference for the past 20 years has become an international forum on semiconductor electronics embracing all aspects of the semiconductor technology from circuit device, modeling and simulation, photonics and sensor technology, MEMS technology, process and fabrication, packaging technology and manufacturing, failure analysis and reliability, material and devices and nanoelectronics. The conference had five keynote talks, 153 oral and 40 poster presentations. Keynote speakers were: A. Lakhtakia (PennState), Edward Chang (from Taiwan), N. F. de Rooij (EPFL Switzerland), Yoon Soon Fatt (NTU, Singapore), and Ooi Boon Siew (KAUST, Saudi Arabia). The program also featured an industrial talk given by Kamarulzaman Mohamed of Silterra.

The conference also included a short course on *Understanding Nanoelectronics: An Accelerated Journey from Transistor Basics to Metal-Gate FinFETS*, by Jakub Kedzierski of MIT Lincoln Laboratory, who is a visiting professor at IIT Bombay. The course attended by 25 participants, covered innovations in devices from 130 nm to 22 nm and beyond.

ED Nepal

–by Bhadra Pokharel

The ED Nepal Chapter organized a Technical Talk at ASCAL Campus Katmandu on November 27th, by Hari Prasad Lamichane of Tribhuvan University on Vibrational Quinones. The talk was attended by more than 50 professionals, including students.

ED/MTT/SSC Penang

–by J. Ragendran

The chapter organized three technical talks and one DL-MQ during the last quarter of 2012. The talks were: (1) *Efficient and Error Resilient Transmission of Multimedia Data Over Wireless Cellular Networks* by Farid Ghani of University Malaysia Perlis; (2) *Auxiliary Envelope Tracking RF power amplifier system* by Zubaida Yusoff, Multimedia University Malysia; and (3) *Organic Electronic Device and Circuit For RFID Applications* by Liu Ming of Institute of Microelectronics, China. Almost all the ED chapter members attended these talks. A DL-MQ (36th WIMNACT) was organized on November, 30, 2012 as a joint event with the ED Singapore Chapter for which more than 70 participants attended the five Distinguished Lectures. A separate report on the MQ is given in this issue.

ICSE 2012 participants at the Grand Millenium Hotel, Kuala Lumpur

Participants of the Technical Talk held at the ED Nepal Chapter

ED/REL/CPMT/ Singapore

–by Xing Zhou and Yeow Kheng Lim

During the last quarter of 2012, the ED/REL/CPMT Singapore Chapter organized four distinguished lectures/technical talks, co-hosted with the NOVITAS Nanoelectronics Center of Excellence at Nanyang Technological University. The technical talks given were: "*The Role of Semiconductor Foundries in System-on-Chip Design and Manufacturing,*" by Narain Arora, Senior VP of Silterra; "*Memristive Nanodevices: Mechanisms, Applications and Challenge,*" by Jianhua Yang of HP; "*2D Carbon/Semiconductor-Enabled Electronics,*" by Bin Yu of SUNY, USA; and "*Technology Integration: Exploring the Interface*" by David Cumming of University of Glasgow.

Participants at the short course by Jakub Kedzierski

Narian Arora and Participants of his lecture

Bin Yu and Participants

The chapter organized for the first time, a social and humanity event for a movie screening, free for members and discounted for other participants. We also invited kids from children's homes to participate in the event, which served a buffet dinner. The event received an enthusiastic response, positive feedback and helped foster interactions among members and the community.

On November 29, 2012, the chapter also sponsored/organized a joint MQ (35th WIMNACT), together with the Penang Chapter (36th WIMNACT), featuring four Distinguished Lecturers: Prof. Chun-Yen Chang of National Chiao Tung University, Prof. Hiroshi Iwai of Tokyo Institute of Technology, Prof. Tian-Ling Ren of Tsinghua University, and Prof. Hei Wong of City University of Hong Kong. A separate report for the event is given elsewhere in this issue.

ED SJCE Student Chapter

–by C. R. Venugopal

The ED SJCE Student Chapter, Mysore, organized a number of fun training and practical learning programs for students during the year. The significant ones were:

(1) Project Mania—a 3-phase event in which students prepared practical innovative projects that were evaluated by an external expert team, with prizes given to the winners; (2) Snap Circuit Workshops—more than 120 students, assigned to three groups, attended this 3-day program and were trained to build basic circuits using the kits; (3) Soldering and Etching Workshop—fifty EDS student members, split into two teams, were trained in quality soldering and etching on printed circuit boards; and (4) Robotics Workshop—students were trained to build and program robots.

~ M. K. Radhakrishnan, Editor

2013 executive committee meeting attendees

ED Japan

–by Akira Toriumi

On February 4, 2013, the annual meeting of the ED Japan Chapter was held at the University of Tokyo. Prof. Akira Toriumi, the Chapter Chair, reported on 2012 activities and plans for the new year. The 2012 ED Japan Chapter Student Award was also presented to 5 students who made excellent presentations at the IEDM or the Symposium on VLSI Technology. Information and photos of the award winners can be found on the chapter's webpage; (http://www.ieee-jp.org/japancouncil/chapter/ED-15/ed15_award.htm).

After the annual meeting, the IEDM 2012 Report Session was held. Nine Japanese members of the IEDM program committee reported on summary, topics and research trends of their sub-committees. This session provided an opportunity for the attendees to understand the research trends of various areas, especially for those who were not able to attend the IEDM. More than sixty people, including some non-members, enjoyed the talks and discussions.

The executive committee meeting of the ED Japan Chapter was also held on February 4th to approve plans for 2013. In attendance were Chapter Executives: Prof. Akira Toriumi; Chair, Dr. Tohru Mogami; Vice Chair, and Prof. Koji Kita; Secretary, the nine invited guest speakers from the IEDM Report Session, as well as Prof. Hiroshi Iwai, EDS Jr. Past President, Prof. Kuniyuki Kakushima, EDS Regional Newsletter Editor, and Dr. Atsushi Kurobe, the former IEEE Japan Council COC Chair.

11th EDS Japan Chapter Student Award winners, together with Prof. Akira Toriumi; Chair, and Dr. Tohru Mogami; Vice Chair

ED Kansai

–by Michinori Nishihara

The ED Kansai Chapter hosted the 12th annual Kansai Colloquium Electron Devices Workshop, October 26, 2012, at Osaka University Nakanoshima Center, Osaka, Japan. The event attracted 39 participants and 13 excellent papers, with authors from the Kansai area, who also presented at the workshop. The papers were specially selected from (1) major conferences such as IEDM or SSDM and (2) technical papers on electron devices published during the past 12 months. The program was divided into four sections as follows: (1) CMOS Device, Process, Circuit and Nanoelectronics, (2) Modeling, Reliability, (3) Power, Compound, Quantum, (4) Display, Sensor, Emerging.

The Award Committee selected two papers from student presenters for the 12th IEEE EDS Kansai Chapter MSFK Award. The winners were Mr. Yusuke Yamashiro of Osaka University for his paper titled, "Electric-field-induced band gap of bilayer graphene in ionic liquid," and Mr. Fumio Mochizuki of Osaka Pref. University for his paper titled, "Mobility improvement in top-gate benzothienobenzothiophene organic transistors processed by spin coating."

Front row, from left to right: Prof. Yukiharu Uraoka, Prof. Hiroshi Iwai, Prof. Albert Wang, Dr. Takahashi. Back row, left to right: Masahiro Moniwa, Dr. Hiroshi Kotaki, Prof. Yoshinari Kamakura, Dr. Yoshifumi Yaoi, Dr. Kenji Komiya, Mr. Michinori Nishihara

The winners of the 12th MSFK Award and "The Chapter of the Year" at the 12th Kansai Colloquium Electron Devices Workshop: Mr. Fumio Mochizuki, Dr. Nobuto Nakanishi, Mr. Yusuke Yamashiro (left to right)

The Committee also selected one paper for the IEEE EDS Kansai Chapter of the Year Award. The winning paper was "High reliable strain measurement for power devices, using STEM-CBED method," by Dr. Nobuto Nakanishi of Renesas Electronics Corporation.

The presented papers were all excellent and stimulated many questions and discussions with the audience, as they were selected from already qualified papers of major conferences and technical journals. This workshop is playing an important role in encouraging students and young engineers in the industry to extend their technical knowledge and career. The ED Kansai Chapter will continue to serve our members' interest.

On November 20th at SHARP Tenri Base, we had a good meeting with Prof. Albert Wang, IEEE EDS President-Elect and Prof. Iwai of Tokyo Institute of Technology. Dr. Takahashi, Chair of the ED Kansai Chapter, described our chapter activities, followed by Professor Wang's explanation of the IEEE Electron Devices Society organization and current issues. Discussions followed, with Prof. Iwai emphasizing the importance of having good communication with people in EDS to extend our activities.

~ Kuniyuki Kakushima, Editor

EDS MEETINGS CALENDAR
(As of 13 March 2013)

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

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 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

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

26 May - 29 May 2013
2013 5th IEEE International Memory Workshop (IMW)
Conf Record :30663
Location: Monterey CA , USA
Contact : Pranav Kalavade
Tel : +1 408 765 5249
Fax :
E-mail: pranav.kalavade@intel.com
Deadline : 08 Mar 2013
www : http://www.ewh.ieee.org /soc/eds/imw/

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 : 10 Jun 2013
www : http://www.ieee-pvsc.org /PVSC39/

23 Jun - 26 Jun 2013
2013 71st Annual Device Research Conference (DRC)
Conf Record :30747
Location: South Bend IN , USA
Contact : Ioannis Kymissis
Tel : 2128544023
Fax :
E-mail: johnkym@ee.columbia.edu
Deadline : 15 Mar 2013
www : http://drc.ee.psu.edu/

02 Jul - 05 Jul 2013
2013 Twentieth International Workshop on Active-Matrix Flatpanel Displays and Devices (AM-FPD)
Conf Record :30622
Location: Kyoto , Japan
Contact : Yukiharu Uraoka
Tel : +81-743-72-6060
Fax : +81-743-72-6060
E-mail: uraoka@ms.naist.jp
Deadline : 12 Mar 2013
www : http://www.amfpd.jp

09 Jul - 12 Jul 2013
2013 26th International Vacuum Nanoelectronics Conference (IVNC)
Conf Record :31038
Location: Roanoke VA , USA
Contact : Jonathan Shaw
Tel : 2027679205
Fax : 2027679205
E-mail: jon.shaw@nrl.navy.mil
Deadline : 03 Jun 2013
www : http://www.ivnc2013.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

30 Sep - 04 Oct 2013
ESREF 2013 24th European Symposium on Reliability of Electron Devices, Failure Physics and Analysis
Conf Record :31739
Location: Arcachon , France
Contact : Nathalie LABAT
Tel : +33540006551
Fax : +33556371545
E-mail: nathalie.labat@ims-bordeaux.fr
Deadline : 24 May 2013
www : http://http: //www.esref.org

30 Sep - 03 Oct 2013
2013 IEEE Bipolar/BiCMOS Circuits and Technology Meeting - BCTM
Conf Record :30279
Location: Bordeaux , France
Contact : Bruce Hecht
Tel : +1 781-937-1535
Fax : +1 781-937-1702
E-mail: Bruce.Hecht@analog.com
Deadline : 19 Jul 2013
www : http://ieee-bctm.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

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/

28 May - 31 May 2013
2013 57th International Conference on Electron, Ion and Photon Beam Technology and Nanofabrication (EIPBN)
Conf Record :31630
Location: Nashville TN , USA
Contact : Leonidas Ocola
Tel : 630-803-2689
Fax :
E-mail: eipbn.2013@gmail.com
Deadline : 28 Jun 2013
www : http://eipbn.org

02 Jun - 04 Jun 2013
2013 IEEE Radio Frequency Integrated Circuits Symposium (RFIC)
Conf Record :30527
Location: Seattle WA , USA
Contact : Lawrence Kushner
Tel : 603-885-3279
Fax : 603-885-8256
E-mail: kushner@ieee.org
Deadline : 15 Mar 2012
www : http://www.rfic2013.org/index.html

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/

12 Aug - 14 Aug 2013
13th Non-Volatile Memory Technology Symposium
Conf Record :31643
Location: Minneapolis MN , USA
Contact : Marie Rahne
Tel : + 1 612-626-0375
Fax : + 1 612-625-4583
E-mail: lars1789@umn.edu
Deadline : 05 Aug 2013
www : http://http://nvmts.org

02 Sep - 06 Sep 2013
2013 Symposium on Microelectronics Technology and Devices (SBMicro)
Conf Record :31025
Location: Curitiba , Brazil
Contact : Jacobus Swart
Tel : +55-19-35213707
Fax :
E-mail: jacobus@fee.unicamp.br
Deadline : 01 Jun 2013
www : http://cobre.eletrica.ufpr.br/chipin/sbmicro.html

03 Sep - 05 Sep 2013
2013 International Conference on Simulation of Semiconductor Processes and Devices (SISPAD)
Conf Record :31141
Location: Glasgow , United Kingdom
Contact : Salvatore Amoroso
Tel :
Fax :
E-mail: salvatore.amoroso@glasgow.ac.uk
Deadline :
www : http://www.sispad2013.org/

04 Sep - 06 Sep 2013
2013 IEEE International Symposium on Low Power Electronics and Design (ISLPED)
Conf Record :31512
Location: Beijing , China
Contact : Pai Chou
Tel : +1 949 824 3229
Fax :
E-mail: phchou@uci.edu
Deadline : 25 Jun 2013
www : http://www.islped.org/

06 Oct - 08 Oct 2013
2013 European Microwave Integrated Circuit Conference (EuMIC)
Conf Record :30843
Location: Nuremberg , Germany
Contact : Wolfgang Heinrich
Tel : +49 30 6392 2620
Fax :
E-mail: w.heinrich@eumwa.org
Deadline : 14 Jun 2013
www : http://www.eumweek.com

07 Oct - 10 Oct 2013
2013 IEEE SOI-3D-Subthreshold Microelectronics Technology Unified Conference (S3S) (Formerly known as SOI Conference)
Conf Record :30572
Location: Monterey CA , USA
Contact : Joyce Hooper
Tel : 818-795-3768
Fax : 818-855-8392
E-mail: joyce@imf.la
Deadline :
www : http://s3sconference.org/

13 Oct - 17 Oct 2013
2013 IEEE International Integrated Reliability Workshop (IIRW)
Conf Record :31681
Location: South Lake Tahoe CA , USA
Contact : Jason Campbell
Tel : +1 301 975 8308
Fax :
E-mail: jason.campbell@nist.gov
Deadline : 13 Oct 2013
www : http://www.iirw.org

14 Oct - 16 Oct 2013
2013 International Semiconductor Conference (CAS 2013)
Conf Record :31015
Location: Sinaia , Romania
Contact : Cristina Buiculescu
Tel : +40 21 269 0775
Fax :
E-mail: cas@imt.ro
Deadline : 01 Jun 2013
www : http://www.imt.ro/cas

06 Jun - 07 Jun 2013
2013 13th International Workshop on Junction Technology (IWJT)
Conf Record :30347
Location: Kyoto , Japan
Contact : Parhat Ahmet
Tel : +81 45 924 5174
Fax : +81 45 924 5584
E-mail: parhat@ep.titech.ac.jp
Deadline : 15 Apr 2013
www :
http://www.iwailab.ep.titech.ac.jp
/IWJT/

11 Jun - 13 Jun 2013
2013 Symposium on VLSI Technology
Conf Record :30784
Location: Kyoto , Japan
Contact : Ran Yagasa
Tel : +011-81-3-3219-3541
Fax :
E-mail: vlsisymp@ics-inc.co.jp
Deadline :
www : http://www.vlsisymposium.org

13 Jun - 15 Jun 2013
2013 IEEE International Interconnect Technology Conference - IITC
Conf Record :30493
Location: Kyoto , Japan
Contact : Shinichi Ogawa
Tel :
Fax :
E-mail: shin1.ogawa1@gmail.com
Deadline : 28 Jan 2013
www : http://www.his.com/~iitc/

16 Jun - 20 Jun 2013
2013 Transducers & Eurosensors XXVII: The 17th International Conference on Solid-State Sensors, Actuators and Microsystems (TRANSDUCERS & EUROSENSORS XXVII)
Conf Record :30951
Location: Barcelona , Spain
Contact : Katharine Cline
Tel : +1-619-232-9499
Fax : +1-619-232-0799
E-mail: kkcline@pmmiconferences.com
Deadline : 26 Mar 2013
www : http://transducers-eurosensors2013.org/

06 Sep - 06 Sep 2013
2013 e-Manufacturing & Design Collaboration Symposium (eMDC)
Conf Record :31329
Location: Hsinchu , Taiwan
Contact : Celia Shih
Tel : +886 3 5917092
Fax : +886-3-5820056
E-mail: celia@tsia.org.tw
Deadline : 31 Jul 2013
www : http://www.tsia.org.tw
/seminar/eManufacturing2013/

08 Sep - 13 Sep 2013
2013 35th Electrical Overstress/Electrostatic Discharge Symposium (EOS/ESD)
Conf Record :31180
Location: Las Vegas NV , USA
Contact : Lisa Pimpinella
Tel : +1-315-339-6937
Fax :
E-mail: lpimpinella@esda.org
Deadline : 11 Jun 2013
www : http://www.esda.org

08 Sep - 13 Sep 2013
2013 23rd International Crimean Conference "Microwave & Telecommunication Technology" (CriMiCo)
Conf Record :31299
Location: Sevastopol , Ukraine
Contact : Yelena Red'kina
Tel : +380992858311
Fax :
E-mail: ElenaRedkina@gmail.com
Deadline : 10 May 2013
www : http://www.crimico.org/en/

12 Sep - 13 Sep 2013
2013 International Siberian Conference on Control and Communications (SIBCON 2013)
Conf Record :30855
Location: Tomsk , Russia
Contact : Oleg Stukach
Tel : +73822260299
Fax : +73822260299
E-mail: tomsk@ieee.org
Deadline : 30 Jul 2013
www : http://sibcon.sfu-kras.ru

21 Oct - 23 Oct 2013
2013 IEEE International Conference on Microwaves, Communications, Antennas and Electronic Systems (COMCAS)
Conf Record :30834
Location: Tel Aviv , Israel
Contact : Shmuel Auster
Tel : +972 8 857-5982
Fax :
E-mail: auster@ieee.org
Deadline : 01 Aug 2013
www : http://www.comcas.org

07 Nov - 09 Nov 2013
2013 International Workshop on Dielectric Thin Films for Future Electron Devices : Science and Technology (IWDTF)
Conf Record :30932
Location: Tokyo , Japan
Contact : Koji Kita
Tel : +81-3-5841-7164
Fax : +81-3-5841-7164
E-mail: kita@scio.t.u-tokyo.ac.jp
Deadline :
www : http://home.hiroshima-u.ac.jp/iwdtf

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/

Summary of Changes to the EDS Constitution and Bylaws

On June 3, 2012, the EDS Administrative Committee (AdCom) approved changes to the EDS Constitution and Bylaws. These amendments were then approved in October, 2012 by the Chair of the IEEE Technical Activities Board (TAB) and later at the IEEE Technical Activities Board. The changes will take effect 30 days following their publication in this copy of the Newsletter (distributed to all EDS members), unless objections are received from at least 5% of the EDS membership. The following is a summary of the changes:

- To change the name of the 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.
- To align terms of all EDS Vice Presidents to begin and end with the term of the incoming President. Appointments of all new Vice Presidents will be made by the President-Elect prior to the start of his or her term as President.

The complete EDS Constitution and Bylaws is available at http://eds.ieee.org/board-of-governors.html.

Renuka Jindal
EDS Junior Past President
University of Louisiana at Lafayette
Lafayette, LA USA