

IEEE ELECTRON DEVICES SOCIETY

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2005 IEEE INTERNATIONAL ELECTRON DEVICES MEETING (IEDM)



WASHINGTON, DC CONVENTION AND TOURISM CORPORATION

The 51st annual IEEE International Electron Devices Meeting (IEDM) will be held in Washington, D.C., USA, at the Hilton Washington and Towers, December 5-7, 2005. It will be preceded by a full day of Short Courses on Sunday, December 4th. IEDM, the Electron Devices Society's annual technical meeting, is the world's premier conference for the presentation of advances in nano-electronics and microelectronic devices and processes.

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

IEDM 2005 will offer a full slate of short courses, evening panel debates, invited plenary talks, a luncheon speaker, and presentation of prestigious IEEE/EDS awards, in addition to the technical program.

Short Courses

This year the Short Courses, on Sunday, December 4th will be: "Next Generation Semiconductor Manufacturing" organized by C. Rinn Cleavelin of Texas Instruments Inc., and "Platform Technologies for Advanced Low Power Systems" organized by Margaret Huang and Suresh Venkatesan of Freescale.

These courses give attendees the opportunity to learn about emerging new areas and important developments, and to benefit from direct contact with lecturers who are experts in the field. They also include introductory material for general audiences. Advance registration is required.

(continued on page 6)

YOUR COMMENTS SOLICITED

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

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

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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

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JUNE 2005 ADCom MEETING SUMMARY



John K. Lowell

The 2005 Spring meeting of the IEEE Electron Devices Society was called to order by President Hiroshi Iwai on Sunday, June 5, at the Convention and Exhibition Center (COEX) in

Seoul, Korea in conjunction with the Transducers - International Conference on Solid-State Sensors, Actuators, and Microsystems.

Executive Reports

Following approvals of the December 2004 meeting minutes, Hiroshi's opening address concerned the VLSI Technology Symposium to which, on behalf of EDS, he will be presenting a congratulatory plaque at its 2005 Symposium in Kyoto, Japan on 14 June in honor of its 25th anniversary. The VLSI Symposia (both Technology & Circuits) are developing a DVD that will include every paper ever published from the start of the Symposia to 2005 to be given to all the 2005 Symposia attendees. President Iwai also announced that EDS is one of five societies asked to participate in a pilot program of the IEEE GOLD Committee, called 'GOLD Strategy and Handbook Project', developed by the GOLD Committee Chair to enhance the quality and quantity of interaction between GOLD and societies/chapters. Elected GOLD AdCom member, Rebecca Welty Nikolic, will represent EDS on this project.

Approved by TAB was the formation of an IEEE Council on Electronic Design Automation (CEDA); the formation of an ad hoc committee to study advancing the role of life sciences in the IEEE through a Society or Technical Council, the formation, in principle, of the IEEE Systems Council; an initiative to incorporate more realistic projections for packaged products and indirect infrastructure in the first pass of S/C budgets, and absorb the variances in

the TAB Budget, and a policy on the sale of CD/DVD digital society publications. Renuka Jindal accepted the action item of investigating the offering of the VLSI Symposia Anniversary DVD.

The ExCom Report, given by President-Elect, Ilesanmi Adesida, focused on the current state of the Distinguished Lecturer program. While the continued health of the program was recognized, especially its extension into underserved regions, a program review to examine criteria for becoming a lecturer, the policy of reinstatement, and lecture frequency required to remain a DL was requested. What is in question here is the meaning behind becoming a DL for each member. Ade also proposed a change in funding allocation for the Graduate Student Fellowship (GSF). Under the current policy, the \$10K [Note: All financial information reported in \$US] prize awards \$5K to the student winner, \$1K to his/her home academic department, \$1K to the faculty sponsor, and \$3K for travel. The new plan, approved by AdCom, will allocate \$7K to the winning student with \$3K in travel funds. The rationale is to make the prize more attractive and simplify the financial distribution. Membership promotion for both regular and student chapters is continuing in Pakistan and Bangladesh, with possible extensions into Indonesia, the Philippines, Brazil, China, and India (Madras & Poona). Both the Region 9 and Region 10 SRCs have been charged to assist in these promotions. On a more sober note, the Chapter Partner program is mostly inactive, and EDS membership (like most of IEEE) is down by 2.9% this year. In budget news, our surplus for 2004 was above \$200K (US), and EDS (based on the current IEEE and EDS reserves status), can spend 3% of its reserves on initiatives (discussed later) such as membership promo-

tion, DL/SRC budget increases, adding another module to the XELL program, and transitioning to the online peer review software, Manuscript Central.

In his EDS Executive Office report, Bill Van Der Vort, presented a lengthy list of ad hoc projects completed since the December AdCom meeting. A few of the items included developing the list of new EDS initiatives (see later), adding a new procedure to send newly-elected EDS Fellows a congratulatory letter and a new procedure for being recognized (upon request) at IEDM, providing the Education Committee a history of DL talks to be used in establishing a DL recognition program as well as helping to increase the number of DLs, preparing the proposal to modify the distribution of GSF awards, reinstating both the EDS SM and TIP membership promotion programs (see later), continuation of the IEEE pilot project for Web-based short courses named XELL (Xplore Enabled Learning Library), implementing the Partial Membership Fee Subsidy Program (PMFP) to offer subsidies only to new members limited to twelve participants per chapter, coordinated the scanning and posting of old EDS Newsletters to the EDS Web site, continued working with IEEE Publications to have all issues of EDL, T-ED, and IEDM made available on-line to members, entertained options on continually updating the archival EDS DVD, and the annual CD-ROM, added a new procedure for EDL, T-ED, and T-DMR manuscript review to advise if a reviewer should be added to a "golden" list, gathered information on holding an annual appreciation reception at IEDM for T-ED, EDL, and IEDM reviewers, continued working to have prior years of ESSDERC (1997-2002), and IRPS (1970-1987) digitized and added to IEEE XPLORE, and provided assistance to four technical meetings requiring EDS support for the first time. In the last half of 2005, some of the upcoming

ad hoc tasks for the Executive Office include: finalize the Distinguished Lecturer recognition program, continued participation in the XELL project, determination of how to distribute the remaining inventory of short course videotapes, digitization of the ESSDERC & IRPS proceedings, reduction of the EDS Newsletter page size, work with IEEE Publications Department to have all years of EDL, T-ED, and IEDM available to members via Xplore as part of their membership, and development of a plan to have EDL manuscripts be processed and reviewed via the Web using the peer review program, Manuscript Central. If approval is granted at this

the two wherein four new members per year would be required for each chapter and not having the program support the same person more than once.

Vice-President Reports

Treasurer, Juin Liou, reports that EDS surplus for 2004 stands at \$216.1K. T-DMR, which had been losing money, will be turning things around in 2005 once they receive the full ASPP infusion. Both the Book Broker and conference income did well in 2004. Many conferences are showing profits this year. Juin gave an optimistic outlook for 2005's finances and projected a \$129.3K surplus.

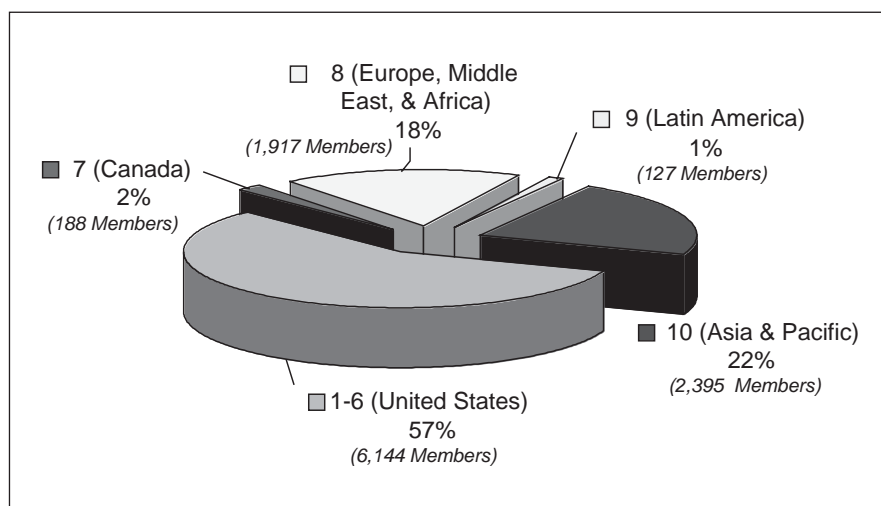


Figure 1. EDS Membership Demographics by Region as of 4/30/05.

meeting, the following projects will also be added to the Executive Office agenda: helping to establish an EDS Education award, edit the GSF brochure to indicate all funds going to the recipient, work with the Education committee to develop a Career Guide Booklet, initiate a direct mail member affiliate promotion, continued updates on the archival DVD and CD-ROM, and planning a Reviewer Reception at IEDM. AdCom discussion on this presentation raised the question regarding the MFSP asking if renewals can be allowed as part of the twelve payments per chapter. The previous program allowed for this, but was cut for budgetary reasons. An action item was given to James Kuo to examine a hybrid of

As of the end of April, EDS membership stands at 10,771 members in 2005, down 2.9% from month-end April 2004. Of these, 6,133 are regular members, 3,747 are permanent members, 863 are students, and 28 remain affiliate members. The demographics can be seen in Figure 1:

Membership V-P, James Kuo, praised the ongoing recruitment efforts at such as conference onsite credit vouchers, TIP mailings, promotional material for Senior Member (SM), and DL promotion. James also reviewed the EDS strategy on the Membership Fee Subsidy Program, reinstatement of the TIP profile as a mailing tool, and reviving the Senior Membership (SM) promotion program. This reinstatement

of the Senior Member promotion program is aimed at increasing Senior Members by getting chapters to encourage new SMs, and using e-mail to encourage SM applicants.

Cor Claeys, Regions/Chapters V-P, discussed new chapters in India, Vancouver, North Carolina, Mexico, Brazil and the Ukraine. He also reviewed plans for the R9 meeting in August, and the R1-3,7 meeting in December. It was also brought to AdCom's attention that while chapter globalization is continuing nicely, the number of US-based chapters is declining. In addition, plans need to be put in place to determine the succession of SRC chairs, and to determine whether or not a chapter is indeed "active". Cor took the action item to examine all of these issues. He also mentioned that the Chapter Partners program may also require some revision. Some partners are not active, and some have little contact with their chapter. Getting Partners and Chapters more involved in working together should be encouraged and the problems could be traced to both chapter budgets and empowerment.

The address by Renuka Jindal, Publications V-P, discussed the revitalization of T-DMR. His discussion also reiterated (from last December) the inadequate referencing by authors of material that is not available electronically since authors in both EDL & T-ED are not searching older, non-digitized papers on their subjects neglecting the earlier work of others. All flagship publications are looking very electronic in both handling and presentation, and will move to Manuscript Central by the end of 2007. The EDS Archival DVD which debuted at the 2004 IEDM has sold almost 450 copies since that time. However the current CD offering does not have search capabilities. Renuka unveiled several options to add a DVD-like search solution. AdCom chose the option wherein a stand-alone annual DVD backward compatible with the EDS archival DVD, and produced for about \$6K. In this talk, the subjects of reviewer recognition, and membership were also touched upon. With the strength

of the archival DVD, membership promotion at last year's IEDM generated 142 new memberships. This was a clear sign that the value of EDS "knowledge" is high and prized by its members. With much of this knowledge available almost gratis, members are asked not to dilute its value by giving it away by loaning or copying their DVD but instead encourage non-members to join and obtain their own copies. Renuka took on the action item to compose an entreaty to members on this subject which appears in this issue of the EDS Newsletter.

Additional Reports

Treasurer Liou reported on EDS' Initiatives for the 2006 budget. IEEE TAB has changed its 'New Initiative' process for 2006, establishing the term 'S/C Internal Initiatives'. It is defined as follows:

"These initiatives are totally within your control and require no outside interactions/justification. They are defined as initiatives that are less than \$50k and are done within your budget. It doesn't matter how many initiatives you want to sponsor, as long as they are carried within your budget. Remember, if your S/C meets the requirements of having an expense to reserves ratio of 50% or greater, you can now budget up to 3% of your reserves in the red toward the accomplishment of S/C initiatives (given that the integral of all of the societies don't budget more than 1% of our integral reserves in the red). All you need to do is provide a list of initiatives by name to the TAD Finance Staff. They will not be reviewed or followed. A simple list will suffice. This is our first opportunity since IEEE's fiscal problems of the early years of this decade to actually budget to use reserves."

EDS does meet the requirement of having an expense to reserve ratio of 50% or greater (ours is 65%), so we can budget for initiatives equal to about 3% of our reserves or about \$123K. Although the new initiative process is for the 2006 budget, it is being considered to implement the more important/timely ones in late 2005. The TAB Finance Dept. has advised EDS that if it

expects to meet/beat its 2005 budget, we can do this through quarterly forecasting. The ten initiatives are listed in the chart below. Action was required on only those initiatives that affected the 2006 budget that EDS had not already approved. The funding for 2006 for six of the ten initiatives passed (see below). Two of the initiatives did not require funding approval, as the TIP initiative incurred no cost and the archival DVD update initiative does not affect the 2006 budget. The funding approval for both the Education Award and Reviewer Reception was deferred to a later date.

Closing Reports

The meeting closed with reports from the Compact Modeling TC, the SRC North America West, and the 2007 International Vacuum Electronics Conference.

The next meeting of EDS AdCom will be on Sunday, December 4, 2005, in conjunction with the 2005 IEDM Meeting in Washington, D.C. at the Washington Hilton.

*John K. Lowell
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Dallas, TX, USA*

EDS Initiatives	
Society Affiliate Promotion	Promotion to Recruit Society Affiliates
Reinstate TIP Promotion	Use TIP Profile to Solicit New Members
Increase Budget for DL & SRC Development	Add funds for DL and Chapter Visitation
Increase budget for XELL Program	Add another Module
Hold Annual Reviewer Reception	Appreciation Dinner for T-ED & EDL Reviewers
Develop A Career Guide for Students	Follow EMBS model for Student Guidebook
EDS Education Award	Proposed Award
Update EDS Archival Collection	Options for Annual Updates of Archival Collections
Manuscript Central	Proposal for Web-based EDL & T-ED Processing
Increase Budget for Grad Student Fellowship	Add a Fourth GSF Award in 2006

Table 2. Proposed List of EDS Initiatives for 2006

Motion	Action
Approval of Minutes from December AdCom 2004	Passed
Reallocation of GSF Monetary Distribution	Passed
Approval of SRC/DL Initiative (\$1K)	Passed
Approval of XELL Initiative (\$20K)	Passed
Approval of GSF Initiative (\$10K)	Passed
Approval of Manuscript Central Initiative (\$34 K)	Passed
Approval of Student Career Guide Initiative (\$10K)	Passed
Approval of Affiliate Funding Initiative (\$20K)	Passed

Table 3. Summary of EDS AdCom Actions - June 2005

2005 IEEE INTERNATIONAL ELECTRON DEVICES MEETING (IEDM)

(continued from page 1)

Technical Program

This year's technical areas of coverage are:

- CMOS Devices
- CMOS and Interconnect Reliability
- Displays, Sensors and MEMS
- Integrated Circuits and Manufacturing
- Modeling and Simulation
- Process Technology
- Quantum, Power, and Compound Semiconductor Devices
- Solid State and Nanoelectronic Devices

The **CMOS Devices** sessions will cover breakthroughs and advancements in device physics; novel MOS device structures (such as vertical, multiple-gate, and 3-D integrated FET); CMOS scaling issues; high-performance, low-power and analog/RF devices; SOI, strained silicon and SiGe devices; noise behavior of MOS structures and device measurement and characterization.

CMOS and Interconnect Reliability will cover all areas of reliability for both device and interconnect manufacturing processes. Specific topics will include hot carriers; gate dielectric wear-out and breakdown; process charging damage; latch-up, ESD and soft errors; bias temperature instabilities; reliability of high-k and low-k materials, circuits and packaging. Other topics include interconnect reliability, electromigration, the impact of back-end processing on devices, manufacturing technologies for reliability; and reliability issues for memory technologies, SOI and BICMOS.

Displays, Sensors and MEMS sessions will cover critical devices, structures and integration for imaging, displays, detectors, sensors, and micro electromechanical systems (MEMS). Displays and Sensors topics include CMOS imagers; CCDs; TFTs; organic, amorphous and polycrystalline devices, vacuum microelectronics, emissive displays, and sensors for chemical, molecular and biological applications. MEMS topics include resonators, switches and passives for RF applications, integrated sensors, micro-optical devices, micro-fluidic

devices, and micro-power generators. Particular emphasis will be placed on integrated implementations. Other relevant subjects include design, fabrication, reliability, theory and modeling.

Integrated Circuits and Manufacturing sessions will focus on advances in integrated circuits technology, novel memory implementations, full process integration for memory, logic and mixed-mode applications, and manufacturing. Areas of interest include process architecture for performance and manufacturing, high-speed logic, advanced memories, multifunction integrated circuits, integrated passives, low-power, low-noise, analog, RF and mixed signal ICs. Topics also include IC manufacturing technology and methodology, process control, failure analysis, yield enhancements and modeling.

Modeling and Simulation sessions will discuss all areas of analytical, numerical, and statistical approaches to modeling electronic and optical devices, their isolation and interconnection. Topics include physical and circuit models for devices and interconnects, modeling fabrication processes and equipment, simulation algorithms, process characterization, and parameter extraction. Submissions should advance the modeling and simulation art or apply existing techniques to gain new insights into devices.

Process Technology sessions will cover front-end and back-end process modules for fabrication of CMOS, memory, and BICMOS devices. Topics related to front-end processing include substrate technologies, lithography, etching, isolation, thin dielectrics, high dielectric constant materials and metal electrodes for transistors and MIM capacitors, shallow junctions, silicides, self-assembly techniques, and new materials. Topics related to back-end processing include conductor systems, low dielectric constant materials, contact and via processes, barrier materials, planarization, and design considerations for multilevel interconnects.

Quantum, Power and Compound Semiconductor Devices will cover compound semiconductors (GaAs, InP, GaN, SiC, and their related alloys) with electronic and optoelectronic device applications and on discrete and integrated high power/current/voltage devices including silicon. Topics include high power and compound RF and millimeter wave devices, FET's, HBT's, LED's, lasers, external modulators. Also of interest are devices with ballistic and quantum effects, spintronics, and optoelectronic integrated circuits, optical interconnects, and photonic bandgap structures and crystals.

Solid State and Nanoelectronic Devices sessions will focus on silicon and silicon germanium bipolar transistors, high speed Si devices, integrated RF components including inductors, capacitors and switches on silicon or silicon germanium. Novel devices and memory structures on silicon, as well as nanoelectronic devices including nanotubes, nanowires, quantum dots, bioelectronics, and molecular devices are also solicited. Also of interest are new methods of assessing silicon device and material performance.

An **Emerging Technologies** session will focus on the topic of **"Polymer Electronics"**. This session is composed of invited talks by leading researchers in the field to bring attention and raise awareness of this significant emerging topic.

Plenary Presentations

IEDM will feature three plenary talks by prominent experts: "More Than Moore: Micromachine products enable new applications and open new markets" by Benedetto Vigna, Director of MEMS Business Unit, ST Microelectronics; "A History of Display Technology" by Dr. Kouji Suzuki, Chief Fellow, Toshiba Corp.; "Scaling, Power and the Future of CMOS" by Dr. Mark Horowitz, Professor, Stanford University

Evening Panel Sessions.

IEDM 2005 will feature two evening

(continued on page 9)

UPCOMING TECHNICAL MEETINGS

2005 IEEE COMPOUND SEMICONDUCTOR IC SYMPOSIUM (CSICS)

2005 IEEE Compound Semiconductor IC Symposium!

Come enjoy the beautiful weather, golf, outdoors and nightlife in lovely Palm Springs, CA, Oct 29-Nov 1, 2005.



More information about the Symposium can be seen at: <http://www.csics.org/>

The IEEE Compound Semiconductor IC Symposium (CSICS) has become the preeminent international forum on developments in integrated circuit technologies using GaAs, InP, SiGe, GaN, SiC and other compound semiconductor devices. Our strong technical program brings the latest advances in high-frequency and high-speed circuits and technology. This program includes papers from both commercial and newly emerging military applications.

This year's 2005 CSIC symposium will be co-located with the Compound Semiconductor Manufacturing Expo (CSMAX) and the Key Conference to offer a full 4-day technical program comprised of several manufacturing, device technology, design, and executive management sessions. The conference will be held October 30-November 2 in beautiful Palm Springs, California, at the luxurious Hyatt Grand Champions Resort. There are several social events planned for the week, so bring your golf clubs and loud Hawaiian or Caribbean shirt and take part in this year's compound semiconductor week.

Symposium Highlights

The IEEE CSIC technical sessions will highlight all aspects of compound

semiconductor IC technology ranging from materials characterization to systems applications. Over 65 technical papers have been selected from worldwide submissions and will be presented for oral presentation and publication in the Symposium Digest. Invited papers and panel sessions on topics of current importance to the Compound Semiconductor IC community will complete the program. Specific technical areas which will be presented at our symposium include:

- Innovative RFIC Device & Circuit Concepts
- Circuit Design & Fabrication
- Manufacturing Technology & Cost Issues
- Device Modelling
- IC Testing & Methodology
- Packaging Technology
- Reliability
- Advanced Device Applications
- System Applications (e.g., wireless, vehicular, RADAR, military)
- Optoelectronic and OEIC applications

Educational Short Courses & Primer Course

In addition, the IEEE CSIC symposium will be providing focused educational opportunities through our Short Courses and Primer Course, both held on Sunday, October 30th. Keeping you abreast of the latest applications of compound semiconductor technology, two one-day short courses will be taught by leading experts from the industry. The first short course is entitled "Compound Semiconductor IC Design for Automotive Radar and Sensor Networks" and the second is "GaN Technology and its Wireless/Microwave/Millimeter-Wave IC Applications." Both will reveal exciting applications exploiting advanced semiconductor technologies. Keeping up with tradition, the Symposium will also offer the popular primer course, "Basics of GaAs, InP and SiGe RFICs," which is an introductory-level class

intended for those wishing to obtain a broad overview of RFIC technology. The Sunday evening course will cover materials and processes, device operation, and both analog/microwave and digital ICs. The Course is tailored to provide the specific background needed for participants to understand and appreciate the papers presented in the Symposium Technical Program.

Exhibition

To enhance our Exhibition we have unified our industry exhibition between CSICS with CS-MAX in which we bring you over 60 technical exhibitors. A wide variety of companies who sell state-of-the-art compound semiconductor integrated circuits as well as companies who sell critical products and services to the III-V IC industry will be represented. The Exhibition will feature informative and interesting displays with corporate representatives on hand between the hours of 5:00 p.m. and 8:00 p.m. on Monday, October 31st and 7:30 a.m. to 4:00 p.m. on Tuesday, November 1st. The Exhibition will also host the Exhibition Opening Reception on Monday evening from 5:00 p.m. until 7:00 p.m. and the Exhibition Luncheon on Tuesday.

Social Events and "Caribbean Nights" Theme Party

To complement the full technical program, we are providing several social events to allow interaction with colleagues to catch up on the latest in our industry. Events include the Sunday Evening CSICS Opening Reception, the Monday CS-Week Exhibition Opening Reception, the CSICS/CSMAX Tuesday evening "Caribbean Nights" Theme Party, and the CS-Week Exhibition Luncheon on Wednesday. Additionally, a breakfast will be served on Monday, Tuesday and Wednesday. At the theme party there will be a wacky shirt contest, so wear your favorite Hawaiian, Reggae or Caribbean shirt.

2005 IEEE SEMICONDUCTOR INTERFACE SPECIALISTS CONFERENCE (SISC)



The **2005 IEEE Semiconductor Interface Specialists Conference (SISC)** will be held December 1-3, 2005, at the Key Bridge Marriott in Arlington, VA, immediately prior to the IEDM. The Key Bridge Marriott overlooks the Nation's Capital and Georgetown from the Virginia side of the Francis Scott Key Bridge, and is only minutes from Washington, D.C. The SISC provides a unique forum for device engineers, solid-state physicists, and materials scientists to discuss issues of common interest. Principal topics for discussion at SISC are semiconductor/insulator interfaces, the physics of insulating thin films, and the interaction among materials science, device physics, and state-of-the-art technology.

This year will be the thirty-sixth meeting of SISC. The first meeting was held in 1965 and attendance was by invitation. The conference, now public, alternates between the east and west coasts, and meets just before the IEDM. An important goal of the conference is to provide an environment that encourages interplay between scientific and technological issues. Invited and contributed talks, as well as a lively poster session, are presented in an informal setting designed to encourage discussion, and conference participants enjoy numerous opportunities for social gatherings with renown scientists and engineers.

The conference emphasis is on silicon-based devices, including the SiC and SiGe systems, and topics evolve with the state-of-the-art. The

program includes talks from all areas of MOS science and technology, including but not limited to the following:

- physics of thin dielectrics and their interfaces
- gate-dielectric conduction and breakdown
- nitrogen-containing oxides and stacked interfaces
- alternative and high-k gate dielectric materials
- insulators on Ge
- non-volatile memory structures and materials
- silicon carbide and its interfaces
- physical and electrical characterization of Si/SiO₂ interfaces
- micro-roughness measurement, modeling, and device-related effects
- hot carrier, plasma damage and radiation effects
- surface cleaning technology and effects on dielectrics and interfaces
- novel oxidation, deposition, and etching techniques
- theory of oxide and interface defects

Invited and contributed talks are complemented by informal events designed to encourage lively discussion and debate. Invited speakers this year include:

Prof. Ashraf Alam, Purdue University, USA

Temperature Bias Instability in Ultrathin SiO₂

Dr. Eduard Cariter, IBM, USA

Metal Gates and High-k/Gate Interfaces

Dr. Gitae Jeong, Samsung, Korea
DRAM Memory Technologies

Prof. Robert Nemanich, North Carolina State University, USA
Interface Dipoles at High-k/Gate Interfaces

Dr. Krishna Parat, Intel, USA

Floating Gate Flash Memory Technology

Dr. Barbara de Salvo, LETI, France

Non-volatile Memory Technologies
Dr. Mariko Takayanagi, Toshiba Corporation, Japan
HfSiON Device and Reliability Characteristics

Generous hospitality allows attendees to focus on enjoying the conference. Hors d'oeuvres, wine, and cheese encourage interaction among poster authors and other conference participants at Thursday's poster session. Friday afternoon has no scheduled talks, to allow time to meet informally, relax, or visit local Washington D.C. attractions. On Friday evening the conference hosts a banquet and awards ceremony, complete with the now-famous (and always riotous) limerick contest. The limericks never fail to give the conference presentations, people and events an entirely new perspective!

This year's SISC will continue the tradition of presenting an award memorializing Prof. E. H. Nicollian. The award will be given for the best student presentation. Ed Nicollian was a pioneer in the exploration of metal oxide semiconductor (MOS) systems. His contributions were important to establishing SISC in its early years, and he served as the Technical Chair in 1982. With John Brews, he wrote the definitive book MOS Physics and Technology.

For registration information and general inquiries about SISC, please refer to the Web site: www.ieeesisc.com or contact the Arrangements Chair, Matt Copel, at IBM TJ Watson Research Center, PO Box 218, Yorktown Hts, NY 10598. Phone: (914) 962-1997, Fax: (914) 962-2141, E-mail: mcopel@us.ibm.com. The deadline for abstracts was July 22, 2005.

Matthew W. Copel
2005 SISC Arrangements Chair
IBM T. J. Watson Research Center
Yorktown Heights, NY, USA

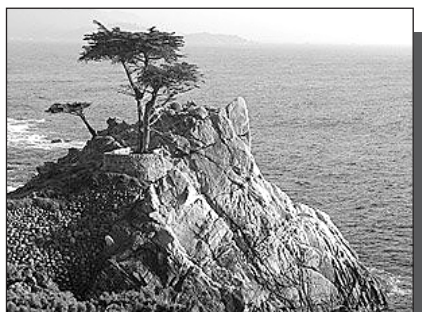
2006 IEEE NON-VOLATILE SEMICONDUCTOR MEMORY WORKSHOP (NVSMW)

The 2006 IEEE Non-Volatile Semiconductor Memory Workshop (NVSMW) will be held February 12-16, 2006, in Monterey, California. The Workshop is sponsored by the IEEE Electron Devices Society. NVSMW is a unique forum for both specialists in all aspects of nonvolatile memory microelectronics and novices wanting to gain a broader understanding of the field. Attendees represent professional and academic researchers involved with semiconductor non-volatile memory development and production along with end users of memory products. Principal topics for discussion at NVSMW are: device physics; silicon processing; product testing; new technologies, including multi-level-cell approaches; programmable logic; memory cell design; integrated circuits; solid state disks and memory cards; memory reliability; and new applications.

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

including snacks and the workshop dinner and lunch are provided as opportunities to meet and exchange ideas with colleagues. Breakfasts are also provided. The morning and afternoon technical sessions are organized in a manner to provide ample time for the informal exchange and to enjoy the beauty of the Monterey peninsula region of California.

This year will be the 21st meeting of NVSMW. The workshop is held every 18 months, alternating between Febru-



ary and August. The February meeting is usually held the week after ISSCC. Early workshops alternated between Monterey, California, for the February meeting and Vail, Colorado, for the August meeting. The Vail venue was dropped a number of years ago, to facilitate attendance and travel from the nearby Silicon Valley. For many years, the attendance for the workshop was around 100. In recent years, however, the attendance has grown consid-

erably, reflecting the large growth in the Non-volatile memory market, particularly flash memory and embedded memory on logic cores, with the attendance at the last several workshops being well in excess of 200 and peaking at 300 at the last workshop. In order to maintain the workshop atmosphere of the forum, the maximum attendance is limited. Therefore, advance registration is highly recommended. NVSMW is attended by a wide international community from North America, Europe, Japan and other Asian countries. Last year's program can be found on the conference Web site — www.ewh.ieee.org/soc/eds/nvsmw/.

The 2006 NVSMW will be held at the Hyatt Regency in Monterey, California. The hotel is conveniently situated on the Monterey peninsula and allows fast access to many sights. Among favorite destinations are: the famous Fisherman's Wharf, Cannery Row, The Monterey Bay Aquarium, 17-Mile Drive, nearby Carmel and the many tranquil sights of natural beauty of the Monterey coastline and the fine dining experiences of the area. The Hyatt Regency is located at: One Old Golf Course Road, Monterey, California. The hotel can be reached by telephone: (831) 372-1234.

*Stephen Keeney
2006 NVSMW Technical Chair
Intel Corporation
Santa Clara, CA, USA*

2005 IEEE INTERNATIONAL ELECTRON DEVICES MEETING (IEDM)

(continued from page 6)

panel sessions on future challenges to the industry: "Will non-volatile memory technology scale past the end of the decade?" and "Semiconductor Research and Development: Who will do it in 2010?"

For **Registration and other information**, visit the IEDM 2005 home page at www.ieee.org/conference/iedm or contact Conference Manager, Phyllis Mahoney, 16220 S. Frederick Ave., Gaithersburg, MD 20877, USA; tel. (301) 527-0900, ext. 103; fax (301)

527-0994; or e-mail: phyllism@widerkehr.com. The submission date for regular papers has already passed, but a limited number of **Late-News Papers** will be accepted for presentation until September 13, 2005.

Washington, D.C. provides many attractions for visitors and we encourage attendees to explore them in the off hours of the conference. The IEDM organizers and committee members look forward to seeing you in December.

*Jon Candelaria
2005 IEDM General Chair
Motorola Labs, Motorola Inc
Tempe, AZ, USA*

*Tom Bonifield
2005 IEDM Publicity Chair
Texas Instruments
Dallas, TX, USA*

*Vivek Subramanian
2005 IEDM Publicity Vice-Chair
University of California Berkeley
Berkeley, CA, USA*

SOCIETY NEWS

EDS MEMBERSHIP COMMITTEE REPORT



James B. Kuo

EDS membership has been quickly becoming globalized these days. From the April 2005 EDS membership statistics, the US (Regions 1-6) has 57% of the total mem-

bership. Europe, Middle East and Africa (Region 8), Latin America (Region 9), and Asia and Pacific (Region 10) have the other 43%. According to the statistics in the recent years, non-US membership becomes more and more important. Nowadays the worldwide semiconductor industry is reconfiguring its territory at a quick pace. In compliance with the EDS strategic planning position statement to ensure EDS activities to reflect the current and the future global trends, the EDS Membership Committee has been working to create new strategies in membership promotion.

For the past three years, as for most IEEE societies, EDS membership has been suffering from a down turn. As of April 2005, total EDS membership is 10,771, down 2.9% from April 2004. To resolve it, we are working on creating innovative approaches for promoting EDS membership. In addition to on-site membership promotion at important conferences, which has been successful for years, EDS membership has been benefiting from other pro-

grams such as the Senior Membership Program (SMP) and the Membership Fee Subsidy Program (MFSP). Among 39 societies in IEEE, EDS has had one of the most successful SMP programs for several years. Currently an improved SMP program has been implemented for further success in membership development in EDS. Also the Membership Fee Subsidy Program (MFSP) continues to attract potential members. Via collaboration with the Regions/ Chapters and Educational Activities Committees, promoting membership in the new chapters worldwide is another strategy.

In order to promote EDS membership further, the Technical Interest Profile (TIP) Promotion and the Society Affiliate Promotion (SAP) have been added this year. Previously a TIP promotion mailing was done via standard mail, but was cut due to budget restraints. The TIP promotion program has been brought back this year due to a new tool available through the IEEE web-site, which allows us to do the promotional solicitation via e-mail as the member is prompted to join on-line. The TIP promotion e-mail was sent to approximately 4,000 IEEE non-EDS members that selected EDS as one of their top five TIPS. The e-mail directed the members to go to the IEEE 'Add Services' webpage to add EDS and provide them with a promo

code to get half-year membership for free. One of the possible items affecting society membership is the high cost of the IEEE membership dues and assessment fees. As an alternative, the Society Affiliate Promotion (SAP) Program would provide people the opportunity of just joining EDS and not IEEE. To become an EDS affiliate member, an individual just has to be a member of another technical society, outside of the IEEE. Instead of paying IEEE dues and assessment and EDS membership fees (\$167 for US members), the individual (for 2006) would only pay the society affiliate fee of \$59.50 and the EDS fee of \$11, a total of \$70.50. The EDS affiliate member can obtain all the benefits offered to EDS members, with one exception that the individual cannot run for an 'elected' AdCom position but can hold an appointed position (committees, etc.). A promotional packet including a membership application and cover letter will be sent to individuals from a number of mailing lists from of non-IEEE technical associations. EDS membership promotion is every member's business. We encourage every one of you to get involved.

James B. Kuo
EDS Vice-President
of Membership
National Taiwan University
Taipei, Taiwan

EDS ORGANIC ELECTRONICS COMMITTEE REPORT



Ananth Dodabalapur

The EDS Organic Electronics Technical Committee activities included increasing the number of submissions to *IEEE Electron Device Letters* (EDL) and *IEEE Transactions on Electron*

Devices (T-ED). One of the committee members, Professor Jerzy Kanicki, has been designated as the contact person for IEEE T-ED. Mailing lists were compiled of researchers in Europe, the Americas, and Asia to encourage submissions. The committee was expanded to include representation from Asia and Canada. The new members that have been inducted

include Professor Arokia Nathan (Canada), Associate Professor Takao Someya (University of Tokyo), and Associate Professor Subodh Mhaisalkar (NTU, Singapore). Future plans include having representation from Europe.

One of the issues that was discussed at some length at the EDS Administrative Committee (AdCom) Meeting in 2004 was the possibility of an IEEE sponsored conference in the area of organic electronics. Since, organic electronics is an interdisciplinary field and even within IEEE other societies besides EDS have an interest in the field. Accordingly, a working group consisting of representatives from several societies, including EDS (represented by A. Dodabalapur), CPMT, etc., will be meeting in New-

port, Rhode Island on 11 July to discuss the best strategy for holding an IEEE conference. The committee will have its next meeting during the 2005 IEDM. The main focus for the coming year will continue to be increasing the number of journal submissions and planning for the conference which is expected to be in 2006. The underlying goal of both these activities is the greater integration of the organic device community with the mainstream semiconductor device community.

Ananth Dodabalapur
EDS Organic Electronics
Technical Committee Chair
The University of Texas at
Austin
Austin, TX, USA

EDS WEB SITE GETS A MAKEOVER



Arlene A. Santos

The EDS homepage has a new streamlined look. With the intent of providing the latest news to its membership, the EDS main page had become long and filled with a lot of text. Laura

Riello of the EDS Executive Office took the initiative to revamp our homepage to the current simplified, more navigable format.

In order to reduce the time it takes to upload new information online, EDS has moved from a centralized support system for the Web site to a decentralized structure. Each member of the EDS Business

Administration Group (Laura Riello, Stacey Waters and Joyce Lombardini), has responsibility to provide web support for specific areas of the EDS business (e.g., membership, publications, etc.). In the past, all the physical changes were made by only one person in the Group. The IEEE has moved to a new web application, Content Management System (CMS), to manage its Web pages and Web content. CMS is a document centric collaborative application for managing documents and other content. Plans for EDS' migration of files began May 27, 2003. EDS went live with CMS around August 11, 2003.

Currently, there are 5 technical committees that have home pages on the EDS site. The Business

Administration staff works with the respective technical committee and handles the physical updating of all sites with the exception of the VLSI Technical Committee. The VLSI Chair worked with IEEE CMS Staff to gain access to the Web pages and makes changes in CMS and submits them directly to IEEE to go live.

Please come and visit our Web site and check out our new look: <http://www.ieee.org/eds>.

We look forward to comments and suggestions to continuously improve our site.

Arlene A. Santos
EDS Web-Site Coordinator
Department of Defense
Fort Meade, MD, USA

EDS DEVICE RELIABILITY PHYSICS COMMITTEE REPORT



Lucian A. Kasprzak

The Device Reliability Physics Committee of the Electron Devices Society has been involved in IRPS (International Reliability Physics Symposium), T-DMR (IEEE Transactions of Device and Materials Reliability), and IRW (Integrated Reliability Workshop), all jointly sponsored by EDS and RS. I would like to thank all the members (past and present) of the Device Reliability Physics Committee: A.N. Campbell – Sandia, Aristos Christou – University of Maryland, Agit Goel – Saratoga, CA, Tony Oates – TSMC, Joe McPherson – Texas Instruments, Robert Thomas – Technology Experts Network. IRPS and IRW are both very successful meetings and I will now focus on T-DMR.

T-DMR, an all electronic publication, has turned a major corner and grown from a few hundred pages in 2001 and 2002 to over 700 pages in 2004 and 2005. This growth was accomplished by a lot of hard work on the part of the Editor-in-Chief, Tony Oates, and his staff of Editors, past and present (Richard Blish – Advanced Micro Devices, Paul Boudreau – University of Maryland, Aristos Christou – University of Maryland, Charvaka Duvvury – Texas Instruments, Fausto Fantini – University of Modena, William Filter – Sandia, Paul Ho – University of Texas, Fred Kuper – Philips Semiconductor, William Miller – Sandia, Don Monroe – Agere, Arokia Nathan – University of Waterloo, Elyse

Rosenbaum – University of Illinois, Robert Rosenberg – IBM Research, Gay Samuelson – Intel Corporation, Robert Thomas – Technology Experts Network, Jim Walls – Freescale, Peter Yuan – University of Central Florida). In addition, we need to express our appreciation to Jo Ann Marsh – IEEE/EDS Publications Office and William Van Der Vort – EDS Executive Director, for their help in keeping us all on the same page, if you'll pardon the pun.

The genesis of T-DMR was a need discovered at IRPS: namely, the people working in Reliability needed a place to publish. The difficulty was the breadth of technical fields covered didn't fit too many existing publications. Additionally, there was a desire for the rigorous referee process, practiced by IEEE transactions class publications. The success of T-DMR is at least partially due to the nature of Reliability Engineering, which tends to require many disciplines to find the root cause of failure and then provide a solution which meets the form, fit and function of the final product. It is often the cross fertilization of these disciplines which leads to the understanding and solution.

Recent topics covered in special issues include: (Interface Reliability, Physical and Failure Analysis of Integrated Circuits, Interface Reliability II, Non-Volatile Memory Reliability, Thermal Management for Reliability, Hi-k Dielectric Reliability, and Soft Error Reliability).

Topics planned or under consideration for future special issues include: (Contamination, Breakdown in Advanced Gate Dielectrics, Medical Electronics Reliability, Automomo-

tive Electronics Reliability, Electromigration in Copper Metallization, Time Dependent Dielectric Breakdown, Reliability of Nanotechnology, Package Reliability, Surface Mount Technology Reliability, Environmental Reliability Issues, and Hot Carrier Reliability Limitations).

Finally, as Chair of the Advisory Board for T-DMR, I would like to thank past and present members of the T-DMR Advisory Board: Ann Campbell – Sandia, Neal Mielke – Intel Corporation, Alan Street – QUALCOMM, Eric Snyder – AMI Corporation, Robert Thomas – Technology Experts Network, William Tonti – IBM Microelectronics, O.D. Bud Trapp – Technology Associates. This Board has worked hand in hand with Tony Oates and his Editors to help T-DMR achieve its goals.

T-DMR can be viewed at the IEEE Xplore Web site (www.ieee.org/iee-explore). It is suggested that you take a look. We are confident you will find relevant, leading edge answers to your reliability problems no matter what aspect of devices, materials and reliability you need. In addition to viewing T-DMR, we ask you to help us going forward. T-DMR needs your input regarding the form it takes in the future, specifically would you like to see T-DMR available in hard copy for subscription. Please send me an e-mail (l.kasprzak@ieee.org) with your opinion and possibly include a special topic area for T-DMR.

Lucian A. Kasprzak
EDS Device Reliability Physics
Committee Chair
Dade Behring, Inc.
Newark, DE, USA

2004 EDS PAUL RAPPAPORT AWARD

A high priority of the Electron Devices Society is to recognize and enhance the quality of papers published in EDS archival literature. Every year, the Society confers its prestigious Paul Rappaport Award to the best paper published in the *IEEE Transactions on Electron Devices*. Among other criteria including technical excellence, an important metric for selection for the award is comprehensive and impartial referencing of prior art. The winning paper was selected from among 330 manuscripts that were published in 2004. The article is entitled, "Testing and Diagnostics of CMOS Circuits Using Light Emission from Off-State Leakage Current". This paper was published in the September, 2004 issue of the *IEEE Transactions on Electron Devices*, and was authored by Franco Stellari, Peilin Song, James C. Tsang, Moyra K. McManus and Mark B. Ketchen. The award will be presented in the plenary session of the International Electron Devices Meeting to be held on December 5, 2005 in Washington, D.C. In addition to the award certificate, the authors will receive a check for \$2,500. On behalf of the Electron Devices Society I would like to congratulate the authors for this achievement. Brief biographies of the authors follow:



Franco Stellari
(S'95-M'04) received a Ph.D. in EE from the Politecnico di Milano, Italy, in 2002. He is currently at the IBM Watson

Research Center working on the characterization of the near infrared light emitted by transistors. He authored about 50 publications and several pending patents applications. He received 2 Best Paper Awards and an IBM Achievement Award.



Peilin Song

(M'94-SM'02) is at the Optical Communications and High-Speed Test Department at the IBM Research Center. He joined IBM in 1997 and

has since worked in the area of design for testability, fault diagnostics, fault modeling, and circuit simulation. He is currently working on developing diagnostic analysis techniques for VLSI chips. He has more than fifty publications, holds seven U.S. patents, has several patents pending, and is an IEEE Senior Member. He received his Ph.D. in electrical engineering from the University of Rhode Island.



James C. Tsang

(SM'98) is at the IBM Watson Research Center. He has a Ph.D. in EE from MIT. His research has involved the optical properties of

materials and devices. Dr. Tsang has received four IBM Achievement awards, written over 140 papers, and holds several patents. He is a Fellow of the APS, and a Fellow of the AAAS.



Moyra K. McManus

(M'98) developed and used Picosecond Imaging Circuit Analysis for VLSI debug. As a manager of the PICA group at IBM's Research she was responsible for the deployment and use of PICA at IBM, and has authored over 35 papers and three patents on this topic alone. She is presently the Technical Assistant to the Vice President of Systems, Research Division. She received her Ph.D. in Physics (1997) from Simon Fraser University, Canada.



Mark B. Ketchen

(M'79-SM'93-F'96) received his Ph.D. in Physics from Berkeley University. Over the last 27 years he has held a variety of

research management positions in solid state science and technology at IBM Yorktown, Almaden, and Zurich. He is currently Manager of the Design/Technology Integration Group working on defining the limits of CMOS scaling. He is a Fellow of IEEE and American Physical Society, a Member of the IBM Academy of Technology, and the recipient of the 1995-1996 American Institute of Physics Prize for Industrial Applications of Physics and the 1996 IEEE Morris E. Leeds Award.

Renuka P. Jindal
EDS Vice-President of Publications
University of Louisiana at
Lafayette
Lafayette, LA, USA

2004 EDS GEORGE E. SMITH AWARD

A high priority of the Electron Devices Society is to recognize and enhance the quality of papers published in EDS archival literature. The George E. Smith Award was established in 2002 to recognize the best paper appearing in a fast turnaround archival publication of EDS, targeted to *IEEE Electron Device Letters*. Among other criteria including technical excellence, an important metric for selection for the award is comprehensive and impartial referencing of prior art. The paper winning the 2004 George E. Smith Award was selected from among 249 manuscripts that were published in 2004. The article is entitled "Fully Depleted Strained-SOI n- and p-MOSFETs on Bonded SGOI Substrates and Study of the SiGe/BOX Interface". This paper appeared in the March 2004 issue of *Electron Device Letters* and was authored by Zhiyuan Cheng, A.J. Pitera, M.L. Lee, J. Jung, J.L. Hoyt, D.A. Antoniadis, and E.A. Fitzgerald. The award will be presented in the plenary session of the International Electron Devices Meeting to be held on December 5, 2005, in Washington, D.C. In addition to the award certificate, the authors will receive a check for \$2,500. On behalf of the Electron Devices Society I would like to congratulate the authors for this achievement. Brief biographies of the authors follow:



Zhi-Yuan

Charles Cheng received his B.Eng from Tsinghua University, Beijing, and his Ph.D. from National University of Singapore, both in Electrical Engineering. He was a Postdoctoral Researcher at MIT, Cambridge, MA. Currently he is a Manager of Emerging Technologies at AmberWave System, Salem, NH. He authored and



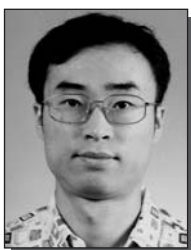
Arthur Pitera

received his Ph.D. at MIT working in the field of lattice-mismatched integration. His work identified a hydrogen-gettering phenomenon in strained layers, thus improving the efficiency of the commercial Smartcut™ process. Dr. Pitera has authored or co-authored over 30 publications on subjects including wafer bonding, epitaxy, H-induced layer exfoliation and materials integration.



Minjoo Larry Lee

received his Sc.B. in Materials Engineering from Brown University in 1998 and his Ph.D. in Electronic Materials from MIT in 2003. He is jointly appointed as a postdoctoral researcher in the Microsystems Technology Laboratory and the Department of Materials Science and Engineering at MIT. Dr. Lee is a member of TMS and MRS.



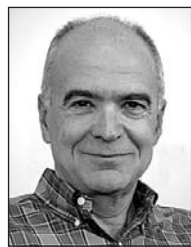
Jongwan Jung

received the Ph.D. degree in Electrical Engineering from KAIST, Korea, in 1996. He was a Senior Member of Technical Staff, at Hynix. He worked as a Postdoctoral Researcher at the MIT, Cambridge, MA, for 3 years engaged in research of nano-CMOS, and Si/SiGe technology. Currently, he is with the Samsung Electronics, Inc., working on CMOS Image Sensor development.



Judy L. Hoyt

is a Professor in the Dept. of Electrical Engineering and Computer Science at MIT. She received her Ph.D. from Stanford University in 1988. She was a Senior Research Scientist in the Dept. of Electrical Engineering at Stanford, prior to joining the faculty of MIT in January 2000. Dr. Hoyt chaired the IEEE IEDM in 2001.



Dimitri A. Antoniadis

is Ray and Maria Stata Professor of Electrical Engineering at MIT. He is Director of the multi-university Focus Research Center for Materials Structures and Devices, IEEE Fellow, and recipient of several professional awards. He is author or coauthor of over 200 technical articles, and he currently works on extreme-submicron Si, SOI and Si/SiGe MOSFETs.



Eugene A. Fitzgerald

(M'01) received his SB in Materials Science and Engineering from MIT and his Ph.D. in Materials Science and Engineering from Cornell University. He was a researcher in lattice-mismatched materials and devices at AT&T Bell Laboratories from 1988-1994, and is currently the Merton C. Flemings SMA Professor of Materials Engineering at MIT.

Renuka P. Jindal
EDS Vice-President of Publications
University of Louisiana
at Lafayette
Lafayette, LA, USA

EDS MEMBERS NAMED WINNERS OF 2005 IEEE MEDALS AND PRIZE PAPER AWARDS

Two EDS members won 2005 IEEE Medals and Prize Paper Awards. Jerry M. Woodall won the IEEE Jun-ichi Nishizawa Medal and Henry Baltes won the IEEE Donald G. Fink Prize Paper Award.

IEEE Jun-ichi Nishizawa Medal



**Jerry M.
Woodall**

"For pioneering contributions to the liquid-phase epitaxy in the GaAs/AlGaAs systems, including applications to photonic and electronic devices."

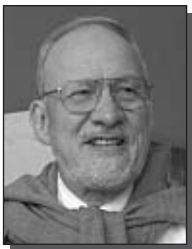
A U.S. National Medal of Technology Laureate, a member of the National Academy of Engineering, and a Professor of Electrical and Computer Engineering at Purdue University in West Lafayette, Indiana, Dr. Jerry M. Woodall changed the way research is conducted in compound semiconductors. His contributions, in turn, have sparked the successful commercialization of a broad range of new widely manufactured opto-electric and high-speed devices.

Earlier in his career, as a staff researcher at the IBM Research Division in Yorktown Heights, New York, Dr. Woodall developed the liquid phase epitaxy (LPE) of the gallium arsenide (GaAs) high-efficiency IR light emitting diodes used in remote control and data-link applications. He also pioneered the use of liquid phase epitaxy of gallium aluminum arsenide (GaAlAs) and the GaAlAs/GaAs heterojunction, which he used to fabricate super-bright red LEDs, high-efficiency solar cells and the heterojunction bipolar transistor used in cellular telephones. He tapped this same technology to create the "pseudo-morphic" high-electron-mobility

transistor widely used in devices and circuits, which offers highly uniform thickness, excellent repeatability, low maintenance, high throughput and low cost of ownership, among other advantages.

An IEEE Fellow, he has received the IEEE Jack A. Morton Award and the IEEE Third Millennium Medal, five major IBM Research Division awards and 30 IBM Invention Achievement Awards. He is the founder and first chairman of the Energy Technology Division of the Electrochemical Society and a recipient of its Edward Goodrich Acheson Award.

IEEE Donald G. Fink Prize Paper Award



Henry Baltes

"For a paper entitled, 'Microfabrication Techniques for Chemical/Biosensors' Proceedings of the IEEE, Volume 91, No. 6, June 2003."

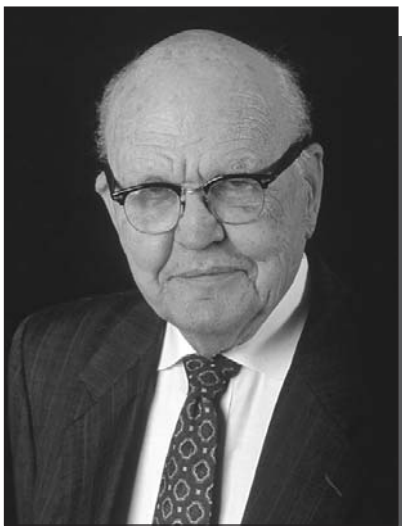
Microfabrication processes for chemical and biochemical sensors hold the potential to produce one or thousands of devices of micrometer and millimeter dimensions. This ability to fabricate many of these devices in parallel leads to tremendous cost savings and enables the production of array structures or large device series with minute fabrication tolerances. The paper "Microfabrication Techniques for Chemical/Biosensors" published in the June 2003 issue of the Proceedings of the IEEE, by Henry Baltes, Oliver Brand, Christoph Hagleitner and Andreas Hierlemann, will be a valued reference to those involved in microfabrication for the foreseeable future. Originally asked to describe how microfabrication technology applies to chemical microsensors, the

authors exceeded all expectations by crafting a powerful review that describes, compares and contrasts the principal approaches to microsensor technology, identifies them with their appropriate micro-fabrication technologies, and provides wide-ranging examples of each from numerous research groups. The paper provides a sound outline of fundamental chemical sensor principles, a definitive review of the advantages and disadvantages of fabricating devices via IC fabrication technology, a description of various micro-fabrication process flows, and a look at monolithic, integrated chemical and biological microsensor systems.

Dr. Henry Baltes is an expert on silicon-based microsystems and is professor of physical electronics at the Swiss Federal Institute of Technology, (ETH), in Zurich, Switzerland, and acting chairman of the new ETH Center of Biosystems Science and Engineering in Basel. A Fellow of the IEEE and member of the editorial board of the Proceedings of the IEEE, he is co-editor of two series of textbooks, "Advanced Micro and Nanosystems" and "Microtechnology and MEMS." A member of the Swiss Academy of Science, his honors include the Koerber European Science Award, the Wilhelm Exner Medal of the Austrian Trade Association and the Swiss Technology Award. He is the former program director of the Swiss National Priority Program for power electronics, systems and information technology, was a co-founder and director of LSI Logic Corporation of Canada, and a co-founder of Sensirion in Zurich.

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

IN MEMORY OF JACK ST. CLAIR KILBY (1923-2005)



TEXAS INSTRUMENTS

Jack Kilby, a Fellow of the IEEE, a member of the IEEE Electron Devices Society, and one of the heroes of electron devices technology and the electronics industry, died in Dallas, Texas, on June, 20, 2005 at the age of 81. He is fondly remembered by his colleagues as a quiet, consummate engineer, who pioneered our industry with his 1958 invention of the integrated circuit.

Kilby grew up in Great Bend, Kansas, and obtained his B.S. and M.S. degrees in Electrical Engineering from the Universities of Illinois and Wisconsin, respectively. In the summer of 1958, shortly after joining Texas Instruments Incorporated, using borrowed equipment, he followed his insight to eliminate the wires that connected discrete transistors by doing the wiring of the transistors together with passive elements directly on a germanium chip to build the first monolithic integrated circuit. Up to that time, transistors were fabricated together on a wafer, then cut apart, and the separate transistors mounted in packages with protruding wires to be later wired individually into circuits. The successful laboratory demonstration of that historical first simple integrated circuit was made on September 12, 1958. The rest is history.

His invention led the way to a worldwide multi-billion dollar - \$180 billion in 2004 - integrated circuit industry that fuels an electronics industry, making inroads into almost every industrial and consumer product. Kilby's invention, consisting of a modest few transistors and passive elements, has evolved into today's integrated circuits that contain millions of transistors on a single chip. Later Jack also participated in the invention of both the hand-held calculator and the thermal printer used in portable data terminals. From 1978 to 1984, Jack held the position of Distinguished Professor of Electrical Engineering at Texas A&M University. Following creation of the Semiconductor Research Corporation in 1982, believing strongly in industry-university cooperation, Jack was key in establishing its research and patent policies. Although Kilby officially retired from TI in 1983, he maintained a significant involvement with the company throughout his lifetime.

In 2000, Jack Kilby was awarded the Nobel Prize in Physics for his 1958 invention. He received numerous honors and awards including the IEEE Medal of Honor in 1986. From the United States he received the U.S. National Medal of Science in 1969 and the U.S. National Medal of Technology in 1990. In 1982, he was inducted into the National Inventors Hall of Fame, standing alongside Henry Ford, Thomas Edison, and the Wright Brothers in the annals of American innovation. We will miss this giant of a man, six feet six inches in height and an icon in our field of electron devices.

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

*William C. Holton
North Carolina State University
Raleigh, NC, USA*

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

Victor M. Agostinelli, Jr.*	Mutsuhiro Mori*
Mohsen Alavi*	Mark M. Nelson
Indrajit Banerjee	Jae-Eung Oh*
Chayanika Basu	Fumio Ootsuka*
Manas K. Bose	Josep Pallares-Marzal
Santhanam Chari	Young-June Park*
Ching K. Chia*	Douglas J. Paul
Stefano Chinnici*	Anthony R. Peaker
Rino Choi*	Xiaoning Qi*
Mina Danesh	Tian-Ling Ren*
John V. Faricelli	Kazem F. Sabet
Anatoly Feygenson	Sante Saracino
David M. Fried	Manju Sarkar
Michael C. Fu	Jurriaan Schmitz
Hua Gao	William J. Siskininetz
Ian D. Goepfert	Seung-Chul Song
Chris W. Hicks	Tetsuya Suemitsu
Mitsumasa Iwamoto*	Heung-Sik Tae
S. Sundar Kumar Iyer	Dorota S. Temple
Steven B. Kaplan	Mammen Thomas
Vishnu Khemka	Marko Topic
Andrey Kosarev*	Ramnath
Norton Lang*	Venkatraman*
Changsheng Li	Jie J. Wu
Juan M. Lopez-Gonzalez*	Zhibo Zhang
	Tianshu Zhou*

* = Individual designated EDS as nominating entity

If you have been in professional practice for 10 years, you may be eligible for Senior Membership, the highest grade of membership for which an individual can apply. New senior members receive a wood and bronze plaque and a credit certificate for up to US \$25 for a new IEEE society membership. Upon request, a letter will be sent to employers, recognizing this new status.

For more information on senior member status, visit http://www.ieee.org/membership/grades_cats.html#SENIORMEM. To apply for senior member status, fill out an application at <http://www.ieee.org/organizations/rab/md/smelev.htm>.

IN MEMORY OF CHARLES W. MUELLER (1912-2005)

Charles W. Mueller, Fellow of the IEEE and a long time member of the IEEE Electron Devices Society, died on June 20, 2005. Charles was the recipient of the 1972 Electron Devices Society prestigious J. J. Ebers Award for "Outstanding Technical Contributions to Electron Devices, Spanning the Evolution of Modern Electronics from the Grid Control Tubes through the Alloy Transistor, The Thyristor, and MOS devices to Silicon Vidicons and Silicon Storage Vidicons." He was a long time member of the EDS Administrative organization, serving as the Chair of the Awards Committee from 1975 to 1986.

Born in New Athens, Illinois, he graduated from Notre Dame University with a B.S. degree in Electrical Engineering in 1934 and received the M.S.



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in Electrical Engineering and the Ph.D. in Physics from MIT in 1936 and 1942,

respectively. He then joined the RCA Corporation and was a member of their laboratory in Princeton, NJ, until he retired in 1975. He was the recipient of several RCA Laboratories awards and made technical contributions in many fields, which are aptly described in his J. J. Ebers award citation. I will remember Charles as a dedicated member of the group of people who served the EDS well while I was EDS President. His career spanned the exciting period of time in electrical engineering when vacuum tubes gave way to discrete transistors and then to integrated circuits. We will miss him.

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

ON-LINE ACCESS TO IEEE JOURNALS AVAILABLE TO EDS MEMBERS

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

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

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

- Online access to their IEEE personal subscriptions
- Full-text PDF image files for content, including all original charts, graphics, diagrams, photographs

and illustrative material starting from 1988

- Full-text search allows you to search metadata fields and the associated full-text journal/transaction content from 1996 forward
- Links to references and cross linking between EDS publications and other IEEE publications is available in articles from 1996 through current
- Online available prior to the print equivalent
- Free and unlimited access to abstract/citation records
- Unlimited printing of bibliographic records and full-text documents
- Includes cover to cover material (starting in 2004) i.e., letters to editor, editorial boards, call for papers

In addition to the above benefits, EDS members can also subscribe to a combined paper and on-line subscription to *Transactions on Semiconductor Manufacturing and the*

Journal of Microelectromechanical Systems. Other publications offered by EDS that have an electronic version available for an additional cost include; *Transactions on Applied Superconductivity*, *Journal of Display Technology*, *Journal of Electronic Materials*, *Transactions on Nanotechnology*, and the *Sensors Journal*.

To use the Xplore system, you must establish an IEEE Web Account. This account is also used for renewing your IEEE membership online. If you need to establish an IEEE Web Account, please visit www.ieee.org/web/accounts/.

IEEE members can go to the Xplore site through the URL www.ieeexplore.ieee.org. We encourage all members of the Society to use this dynamic system.

Renuka P. Jindal
EDS Vice-President of Publications
University of Louisiana at Lafayette
Lafayette, LA, USA

EDS REGION 10 CHAPTERS MEETING SUMMARY

The Electron Devices Society held its 4th Biennial Region 10 (Asia & Pacific) Chapters Meeting on June 4, 2005, at the Convention and Exhibition Center (COEX) in Seoul, Korea. The meeting was held in conjunction with the International Conference on Solid-State Sensors, Actuators and Microsystems (Transducers 2005), WIMNACT-7 on June 3, 2005, and the EDS Administrative Committee (AdCom) meeting on June 5, 2005. The meeting provided a forum for Chapter representatives from Region 10 to meet one another, and exchange experiences and best practices.

The meeting was co-hosted by Cor Claeys, EDS Vice-President of Regions/Chapters, Juzer Vasi, Chair of Sub-Committee for Regions/Chapters Asia & Pacific (SRC-AP), and Xing Zhou and Steve Chung, Vice-Chairs of SRC-AP. Also present were the EDS President, Hiroshi Iwai, and the President-Elect, Ilesanmi Adesida. The chapters represented at the meeting were: SJCE Student Branch, Mysore (C.R. Venugopal),

Bombay (M.B. Patil), Calcutta (C. Sarkar), India (K.S. Chari), Singapore (K.T. Tan), Japan (K. Tsutsui), Korea (B.G. Park), Seoul (J. Burm), Beijing (S. Xia), Hong Kong (M. Chan), Shanghai (B.Z. Li), Taipei (S. Chung) and Xian (Y. Zhang). Also in attendance at the meeting were several EDS AdCom members and chapter partners.

Cor Claeys opened the meeting with a welcome and an overview of the worldwide Regional Chapter Coordination Program. This was followed by an overview of the SRC-AP by Juzer Vasi, and a presentation on the EDS Distinguished Lecturer Program by Ilesanmi Adesida. All chapter representatives then gave a brief presentation of their chapters' activities. It was seen that the chapters in Asia & Pacific are very active, and the WIMNACT series of workshops which have been conducted by different chapters in the region have been extremely successful.

An open forum discussion which followed the presentations

saw an active exchange of ideas by the participants. Some of the issues touched upon were: strategies for membership development; servicing members in Region 10 countries; new chapter possibilities in Region 10; and enhancing the already successful Distinguished Lecturer Program in Region 10.

*Cor Claeys
EDS Vice-President of
Regions/Chapters
IMEC
Leuven, Belgium*

*Juzer Vasi
Chair, SRC-AP
Indian Institute of Technology
Mumbai, India*

*Xing Zhou
Vice-Chair, SRC-AP
Nanyang Technological University
Singapore*

*Steve Chung
Vice-Chair, SRC-AP
National Chiao Tung University
Hsinchu, Taiwan*



Participants at the Region 10 Chapters Meeting held in Seoul, Korea on June 4, 2005. Seated, left to right: K. Tsutsui, B.G. Park, R. Jindal, C. Claeys, H. Iwai, J. Vasi, S. Chung, X. Zhou, K.S. Chari, Y. Zhang. Standing, left to right: K.T. Tan, J. Burm, H. Shin, S. Xia, C. Sarkar, B.Z. Li, C.R. Venugopal, M.B. Patil, M. Chan, A. Trigg, W.F. Van Der Vort.

EDS DISTINGUISHED LECTURERS PARTICIPATE IN THE 8TH WIMNACT-SINGAPORE

The 8th Workshop and IEEE EDS Mini-colloquium on Nanometer CMOS Technology (WIMNACT-Singapore) was successfully held on July 2, 2005, at the Institute of Microelectronics (IME) in Singapore. This mini-colloquium was organized and sponsored by the IEEE Rel/CPMT/ED Singapore Chapter, and co-sponsored by the EDS Distinguished Lecturer (DL) Program and Asia-Pacific Subcommittee for Regions/Chapters (SRC-AP) as well as the Institute of Microelectronics, A*STAR, Singapore. The Guest-of-Honor was Prof. Dim-Lee Kwong, Executive Director of IME, who delivered a welcome address to the invited guests and the audience, and outlined the research directions and activities at IME. Prof. Xing Zhou, who is an executive member of the Chapter responsible for ED activities and also the organizer of this event, presented a brief introduction of the Chapter as well as a history of the WIMNACT series of events on behalf of the Chapter.

There were seven invited speakers, including four DLs from overseas, two local DLs, and one invited speaker. The first talk was given by Prof. Juin Liou from the University of Central Florida (UCF) entitled, "Characterization and Simulation of Reliability of MOS Devices and ICs," followed by the talk on "Study of Breakdowns in High-k Gate Stacks of Nano-scale MOSFETs" given by Prof. Kin-Leong Pey from Nanyang Technological University (NTU), who is also a DL and Chapter Chair. The morning session was concluded by the DL talk given by Prof. Mansun Chan from Hong Kong University of Science & Technology (HKUST) on the topic "3-D Multi-layer Integrated Circuit Technologies for Interconnect Reduction." After lunch, Prof. Dim-Lee Kwong of IME gave the DL talk on "CMOS Integration Issues With High-K/Metal Gate Stack," followed by the DL talk on "Reliability and Microstructural Damages in Ultra Thin Gate Oxide MOSFETs" given by

Dr. M. K. Rahdakrishnan of NanoRel. Prof. Albert Wang from Illinois Institute of Technology (IIT) gave the DL talk on "RF CMOS Comes to Reality." The Workshop ended with the invited talk by Dr. Natarajan M. Iyer from IMEC, who was in town attending IPFA'2005, on "ESD Protection for RF CMOS Designs." At the end of the Workshop, the Chapter Chair of Singapore, Prof. Kin-Leong Pey, gave a concluding remark and presented tokens of appreciation to all the speakers.

In summary, the 8th WIMNACT-Singapore has been another successful event after the 3rd and 4th WIMNACT-Singapore, which were organized by the Chapter in October 2003 and July 2004, respectively. The Workshop received an enthusiastic response with more than 100 attendees from the local industries and academic institutions. Although it was held on a Saturday, about 40 people stayed for the whole day event. They showed deep interests in the invited talks, which covered a wide range of important topics of current and future technologies. The complete information on the 8th WIMNACT-Singapore, including

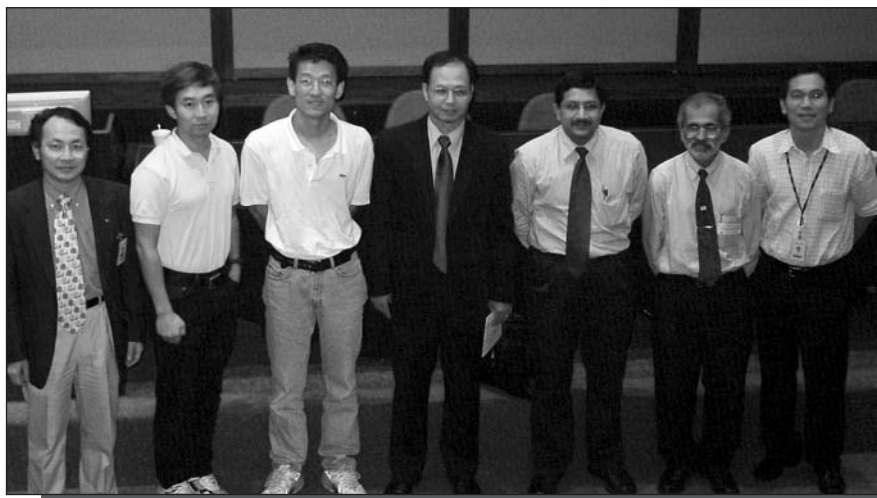
all the slides and snapshots as well as links to the past WIMNACT series, has been made available from the following Web site: <http://www.ntu.edu.sg/eee/eee6/conf/WIMNACT05.htm>.

*Xing Zhou
WIMNACT Organizer
Nanyang Technological University
Singapore*

*Kin-Leong Pey
Rel/CPMT/ED Singapore
Chapter Chair
Nanyang Technological University
Singapore*



Prof. Dim-Lee Kwong, Executive Director of the Institute of Microelectronics, Guest-of-Honor and DL for the 8th WIMNACT-Singapore.



From left to right: Xing Zhou (Organizer and Chapter member), Mansun Chan (DL speaker, HKUST), Albert Wang (DL speaker, IIT), J. J. Liou (DL speaker, Univ. Central Florida), Natarajan M. Iyer (invited speaker, IMEC), M. K. Radhakrishnan (DL speaker, NanoRel), Kin-Leong Pey (DL speaker, NTU, Chapter Chair).

IEEE ELECTION ? DID YOU VOTE YET?

This is a reminder for EDS members to vote in the 2005 IEEE Election for the following positions and candidates.

* Candidate nominated by petition

Position	Candidates
IEEE President-Elect, 2006	Leah H. Jamieson Gerald H. Peterson James M. Tien*
Region 1 Delegate-Elect/ Director-Elect, 2006-2007	Howard E. Michel Charles P. Rubenstein
Region 3 Delegate-Elect/ Director-Elect, 2006-2007	Eric S. Ackerman William B. Ratcliff Clarence L. (Lee) Stogner
Region 5 Delegate-Elect/ Director-Elect, 2006-2007	Francis B. Grosz, Jr. David J. Pierce
Region 7 Delegate-Elect/ Director-Elect, 2006-2007	Gerard M. Dunphy Eric Holdrinet Maike Luiken Miller Ferial El-Hawary* Vijay K. Sood*
Region 8 Delegate-Elect/ Director-Elect, 2006	Gerhard P. Hancke Jean G. (Jean-Gabriel) Remy
Region 9 Delegate-Elect/ Director-Elect, 2006-2007	Enrique E. Alvarez Juan R. (Ramon) Falcon Enrique A. Tejera M.
Standards Association President-Elect, 2006-2007	George W. Arnold Raymond Hapeman Forrest D. (Don) Wright
Standards Association Board of Governors Member -at-Large, 2006-2007	Paul Nikolich Carl R. Stevenson
Standards Association Board of Governors Member-at-Large, 2006-2007	L.B. (Bruce) McClung T.W. (Ted) Olsen
Technical Activities Vice President-Elect, 2006	Jose R. (Roberto) Boisson de Marca Peter W. Staecker
IEEE-USA President-Elect, 2006	Russell J. Lefevre John W. Meredith
IEEE-USA Member -at-Large, 2006-2007	Burton J. Loupee Gregg L. Vaughn

Ballots are mailed on or before 1 September and must be returned before 12:00 noon on the first business day following 31 October. For more information concerning the election (including biographies), please visit the IEEE website at www.ieee.org/corporate/elections/candidates.xml.

EDS DISTINGUISHED LECTURER TALKS AT MIXDES AND VISITS POLAND CHAPTER



From left to right: Prof. Xing Zhou, Dr. Yuhua Cheng, and Prof. Hiroshi Iwai at the MIXDES 2005, Krakow, Poland

At the invitation of the ED Poland Chapter Chair, Professor Andrzej Napieralski, EDS Distinguished Lecturer, Professor Xing Zhou, presented an invited paper entitled "A Compact Model for Future Generation Predictive Technology Modeling and Circuit Simulation" at the MIXDES 2005 in Krakow, Poland, on 23 June 2005. The paper is based on Professor Zhou's research sponsored by the EDS subcommittee for Regions/Chapters (SRC) and presented at the 12th MIXDES special session on Advanced Compact Modeling and its Standardization: Compact Models as Link between R&D, Foundry and IC Design, organized by Professor Hiroshi Iwai and Dr. Wladyslaw Granbinski. It was a very successful special session on advanced compact models.

At the end of the day of the conference, the ED Poland Chapter organized a chapter meeting. Professor Hiroshi Iwai, Professor Xing Zhou, and Dr. Yuhua Cheng, who also gave invited talks at the MIXDES, attended the chapter meeting, during which participants discussed past and future chapter activities as well as the planning for the next MIXDES conference.

*Xing Zhou
Vice Chair SRC-AP
Nanyang Technological University
Singapore*

ANNUAL DVD UPDATE PACKAGE AVAILABLE TO EDS MEMBERS



Renuka P. Jindal

I would like to inform you that the EDS CD-ROM Package has been upgraded to a more comprehensive product and will be offered in DVD format. The product will henceforth be known as the EDS DVD Update Package. As always, the package will include the prior year's articles. Therefore, the 2005 EDS DVD Update Package will include all the 2005 issues of both *Electron Device Letters* (EDL) and *Transactions on Electron Devices* (T-ED), as well as the 2005 technical digest of the International Electron Devices Meeting (IEDM).

Further, for compatibility with our EDS Archival Collection, this time

around, the EDS DVD Update Package will also include T-ED and EDL issues from September through December 2004. The two products will work together seamlessly providing extensive search capabilities to all issues of EDL going back to 1980, all issues of T-ED going back to 1954 and all the technical digests of IEDM back to 1955. This Archival Collection can be ordered through the IEEE online store at <http://shop.ieee.org/store/>.

You can request the DVD Update Package in advance as a subscription via your 2006 IEEE Membership Renewal Bill when you receive it this Fall. The 2005 EDS DVD Update Package will be available at the latest by June 2006. Once you sign-up to receive the 2005 package via your member renewal bill, you will automati-

cally be billed each year for subsequent versions of the package. The EDS DVD Update Package is available *exclusively* to Society members for the low price of \$30 (students \$15).

For those interested, the previous eight CD-ROM Packages (1997 through 2004) are still available to members US \$25.00 (US \$13.00 for students). If you would like to order any of these products, please visit the IEEE online store at <http://shop.ieee.org/store/>. If you choose not to subscribe to the DVD Update Package via your renewal bill, you may also order it individually through the online store.

Renuka P. Jindal

EDS Vice-President of Publications
University of Louisiana at Lafayette
Lafayette, LA, USA

EDS ARCHIVAL COLLECTION On DVD

Archival Collection Includes a comprehensive author, subject, and publications indexes, abstract pages and all articles in PDF for the following publications:

Transactions on Electron Devices
Electron Device Letters
International Electron Devices Meeting

All issues from **1954** through **August 2004**
All issues from **1980** through **August 2004**
All technical digests from **1955** through **2004**

Collection also includes abstract pages for the publications listed below:

Journal of Solid-State Circuits
International Solid-State Circuits Conference
VLSI Circuits Symposium

All issues from **1966** through **2003**
All issues from **1955** through **2003**
All proceedings from **1988** through **2003**

Electron Devices Society 50th Anniversary Commemorative Booklet
and EDS Newsletter (1999-2004), also included.

As a member of EDS, you can purchase this amazing collection for just \$30, (Student members can purchase for \$9.95), by just visiting the IEEE Online Store at <http://shop.ieee.org/store/>. Be sure to log in as an EDS Member to get the \$30 price break. The IEEE product number for the DVD is JD1554. New members are welcome to join at <http://www.ieee.org/eds/join>

A CALL FOR LOYALTY



Renuka P. Jindal

Dear EDS Member:

As a member of IEEE and the Electron Devices Society for 28 years, I ask myself the question, "What value does EDS provide to its members?" If I were to capture it in a single sentence it would have to be "An affordable forum for dissemination of and access to highly prized technical information in the field of Electron Devices." This theme cuts across all our flagship publications and conferences and a multitude of co-sponsored journals and meetings. As Vice-President of Publications, let me focus on the publications side. In the old days, when paper medium was the dominant means of information sharing, we used to mail you your copy of *IEEE Transactions on Electron Devices* (T-ED) and *IEEE Electron Device Letters* (EDL). They both arrived at your door-step at a very affordable price, the 1996 per copy prices being \$1.50 for T-ED and \$1.00 for EDL. The price was subsidized by our other surplus generating activities including library and non-member subscriptions. (Even today we maintain a healthy paper circulation of close to 7,500 worldwide.) As we moved into the Electronic Age, in 1999, largely due to the efforts of Dexter Johnston, the then Publications Chair, we started offering free electronic access to our flagship publications to EDS members. As technology evolved, in 2004 we published our first-ever Archival DVD that chronicles the history of the Electron Devices Society and the field of electron devices containing everything that was ever published in T-ED, EDL and IEDM at a give-away price of US \$30. Please note that this Archival DVD is NOT simply an organized collection of PDF files. It is an indexed, fully searchable collection. Please see the January 2005 Newsletter article [[http://www.ieee.org/society/eds/pubs/newsletters/Newsletter_](http://www.ieee.org/society/eds/pubs/newsletters/Newsletter_Jan05new.pdf)

[Jan05new.pdf](http://www.ieee.org/society/eds/pubs/newsletters/Newsletter_Jan05new.pdf)] for full details. We are currently contemplating a yearly addendum to this DVD to keep this product vibrant. You may ask why am I telling you this? Well, the answer is very simple. For those of us, who have kept track of events in the USA, there was an airline called "People's Express." After the deregulation of the airline industry, to my knowledge, they were among the pioneers in launching the concept of "no-frills" air service from coast-to-coast for \$79 each way. Travelers went to them in droves. However, they got phased out of existence due to competition. The idea was great but what was missing was "consumer education" and "customer loyalty". As soon as the competitors matched their fares, travelers switched back airlines not thinking through the consequences. Not too long after, as "People's Express" went out of business, the other airlines raised their fares again. IEEE publications are your publications. Our engines are powered by "Volunteer Power" i.e., YOU. We are looking for more than your money. We are looking for your time and involvement as an EDS member. We are looking for your loyalty! We EEs have to learn from history. I think we EEs can do better. It would be educational to go on the web and check out the subscription of some other commercial publications in our field. We are in for a BIG surprise and a rude shock. The value provided by IEEE EDS publications is unparalleled in the publication industry. However, we cannot be successful without your involvement.

Coming back to the Archival DVD, I suspect that it may be considered perfectly normal to buy "a" copy of the DVD and share it among the members of a research group. Unfortunately this is precisely what we need to discourage. During the production of the DVD, we had the option to add several security features to restrict its use. However, this would have increased the cost of producing the DVD. To keep the price low and encourage the concept of individual ownership, we decided against these

measures. We are counting on your loyalty and professionalism. SO PLEASE SPREAD THE WORD. In addition, we are listening. In the spirit of information sharing and empowerment, we are lowering the price of our archival DVD to \$9.95 for student members. At this price there is no excuse for each student in the field of Electron Devices not to use their own copy of the DVD. Here are some Do's and Don'ts worth noting.

1. Please DO purchase your own copy of the archival DVD. Visit <http://shop.ieee.org/store/>.
2. Please DO NOT loan your DVD to others
3. Please DO NOT allow copying of your DVD
4. Please DO encourage your colleagues and students to become members and acquire their own copy of the DVD. Visit <http://www.ieee.org/eds/join>

Remember, it is in our professional interest that this society prospers and continues to provide us more services at an affordable price. This is our own society, so let us support it with our time by getting involved as an EDS member.

For readers who hold management positions in multi-national corporations, I have a special message. The ultimate outcome of this nearly-free access to technical information of the highest quality is the powering of the engines of innovation in this global economy. Your corporation is an integral beneficiary of this economic pay-off. I urge you to use your influence, both monetary and administrative, to encourage participation in the IEEE Electron Devices Society.

Please let me know how we can further enhance the value of EDS membership. Use the keywords "IEEE EDS Membership Value" as the subject of your email.

Sincerely,

Renuka P. Jindal

EDS Vice-President of Publications
University of Louisiana at Lafayette
Lafayette, LA 70504, USA
jindal@louisiana.edu

REGIONAL AND CHAPTER NEWS

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

2005 International Semiconductor Device Research Symposium

- by Thomas E. Murphy

The 2005 International Semiconductor Device Research Symposium (ISDRS 2005) will be held at the Bethesda Holiday Inn Select, in the Washington, D.C. area, December 7-9, 2005. This biennial meeting is scheduled to immediately follow the annual IEDM meeting, also held in Washington, D.C.

The meeting focuses on exploratory electronic and photonic devices and the materials technology necessary to make them. The purpose of the symposium is to bring together participants from diverse backgrounds and to provide a forum for extended interaction between engineers, scientists, and students working in the fields of electronic and photonic materials and devices.

The technical program includes contributed papers and posters as well as invited papers and plenary speakers from industry and academic leaders. All accepted abstracts are published in the ISDRS technical digest, and authors may optionally submit a full-length manuscript to be considered for publication in a special issue of Solid State Electronics.

This year the conference will be held in Bethesda, MD. Bethesda is immediately outside of Washington D.C., and a short subway trip from the nearby IEDM venue. It is readily accessible from both of the Washington area airports and the Baltimore airport, and it offers a range of hotels. Downtown Bethesda is a lively community with numerous shops, perfor-

mances, theatres, and one of the highest concentrations of restaurants in the Washington, D.C. area.

Washington DC is not only the nation's capitol and home of the U.S. government, but also one of the most historically rich and culturally diverse cities in the country. Scores of museums, memorials, performance centers and galleries make it one of the most visited cities in the world.

For more information about ISDRS 2005, including topical areas, session chairs, conference organizers, online registration, submission instructions, accommodations, and travel information, we invite you to visit: <http://www.ece.umd.edu/isdrs2005/>.

Other inquiries about registration should be addressed to UMD Conference and Visitor Services: isdrs_registration@umd.edu; 301-314-7884

ISDRS is sponsored by the IEEE-EDS, IEEE-LEOS, National Institute of Standards and Technology, University of Maryland, DARPA MTO, National Science Foundation, Army Research Laboratory, Naval Research Laboratory and Army Research Office.

~ Ibrahim M. Abdel-Motaleb,
Editor

ED/SSC/CAS Chicago

- by Yuhua Cheng

With the invitation by the new Chapter Chair, Russel Schenke of Northrop Grumman, I visited the ED/SSC/CAS Chicago Chapter on 20 June, in order to understand the chapter activity status and discuss future planning with the new officers. I met most of the chapter officers and had a round table discussion with them about the chapter status and their comments/suggestions to further enhance the chapter activities. Russel Schenke, the Chair, Ron Nordin, the Vice Chair, Scott Vrshek, the Treasurer, Ramesh Tirumala, the Secretary, and Ronald Stetz, the Program Chairman, attended the discussion. The

chapter is actually very active after a pause during the transition period of the officer change in 2004. They had one DL seminar and the executive committee meeting in 2004 and started to be normal in 2005. Up to July this year, including the DL talk given by me, they have had a total of 6 seminars already. Here is a list of the talks Russ reported to me:

- 20 June 2005 - CMOS Device Modeling in Nanoscale and Wireless Era, presented by Yuhua Cheng, Siliconlinx Inc.
- 12 May 2005 - Printed Circuit Layout for best EMC, by Roger Swanberg, D.L.S. Electronic Systems, Inc.
- 27 April 2005 - Application of Computational Fluid Dynamics (CFD) Based Technology to Computational Electromagnetics, by Professor Ramesh Agarwal, Washington University.
- 1 April 2005 - CMOS Scaling Limits and Nanoelectronic Devices, by Professor Yoshio Nishi, Stanford University.
- 17 March 2005 - Quantum Engineering of Nanoelectronic Devices, by Professor Vijay K. Arora, Wilkes University.
- 10 March 2005 - Commercial Aircraft Protection Against Man-Portable IR Surface-to-Air Missile, by Leo Danielides, Northrop Grumman Corp.

At the seminars, they displayed IEEE promotional material to show the attendees the advantage of joining IEEE. In addition to the membership promotion, for which they have been doing a good job in advertising IEEE benefits, we also discussed the possibility of organizing a one-day technical workshop. They were very interested in it and would like to get more information. I forwarded them the information on the "Technical Symposia Grant Program 2005", that Stacey Waters of the EDS office sends out and also some information on the one day

workshop provided by the Phoenix Chapter. The chapter officers are very proactive by looking at the way they organized the DL seminar. Most of them are young and enthusiastic. They should be able to have more and bigger activities when the new chapter officers get familiar with the operation of such events. I will continue to follow up with them and provide any needed help to keep this chapter active.

After the chapter officer meeting, I gave a DL talk entitled "Advanced Device Modeling in Nano-scale and Wireless Era". The feedbacks were positive. The presentation material was distributed to the audience, including some professors from universities in that area.

I enjoyed the discussions with the chapter officers and was impressed by their activities. I think it was a very good visit to engage with the chapter and explore the approaches to promote IEEE activities and membership.

~ **Sunit Tyagi, Editor**

EUROPE, MIDDLE EAST & AFRICA (REGION 8)

ED Israel

- by Gady Golan

A. On Sunday, May 1, 2005, at the Holon Institute of Technology - HAIT.

One day conference on:

"Advances in optics and computational imaging",

- Prof. Natan Kopeka, "Atmospheric optics".



Professor Golan in the opening session of the conference

- Prof. Erez Ribak, "Multibeam combination in stellar interferometer".
- Dr. Eyal Agasi, "Multispectral imaging".
- Prof. Yaron Silberberg, "Non linear microscopy".
- Prof. Erez Hasman, "Sub wavelength gratings".
- Prof. Shelly Glaser, "Lense arrays and applications".
- Dr. Michael Golob, "Diffractive optics".
- Prof. Gady Golan, "High growth rate sputtering methods for photovoltaic (PV) cells in roll to roll systems".
- Prof. Naftali Eisenberg, "Bifacial solar cells".
- Mr. Noam Babyof, "Ultra fast 3-D scanning".
- Prof. Shmuel Peleg, "Evolving time fronts".

Chairman of the conference: Professor Gady Golan

90 people attended the conference at HAIT.

B. On Monday, May 2, 2005, at the Holon Institute of Technology - HAIT.

One day conference on:

"RFI, EMC and ED,"

- Professor. Gady Golan, "Methods for high growth rate sputtering techniques for multilayer photovoltaics (PV) thin films".
- Prof. Herzl Aharoni, "Low temperature oxide growth".
- Dr. Shaul Niv, Power electronic circuits for MEMS applications".
- Dr. Alex Axelevich, "Roll to Roll sputtering for photovoltaic cells".

Chairman of the ED session: Prof. Gady Golan

130 people attended the conference at HAIT.

~ **Gady Golan, Editor**

Chapter Partner and DL Visit to ED Poland Chapter

- by Yuhua Cheng

With the invitation by Professor Andrzej Napieralski, the Chair of the ED Poland Chapter, Dr. Yuhua Cheng, a chapter partner of this chapter and a distinguished lecturer, visited Krakow, Poland on

June 23 and 24. During the period, the 12th MIXDES conference (Mixed Design of Integrated Circuits and Systems"), was held, which was organized by Professor Napieralski with the sponsorship by IEEE/EDS. A chapter meeting was conducted during the conference to introduce the chapter activities and discuss how to further promote the IEEE EDS activities. Several other EDS officers, including the President of EDS, Professor Hiroshi Iwai, also attended this meeting. Professor Iwai had a remark in the meeting to give an introduction of EDS and delivered the support from the Society Administrative Committee. It was an excellent meeting to promote IEEE/EDS and discuss the working plan for future chapter activities. During the visit, Dr. Cheng delivered a distinguished lecture, entitled "the challenges and opportunities in technology platform development for advanced IC design" as a plenary speech in the 12th MIXDES conference. He also delivered another invited talk, entitled "Advanced Device Modeling in Nano-scale and Wireless Era", in a special session on Advanced Compact Modeling and its Standardization: Compact Models as Link between R&D, Foundry and IC Design, organized by Prof. Hiroshi Iwai and Dr. Wladyslaw Granbinski, in the MIXDES conference. Both talks were well received by the audience. It was a very successful and fruitful visit. Dr. Cheng was also impressed by the efficient



From left to right: Dr. Yuhua Cheng, Prof. Hiroshi Iwai, and Prof. Andrzej Napieralski at the MIXDES 2005, Krakow, Poland.

and successful organizing of the MIXDES conference, which gathered a lot of experts and professionals around the world and included many interesting talks and events.

2005 International Conference on Mixed Design of Integrated Circuits and Systems (MIXDES)

- by Andrzej Napieralski

On 22-25 June 2005 in Kraków, Poland, the 12th International Conference MIXDES 2005 took place. The event was organized by the Technical University of Lodz, Poland, in cooperation with the AGH University of Science and Technology, Poland, and the Warsaw University of Technology, Poland. The conference was co-sponsored by the IEEE ED Poland & CAS Chapters, REASON Project (Research and Training Action for System on Chip Design IST-2000-30193), CARE Project (Coordinated Accelerator Research in Europe), Ministry of Scientific Research And Information Technology, and Section of Microelectronics and Section of Signals, Electronic Circuits and Systems of the Committee of Electronics and Telecommunication of the Polish Academy of Sciences.

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

- Special session on "Advanced Compact Modeling and its Standardization: Compact Models as Link between R&D, Foundry and IC Design" organized by Władysław Grabinski (Freescale Geneva, Switzerland) and Hiroshi Iwai (Tokyo Institute of Technology, Japan)
- Special session on "Special Topics in Emerging Electronics Technologies" organized by Daniel Foty (Gilgamesh Associates, USA)
- CARE Project Special Session organized by Stefan Simrock (Deutsches Elektronensynchrotron DESY, Germany) and Mariusz Grecki (Technical University of Lodz, Poland)
- EDUCHIP Special Session organized by Raimund Ubar (Tallinn

Technical University, Estonia) and Andrzej Kos (AGH University of Science and Technology, Poland)

- "Analog ICs Design Tutorial" organized by Vladimir Lantsov (Vladimir State University, Russia)
- "Quality-driven System on Chip Design Tutorial" organized by Lech Jozwiak (Eindhoven University of Technology, The Netherlands)
- "Smart Microsystems Tutorial" organized by Malgorzata Napieralska (Technical University of Lodz) and Bedrich Weber (Slovak University of Technology)

The conference was attended by over 170 scientists from 29 countries from all over the world. During the conference nine invited papers and 173 regular papers were presented at oral, poster, and special sessions. The conference proceedings (1020 pages, ISBN: 93-919289-9-3) and CD-ROM were published by the Technical University of Lodz.

The keynote invited speakers were:

- Karl J. Johnson (Freescale Semiconductor, USA): "Advanced Technologies for Future Direction of Radio Frequency and Wireless Communication"
- Yuhua Cheng (SiliconLinX Inc., USA): "Challenges and Opportunities in Technology Platform Development for Advanced IC Design"
- Mike Sadd, Rajesh Rao, Ramachandran Muralidhar (Freescale Semiconductor, USA): "Circuit Modeling of Non-volatile Memory Devices"
- Hannu Tenhunen (Royal Institute of Technology, Sweden): "Electrical Issues in Scaling Advanced SoC to Nanoscale"
- Vikram Jandhyala, Swagato Chakraborty, Dipanjan Gope and Chuanyi Yang (University of Washington, USA): "Fast Methods for Electromagnetic and Circuit-electromagnetic Simulation of Mixed-signal Systems and High-speed ICs in Time and Frequency Domains"

- Ahmed Amine Jerraya (TIMA Laboratory, France): "Long Term Trends for Embedded System Design"
- Monuko du Plessis (University of Pretoria, South Africa), C. Conradie (African Explosives Limited, South Africa): "Nano-explosions in Silicon"
- Bohdan Mroziwicz (Institute of Electron Techn., Poland): "Optical Interconnects - A Challenge to Semiconductor Lasers"
- Lukas W. Snyman, Monuko du Plessis (Tshwane University of Technology, South Africa), H. Aharoni (Ben-Gurion University of the Negev, Israel): "Three Terminal Optical Sources (450nm - 750nm) for Next Generation Silicon CMOS OEIC's"

At the end of the day of the conference, the ED Poland Chapter organized a chapter meeting. Prof. Hiroshi Iwai, Prof. Xing Zhou, and Dr. Yuhua Cheng, who also gave invited talks at the MIXDES, attended the chapter meeting, during which participants discussed past and future chapter activities as well as the planning for the next MIXDES conference.

The Preliminary Call for Papers for the next MIXDES 2006 Conference is already available at <http://www.mixdes.org/downloads/call2006.pdf>. More information about the past and next MIXDES Conferences can be found at <http://www.mixdes.org>.

ED Poland

- by Andrzej Napieralski

There was a Chapter meeting held during the 1st Beskid Seminar on the Sea – Dar Młodzieży, from 30 April to 3 May 2005. During the meeting Professor Andrzej Napieralski from the Technical University of Lodz, presented a speech on "Microelectronics and Nanotechnology".

There was a joint meeting of the Microelectronics Section of Electronics and Telecommunication Committee of the Polish Academy of Science and the ED Poland Chapter in Gdynia, Poland. During the meeting Professor Janusz Zarebski from



The ED Poland meeting participants next to the "meeting boat".

Gdynia Maritime University, presented a topic "Modeling of power semiconductor devices and electronic circuits with thermal phenomena taken into account". After the meeting the participants had an opportunity to sail the boat "Horyzont II".

~ **Andrzej Napieralski, Editor**

UPoN-4 2005

- by **Lino Reggiani**

The 4th International Conference on Unsolved Problems of Noise (UPoN) and Fluctuations in Physics, Biology and High Technology was held in Gallipoli (Lecce) June 6-10. This

fourth edition focused mainly on noise and fluctuations at the nanometric scale-length in electronic devices, bio-materials, and mesoscopic systems. The total number of contributions, including a poster session, was around 90. There were approximately 110 attendees coming from 4 continents and 27 countries. Since its first edition in 1996, the aim of the UPoN conference was to provide a forum for researchers working on noise and fluctuations, where they can present and discuss their scientific problems which resist solutions. To favour cross-fertilization from different disciplines and transfer of knowledge, the conference was organized as a single session. The conference focused on the following topics: Theoretical and Experimental frontiers of noise and fluctuations; Enhanced and suppressed shot noise; Noise and coherence; Noise and chaos; Constructive role of noise; Non-Gaussian noise and fluctuations; Noise in biological systems; Noise in devices; and Noise and fluctuations in complex systems.



Award winner Dr. Maria King with Lino Reggiani, Chairman of UpoN-4 2005.

To honor the memory of Professor Michele Costato, a physicist at the Modena University (Italy), who pioneered the study of electrical noise in semiconductors, an award in the amount of 2000 euros was given by the Scientific Committee to Dr. Maria King from the Department of Biochemistry and Biophysics at the College Station Texas A&M University (USA), for her presentation of the most intriguing unsolved problem at the UPoN-4 2005 conference.

The motivation of the award addressed the issue, NOISE FOR HEALTH: Can noise signify the health of a living organism?

Insulating Films on Semiconductors Conference 2005 (INFOS)

- by **Guido Groeseneken**

The 14th biennial Conference on Insulating Films on Semiconductors, organized by IMEC was held in the new conference center of the Provinciehuis Leuven, Belgium, June 22-24, 2005. The conference was attended by 157 people from 21 countries worldwide and was sponsored by IEEE, EDS, ECS, IMEC, Philips, ST Microelectronics, Aixtron, Tokyo Electron (TEL) and Keithley.

The conference presented the current status of dielectrics, semiconductor/insulator interfaces, and the physics, technology and characterization of MOS devices and brought together scientists and engineers oriented to materials, devices and applications. Out of the all-time record of 209 abstract submissions, 53 papers were selected for oral and 27 for poster presentation, 27 of which were student papers. Together with 17 invited papers from both academia and industry this brought the total number of papers at the conference to 97, submitted from 20 different countries.

In view of the need to scale CMOS technologies beyond the 45 nm technology node, a large part of the conference was devoted to the important recent developments in the field of high-k/metal gate devices, which was



Participants of INFOS 2005

also introduced by the opening plenary speaker Robert Chau from Intel. Several sessions with invited talks were dedicated to various aspects of high-k/metal gate devices and technologies (A. Toriumi, MIRAI, Japan), and high k materials and characterization (A. Craven, University of Glasgow). Other sessions and invited talks covered topics such as Germanium devices (K. Saraswat, Stanford University), dielectrics for compound semiconductors (R. Droopad, Freescale Semiconductors), SOI (F. Balestra, IMEP, France) and non-volatile memory devices (R. Bez, ST Microelectronics, Italy and D. Ielmini, Politecnico di Milano, Italy), FERAM and DRAM dielectrics (H. Kohlstedt, Forschungszentrum Julich, Germany), low-k dielectrics (R. Hoofman, Philips Research, Belgium), multiple gate devices (T. Poiroux, LETI, France), dielectrics for organic devices, dielectric reliability (S. Mahapatra, IIT, India and K.L. Pey, Nanyang University, Singapore) and defect modeling (P. Bloechl, Clausthal University, Germany and G. Pourtois, IMEC, Belgium), semiconductor and insulator nanostructures (F. Rosei, University of Quebec), and, last but not least, also the "good old" SiO₂-based dielectrics (D. Matsushita, Toshiba Corp., Japan).

For the first time at the conference a Best Student Paper Award was granted to L. Thevenod for his paper, "Influence of TiN Metal Gate on Si/SiO₂ surface roughness in N- and PMOSFET's".

The social program included Belgian beer tasting during the poster reception, an excursion to Antwerp including a guided tour to the Rubenshouse, the beautiful 17th century private home of the famous Flemish painter Pieter Paul Rubens and the conference ban-

quet dinner in the Horta, which is a place built in Art Nouveau style, reconstructed from the remainders of the old Maison du Peuple in Brussels from the famous Belgian Art Nouveau architect Victor Horta.

More information on the conference can be found at <http://www.imec.be/infos>. For Additional information and copies of the proceedings on CD-ROM, e-mail Guido Groeseneken (guido.groeseneken@imec.be), Chairman for INFOS 2005.

The 18th International Conference on Microelectronic Test Structures (ICMTS)

- by *Ulrich Schaper*

The 2005 IEEE International Conference on Microelectronic Test Structures (ICMTS) was held at the Katholieke Universiteit in Leuven, Belgium April 5-7, 2005. General Chair of this IEEE EDS sponsored conference was Professor Willy Sansen. A Tutorial Short Course on Microelectronic Test Structures preceded the ICMTS and an equipment exhibition during the conference focused on the latest versions of measurement equipment and software for data analysis.

Test structures and their characterization are essential for the development of semiconductor devices. Shrinking the devices, decreasing supply voltages, and increasing the number of devices in integrated circuits, demand for precise characterization in all device operation regimes. The ICMTS addresses topics including extraction of manufacturing data, extraction of model parameters and characterization of parameter variations.

ICMTS brings together designers and users of test structures from industry and universities to discuss recent developments. The attendees (111 for the Conference, 61 for the Tutorial) came from Japan (24), Taiwan (5), Korea (2), United States (21), and Europe (44) participating in 3 invited papers (Sematech, Intel, IMEC) and 44 regular papers accepted from 60 submissions. The technical program and the smooth flow of the conference was highly appreciated by the attendees. The contribution on "In-Line Process Monitoring of High Speed Test Structures" was selected for the Best Paper Award.

ED Central & South Italy

- by *Salvatore Bellone and Heinz-Christoph Neitzert*

Recent chapter activities have been focused on increasing the attraction of students towards the microelectronic field and the EDS student chapter, formed last year at Salerno. One of the main events was the visit on May 25th of about 40 students to the MICRON DRAM Fab at Avezzano. A visit to one of the most sophisticated semiconductor manufacturing clean-room facilities was followed by a vivid discussion regarding detailed technical aspects of ULSI technology as the educational profile for possible careers in the microelectronic field. This was particularly interesting in the background of the new engineering curricula in Italy.

Last but not least, we continued the tradition of inviting top international scientists to give seminars in Central and South Italian universities. On 30 March thru 1 April, Dr. Boit from the Technical University Berlin, gave a series of lectures, titled: "New Generation Silicon & Diagnosis of Integrated Circuits with physical techniques through chip backside", where he introduced new concepts in microelectronics failure analysis.

ED Spain

- by *Antonio Luque Estepa*

On May 11th, Professor Lorenzo Faraone, from the University of Western Australia, gave a talk about Micro-electro-mechanical systems (MEMS) for



Professor Faraone during his presentation

tuneable multi-spectral infrared sensor arrays, within the EDS Distinguished Lecturer Program. The presentation was hosted by the Engineering College of the University of Seville, Spain, and was organized jointly by the ED Spain Chapter and the local IEEE Student Branch. Several dozen people, including faculty and Ph.D. and graduate students attended the talk; all of them enjoyed the dissertation.

Professor Faraone's research group has a wide expertise background in infrared sensor arrays, and is now researching on the integration of MEMS into them. He discussed the present problems that designers of optical sensors must deal with, and explained how using adjustable MEMS micro-mirrors can help improve their tuneability.

~Cora Salm, Editor

ASIA & PACIFIC (REGION 10)

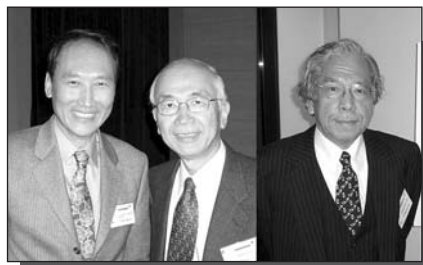
ED Kansai

- by Toshimasa Matsuoka

The ED Kansai Chapter held the third International Meeting for Future of Electron Devices, Kansai (2005 IMFEDK) at Kyoto University Clock Tower Centennial Hall, Kyoto, Japan, April 11-13, 2005. This year, Professor Chenming Hu from the University of California, Berkeley, and Professor Yoshihiro Hamakawa from Ritsumei University delivered the keynote speech concerning CMOS and solar photovoltaic technologies, respectively. We had four oral sessions: silicon process and emerging devices, characterization and test-

ing technologies, modeling and device simulation, compound semiconductors. There was also one poster session. In addition, three tutorial lectures on RF CMOS technologies were provided prior to the plenary meeting. Fifty-five papers, including eight invited ones, were presented followed by active discussions in a wonderful atmosphere. The number of the attendees was about 180. It was a great opportunity for discussions and exchanges of various viewpoints of the participants with different backgrounds. Professor Kenji Taniguchi, Chair of the ED Kansai Chapter and Steering Committee Chair of the 2005 IMFEDK, honored Dr. N. Shigekawa (NTT) for the Grand Award, Dr. H. Sanda (Stanford University) for the Best Paper Award, Mr. X. Wu (Hong Kong University of Science and Technology) and Mr. K. Makiyama (Hiroshima University) for the Student Award, with award of merits at the end of the meeting.

On April 19, 2005, a Distinguished Lecturer meeting was held at Kyoto University, Kyoto, Japan. Professor Hiroshi Nozawa of Kyoto University was invited as a Distinguished Lecturer. The title of his talk was "Trend of SoC Technology_Using Ferroelectrical Memory". Starting from the importance of Ferroelectrical Memory. He described basic physics and memory technologies. The meeting was hosted by Professor Kenji Taniguchi, Osaka University and the number of participants was about 40, including students and researchers from industries. We truly appreciate Professor Nozawa's dedicated effort.



Prof. Chenming Hu, Prof. Yoshio Nishi (Stanford Univ., General Chair of IMFEDK), and Prof. Yoshihiro Hamakawa at the 2005 IMFEDK, 11 April 2005, Kyoto, Japan.

ED Korea

- by Byung G. Park

On June 3rd, the ED Korea Chapter held the 7th WIMNACT at Hanyang University, Seoul, Korea (See the separate report entitled "EDS Distinguished Lecturers Participate in the 7th WIMNACT - Korea" in this issue.) On the same day, the ED Korea Chapter had a chapter meeting, discussing the various issues related with the workshop, EDS Region 10 Chapters Meeting, EDS AdCom Meeting, and the support plan for AWAD 2005.

On June 9th, Professor ByungJin Cho from the National University of Singapore (NUS) held his technical seminar at Seoul National University. His topic was on "High-k Dielectric". He discussed the various high-k dielectric materials pursued at NUS and novel approaches to the gate stack engineering in nanoscale CMOS fabrication. Dr. Yukinori Ono from NTT Basic Research Laboratories presented his technical seminar on "Single-Electron Manipulation in Silicon; Towards Single-Dopant Electronics," at Inter-University Semiconductor Research Center (ISRC), Seoul National University, on June 27th. He described the fabrication of silicon-based SEDs using CMOS technology and discussed silicon single electron pumps and turnstiles developed recently in his laboratories. As another path to realizing single-electron transfer, he also discussed using a dopant level in semiconductors or "true atom" instead of a quantum dot or "artificial atom".



Dr. Yukinori Ono from NTT Basic Research Laboratories, Japan, presenting his seminar on single electron devices.

The ED Korea Chapter co-sponsored the 2005 Asia-Pacific Workshop on Fundamental and Application of Advanced Semiconductor Devices (AWAD 2005), which was held at Seoul National University during June 28-30. The workshop drew quite a number of participants from Japan and Korea, and provided a ground for open discussions on recent advances in semiconductor devices.

~ **Hisayo S. Momose, Editor**

ED Japan

- by *Hiroshi Ishiwara*

The ED Japan Chapter organized the symposium entitled "Challenges and Problems toward Future Nano-CMOS Technology" held April 27-28, 2005, at Waseda University in Tokyo. Twenty speakers, including 6 invited speakers (Dr. E. Suzuki — Adv. Industrial Science, and Technology, Dr. T. Mogami — NEC, Dr. K. Okuwada — Ministry of Education, Culture, Sports, Science, and Technology, Professor K. Ito — Keio University, Professor H. Fujita — University of Tokyo and Professor H. Sakaki — University of Tokyo), spoke at this symposium. We had about 100 participants for the two days, and enthusiastic discussions about technology trends, frontier technologies of device process and analysis, and theoretical approach to new

device physics and materials, which were all focused to the coming Nano-CMOS technology. A session of panel discussions by 8 panelists, i.e., Professor H. Iwai (Tokyo Tech.), coordinator, Dr. S. Kimura (Hitachi), Professor H. Fujita (Univ. Tokyo), Professor M. Koyanagi (Tohoku Univ.), Professor T. Hiramoto (Univ. Tokyo), Professor A. Tachibana (Kyoto Univ.), Professor A. Yasuda (Kochi Inst. Tech.), and M. Fukuma (NEC), was also held at the end of the symposium. Although this symposium was held as a domestic one this time, the next will be an international symposium and will be held from January 30 to February 1, 2006, at Mishima City, Shizuoka, Japan.

The ED Japan Chapter co-organized the 5th International Workshop on Junction Technology (IWJT2005) held on June 7-8, 2005, at Osaka, Japan. We had 130 participants and 34 papers were presented in the field of process technology, especially focused on doping, rapid thermal processes for activation and silicide technology.

ED SJCE Student Branch

- by *Ms. Sangeetha B (Vice Chairperson) and Ms. Meghna Parashar (Editorial Board — IEEE SJCE)*

The amalgamation of true spirit and perseverance resulted in the genesis of the IEEE Electron

Devices Society, Sri Jayachamara-jendra College of Engineering, Mysore, Student Chapter on 28 September 2004, with a formal inauguration by Dr. Navakanta Bhat, Professor, IISc, Bangalore. He holds a doctorate from Stanford University.

This chapter, the only one of its kind in India, is an embodiment of a board of 3 office bearers, an Executive Committee of 5 students, 42 student members and 2 staff advisors.

The novice activity of the chapter was a talk on MEMS by Dr. Navakant Bhat 28 September 2004. With all these came a challenge for all the EDS members as offered by Dr. Navakant Bhat, to train 2 students at his MEMS lab at IISc, Bangalore. In this view, 2 rounds of screening were held. The first round on 18 March 2005 selecting 8 students and the second round on 27 May 2005 to choose two of these eight.

On 17 April 2005, 36 teams from all over the state participated in a state level technical quiz-QUIZ'NT POINT, officiated by the EDS SJCE Student Chapter. The 3 round contest comprised of 2 elimination rounds (written and design) and a final quiz choosing 2 winning teams.

Adding to the cadastre of events a series of talks was organized by the chapter on 7 May 2005.

- A talk on DSM designs analysis by Mr. P.R. Suresh from Texas Instruments. He gave an insight into the technology and design flow, various aspects of electromagnetism in metals.
- Dr. Navakant Bhat from IISc, Bangalore, rendered a brief talk on RF MEMS, accentuating on MEMS varactors and silicon CMOS, working at radio frequency.
- A quick and fleeting knowledge of the history and applications of semiconductor devices was furnished by Dr. Radhakrishnan, CTO, Nanorel, Singapore.

The annual general body meeting (AGM) was held on 31 May 2005. It converged to form the new board of office bearers and the working force for the forthcoming academic year.



Symposium on "Challenges and Problems toward Future Nano-CMOS Technology" on April 27-28, 2005. Inset: Opening by Prof. H. Ishiwara, Chair of the ED Japan Chapter.

ED/SSC Bangalore

- by P.R. Suresh

The IEEE ED/SSC Chapter organized several technical events during the second quarter of 2005 that received an excellent response from the technical community.

On 20 June, Dick McCartney, Principal Display Technologist National Semiconductor, USA, gave a talk on "Fundamentals of Liquid Crystal Display and its application in TV". About 50 people attended this talk.

On 28 June, Atiq Raza, Chairman and CEO Raza Microelectronics Inc., gave a talk on "New Waves in Technology Markets and the nature of Next Generation Silicon Architectures". About 70 people attended this talk.

The chapter co-sponsored a one week "VLSI Education Workshop" with the VLSI Society of India, at SJCE, Mysore, 8-13 May. The workshop was specifically targeted towards the faculty members of engineering colleges engaged in postgraduate courses in VLSI. The attendance was limited to about 50 so that a better interaction was possible. The workshop also had lab sessions to enable the attendees to get hands-on exposure to various design tools. The lectures were presented by several leading experts from academia and industry. Some of the topics covered were: Analog CMOS design, CAD tools for VLSI circuits, testing and verification, VLSI system architecture, filter design, and reliability of IC's.

We continued mentoring the newly formed ED student chapter at SJCE, Mysore. We helped them in conducting a one day workshop on "Recent Trends in Semiconductor Technology" on 7 May. In this workshop, several members from the Bangalore Chapter gave technical talks on topics such as DSM design analysis, MEMS varactors, and history of semiconductor devices. We are also helping this chapter to get exposure to research institutions and semiconductor industries in Bangalore.

The chapter proposes to conduct a few more technical talks

and workshops in the coming months. Details will be communicated to the section members when these events are finalized.

AP/ED Bombay

- by Mahesh Patil

The IEEE AP/ED Bombay Chapter organized the following events:

- On 12 April, Mr. Abhisek Dixit, IMEC Belgium, gave a talk on "Series resistance reduction in FinFETs using S/D engineering".
- On 1 June, Dr. Vinayak Tilak, GE Global Research, Niskayuna, NY, gave a talk on "Fabrication and characterization of GaN transistors and Schottky diodes".
- On 2 June, Dr. Sayanu Pamidighantam, Bharat Electronics Laboratories, talked on "RF-MEMS" and their applications.
- On 7 June, 2005, Dr. Tamalika Banerjee, MESA Institute for Nanotechnology, University of Twente, The Netherlands, gave a talk on "Semiconductor/Ferromagnet hybrid devices for Spintronics".

ED/MTT India

- by K. S. Chari

The Chapter has pursued the following diverse activities spread across the country in different regions during the period January – June 2005:

Guest Lectures/talks: Over 5 talks were held under this event. Mr. N.B. Singh, Scientist CEERI, Pilani, delivered the first lecture, "Technology and Mathematical Issues in Information Sciences" at Department of Information Technology, New Delhi on 2 March 2005. The talk covered issues of various communication strategies, media choices, influence of media, broad band vs. traditional network methods, data security, secure networks, etc. Mr. Saket Labh, Engineer with Defence Institute, Delhi, delivered a second talk on "Current trends in IT" at the Department of Information Technology on 9 March 2005. The lecture covered issues of PC, PC connectivity, Internet, communication methods and protocols, market trends, technology options, role of open source and typical features of popular LINUX and Java, etc. The Chapter Chair delivered a third talk, "Design and Development of an SOC embedded system for Digital Hearing Aid" on 10 May 2005, at the National Workshop on Embedded Systems, SASTRA University, Thanjavur. The lecture described the aids for hearing impaired, defects of human ear, types of losses and prevailing disabilities, types of hearing aids available, limitations of conventional hearing aids, advantages of digital solutions, barriers to low cost implementation, typical FPGA solution of DHA, performance of DHA prototype, future upgrades,



Section of attendees at National Workshop on Embedded Systems, 9-11 May 2005, SASTRA Thanjavur



Participants at Asia Pacific Electronic Design Leaders Conference, 27-28 June 2005, Bangalore

etc. The fourth talk, "March of Microprocessor" was delivered by the Chapter Chair on 11 May 2005, at SASTRA University. The history of early developments in the field, firms associated, architectures and technologies employed, features of popular processors, evolution of microprocessor complexity, performance and power dissipations, strategies for product developments, range of appliances using processors, etc. were covered. The fifth talk on "Journey to nano- a glimpse" was delivered by the Chapter Chair on 12 May 2005, at TIFAC-CORE, SASTRA, Thanjavur. The talk featured march of semiconductor electronics, emergence of nano world and nano disciplines, nano technology implementation approaches in solid state, molecular and bio worlds, overview of typical devices demonstrated, paths ahead, etc. Participants in the range of 60-100 attended these events.

International Conference: The Chapter co-sponsored the Asia Pacific Electronic Design Leaders Conference organized by M/s Marcus Evans, Malaysia at Bangalore, 27-28 June 2005. The event brought together the Managers, Directors and Chief Executives of the MNCs and National industries operating in the area of Electronic Design. About 15 lead speakers covered various Electronic Design issues like Future of Electronics Design, Trends and Challenges in IC Design and Manufacture, IPR matters in IC Design Layout protection, Trends in Asia Pacific Electronics Industry, Considerations for Electronics Design, Impact of

Pre-Development, Quality Engineering and Testing Very Deep Submicron calls for VDSM, Environmental Safety Issues, and case studies on Polymer PTC, Insilica-Moving up on Value Chain, Ittiam Systems- Building world class DSPs, Increasing value chain through Test, Assembly and Packaging, Texas Instruments HR Strategy. The Chapter Chair gave the invited talk on "IPR Protection in IC Lay-out Designs". Over 70 specialists attended the global event.

National Symposia/Workshops:

Two events were held. The Chapter, in association with Electronics Society, Kurukshetra University, Kurukshetra, organized a National Symposium on Electronics and Technology (NASET 2K5) at their campus 1-2 April. The symposium exclusively catering to the student community, was inaugurated by Professor P.J. George, Chairman, Electronic Science Department. NASET featured a number of events like Technical Paper Presentation, Logic Circuit Design contest, Hardware Display-cum-Exhibition, Science and Technology Quiz and Technical Poster presentation. The hardware event featured 30 entries short-listed from a total of 200 received. NASET 2005 received a major response from industries in the form of sponsorship. The Chapter awarded a total of 8 awards and prizes in the Hardware Section including 5 awards/prizes constituted especially this year in the category of "Consolation" and "Proof of Concept" categories. Each winning participant received

a certificate and a prize. Those awarded at NASET 2K5 are: Technical Paper Presentation Electronics: 1st Prize - Gas monitoring system, Gurmeet Singh & Manoj Sharma, Beant College of Engineering, Gurdaspur (Punjab); 2nd Prize - Optical associative processing, Sudhanshu Tripathi & Amit Chatterji, UCIM, Punjab University, Chandigarh. Logic Design Contest: 1st Prize: Shalli Khurana, NIT, Kurukshetra; 2nd Prize: Sandeep Sharma, Electronic Science Department, K.U. Hardware Display cum exhibition: 1st Prize: Remote controlled Tank, Sachin and Munish, RKSD College, Kaithal; 2nd Prize: Automatic Electricity Distribution system, Virender and Anurag, Electronic Science Department, K.U., Kurukshetra. Consolation prizes: i) Automatic Parking System; ii) IR control. Proof of concept Prizes: i) G-meter; ii) Tsunami Waves Informer; iii) Traffic Light Controller. Technical Poster Presentation: 1st Prize: Technology in every aspect, Pooja Kaushik & Varun Gaurav Institute, Department of Microbiology, K.U., Kurukshetra. Science and Technology Quiz: Winners-Kapil Tyagi & Manish Trivedi, Electronic Science Department, K.U., Kurukshetra. Kurukshetra University, Professors P.J. George and Vohra, faculty Mrs. Anurekha Sharma and Mr. Ashok Kumar, coordinated the Workshop activities.

The Chapter has actively worked with SASTRA University and jointly held a "National Workshop on Embedded Systems" at Thanjavur campus during 9-11 May 2005. The workshop had brought together students, industry leaders and R&D groups for an exposure to the latest developments in the area, typical electronic product designs being carried out, case studies in the field, etc. Over 17 speakers delivered talks covering Embedded Systems, Low Power Embedded System Design, Embedded Computing, Wireless Security, Trends in 32 bit Platform, Open Source Security for embedded System,

Embedded VLSI Testing, SOC Embedded System for Digital Hearing Aid, Quality/Healthy Systems with XP, Embedded System for Electronic Voting, microcontroller for Automotives, Embedded Sensor Networking, etc. The event also featured a Panel Discussion on "Future of Embedded Systems". Over 100 participants attended the event. Professor Usha Devi, Head TIFAC- Core, organized the event from the SAS-TRA side.

EDS Region 10 Chapters Meeting

The Chapter Chair represented the Chapter at the EDS Region 10 Chapter Chair's meeting, Colloquia and EDS AdCom in Seoul, Korea, during 3-5 June 2005. A Chapter activity report was presented and the Chair actively participated in the discussions with several inputs.

ED Malaysia

- by *Burhanuddin Yeop Majlis*

The MEMS Technology Seminar was successfully held at the Marriott Putrajaya Hotel on May 25, 2005. The event was jointly organized by the Institute of Microengineering and Nanoelectronics (IMEN-UKM), Universiti Kebangsaan Malaysia and ED Malaysia Chapter,

in co-operation with Coventor Inc., FTD Solutions Pte. Ltd. and Kriptik Devices Sdn. Bhd.

The Deputy Minister of Higher Education, Y.B. Dato' Fu Ah Kiow, officiated the seminar which saw the MOU signing ceremony between IMEN-UKM with Mem-sTech Pte. Ltd. IMEN-UKM was represented by the Vice Chancellor of UKM, Prof. Dato' Dr. Salleh Mohd. Yassin and witnessed by director of IMEN, Prof. Dr. Burhanuddin Yeop Majlis. The chairman executive of AKN Technology Bhd., Datuk Ahmad Kabeer Mohd. Nagoor, signed the MOU on behalf of Mem-sTech Pte. Ltd.

The objectives of the MEMS Technology Seminar is to provide the latest knowledge on MEMS and to examine the challenges and opportunities for MEMS research. Eighty-six participants attended the seminar which consisted of academicians and researchers. Prof. Dr. Burhanuddin Yeop Majlis started the seminar with a lecture on challenge and opportunities in MEMS followed by an overview and fabrication of MEMS. Next, Mr. Sandiapan Maity from Coventor Inc., talked about MEMS in biotechnology industry followed by Mr. Kok Kitt Wai's presentation on MEMS microphone. The semi-

nar ended with a lecture on MEMS in telecommunications also by Mr. Sandiapan Maity.

Following the seminar, a two-day workshop on MEMS Technology was held from May 26-27, 2005, at the Institute of Micro Engineering and Nanoelectronics, Universiti Kebangsaan Malaysia. Twenty-six participants attended the workshop. The participants were given hands-on training on simulating several MEMS devices such as general MEMS device, accelerometer for automotive applications, bio-MEMS and RF-MEMS using the CoventorWare software. The training was conducted by Mr. Sandiapan Maity from Coventor Inc.

For more information, please contact Prof. Dr. Burhanuddin Yeop Majlis, Institute of Microengineering and Nanoelectronics (IMEN), Universiti Kebangsaan Malaysia. Tel: 603-89265861, Fax: 603-89259080, e-mail: burhan@vlsi.eng.ukm.my.

~ **Xing Zhou, Editor**

REL/CPMT/ED Singapore

- by *K.L. Pey*

The REL/CPMT/ED Singapore Chapter reports the following activities.

DL/Technical talks

14 March 2005, Professor Arokia Nathan of the University of Waterloo, Canada,, an EDS DL, gave a DL talk on "Nanoscale Elastic Circuits". "Nanoscale Elastic Circuits".

28 March 2005, Mr. Chen Jinghao of the National University of Singapore, gave a technical talk on "Novel Nano-crystals and SONOS-type Nano-dots Flash".

Conferences/ mini-colloquium

7th Electronics Packaging Technology Conference (EPTC 2005), 7th – 9th December 2005, Grand Copthorne Waterfront, Singapore

Preparations for the 7th Electronics Packaging Technology Conference (EPTC 2005) have begun. YC Mui from Advanced Micro Devices succeeds Toh Kok Chuan as the General Chair for EPTC 2005. EPTC 2005 will also have James How from Motorola and



MEMS Technology Seminar 2005

John HL Pang from Nanyang Technological University as its Technical Chairs. Both of them have been involved with EPTC for the past three series. The EPTC 2005 committee is 17-members strong including representation from IEEE REL/CPMT/ED local Chapter.

EPTC 2005 is organized by IEEE REL/CPMT/ED Singapore Chapter, and the Call for Papers was initiated in the 2nd week of April 2005. Mass e-mailing to 6,000 fellow researchers, managers and engineers was also completed. EPTC 2005 will continue the successful formulae of past EPTCs with a strong focus on the technical program. The committee is finding ways to increase the number of technical papers while maintaining a high quality content that will bring greater value to the delegates. Similarly, the committee is planning short course programs that would be beneficial to the engineers in the region.

IPFA 2005

The 12th IPFA was held 27 June to 1 July 2005 at Shangri-La's Rasa Sentosa Resort, Singapore. This year, we were pleased to receive nearly 100 submitted papers and about 70 of those have been presented in the symposium, either orally or as posters. In addition, we had an exchange of papers from ISTFA and ESREF, 4 invited papers and a keynote address. (See more details in a separate report in this issue).



IPFA Keynote address by Mr. Kay Chai ("KC") Ang, Senior Vice President for Fab Operations at Chartered Semiconductor.

8th WIMNACT-Singapore

The 8th WIMNACT was successfully held on 2 July 2005 in Singapore. Four overseas DLs, 2 local DLs and one invited speakers presented the latest development in nano-scale CMOS technology to themore than 80 participants. (See more details in a separate report in this issue).

12th International Symposium on the Physical and Failure Analysis of Integrated Circuits (IPFA 2005)

- by Alastair Trigg and K.L. Pey

The 12th International Symposium on Physical and Failure Analysis of Integrated Circuits (IPFA) was held 27 June to 1 July 2005 at Shangri-La's Rasa Sentosa Resort, in Singapore. The location was an unusual one, several km from the city centre, next to the beach on the island of Sentosa, more relaxing than the usual city centre hotels. IPFA has been away from Singapore for two years since IPFA 2003 had to be cancelled due to the SARS outbreak in that year and in 2004, IPFA went overseas for the first time in its history, to Hsinchu in Taiwan.

IPFA has been the main Asian conference on reliability and failure analysis of devices and integrated circuits, for over 15 years and is sponsored by the REL/CPMT/ED Singapore Chapter and the IEEE Electron Devices & Reliability societies.

The five day event began with two days of tutorials followed by the three day technical symposium in parallel with an exhibition of FA and characterization equipment.

The six half-day tutorials, two on Monday and four in parallel sessions on Tuesday were:

- Cu/Low-k Failure Analysis & Interconnect Degradation Studies by Dr. Ehrenfried Zschech (AMD)
- Reliability Testing in the Semiconductor Industry by Dr. Luc Tielemans (QTest)
- Electrostatic Discharge (ESD) Reliability Issues in Advanced Silicon Technologies - Basics and Trends by Dr. Mahadeva Iyer Natarajan (IMEC)

- Electrical Diagnosis: Making Best Use of Test to Support Physical Failure Analysis by Dr. Camelia Hora (Philips)
- Laser Induced Techniques for Microelectronic Failure Analysis by Professor Jacob Phang (NUS) & Dr. Michael Bruce (AMD)
- MOS Gate Dielectric Reliability by Dr. James Stathis (IBM)

All were exceptionally well supported with an average attendance of over 40 and none having less than 30 registrants.

The Technical symposium began with the keynote address, "Yield Challenges in Nanotechnology", by Kay Chai "KC" Ang, Senior Vice President for Fab Operations at Chartered Semiconductor. This was followed by Best/Outstanding paper exchanges from ESREF and ISTFA. From ESREF, Pei Lin Song of IBM T.J. Watson Research Center presented "Testing of Ultra Low Voltage CMOS Microprocessors Using the Superconducting Single-Photon Detector (SSPD)", while from ISTFA, J. Evertsen of University at Albany, presented "Three Dimensional Imaging of Microelectronic Devices Using a CrossBeam FIB."

The rest of the week saw four invited papers and 44 contributed papers presented orally and another 18 papers presented during the poster session and reception. The Technical symposium attracted nearly 200 participants, just over half of them from Singapore and the rest from overseas. In parallel with the symposium 30 exhibitors were able to showcase their products and services. Although not an official part of IPFA, an FIB user group meeting and reception were held on the Thursday evening which proved very popular with participants. The social highlight of the week was undoubtedly the banquet barbecue held in the Pavillion room with its excellent view over the South China Sea and the flotilla of ships passing through the port of Singapore.

~Xing Zhou, Editor

EDS MEETINGS CALENDAR

(AS OF AUGUST 24, 2005)

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

October 2 - 5, 2005, T **IEEE International Conference on Computer Design**, Location: San Jose Doubletree Hotel, San Jose, CA, USA, Contact: Edward Grochowski, E-Mail: edward.grochowski@intel.com, Deadline: 5/13/05, www: www.iccd-conference.org

October 3 - 5, 2005, * **International Semiconductor Conference**, Location: Sinaia Hotel, Sinaia, Romania, Contact: Dan Dascalu, E-Mail: dascalu@imt.ro, Deadline: 5/25/05, www: <http://www.imt.ro/CAS/index.htm>

October 3 - 6, 2005, * **IEEE International SOI Conference**, Location: Hyatt Regency Waikiki Resort & Spa, Honolulu, Hawaii, USA, Contact: Bobbi Armbruster, E-Mail: bobbi@bacmnc.com, Deadline: 5/6/05, www: www.soi-conference.org

October 3 - 7, 2005, T **European Gallium Arsenide and Other Semiconductor Applications Symposium**, Location: CNIT Paris la Defense, Paris La defense, France, Contact: Raymond Quere, E-Mail: quere@brive.unilim.fr, Deadline: 3/2/05, www: www.eumw2005.com

October 4 - 7, 2005, T **International Conference on Advanced Thermal Processing of Semiconductors**, Location: Fess Parker's Double Tree Resort, Santa Barbara, CA, USA, Contact: Bo Lojek, E-Mail: blojek@atmel.com, Deadline: 5/31/05, www: www.ieee-rtp.org

October 9 - 11, 2005, @ **IEEE Bipolar/BiCMOS Circuits and Technology Meeting**, Location: Fess Parker Doubletree Resort, Santa Barbara, CA, USA, Contact: Janice Jopke, E-Mail: ccs@mn.rr.com, Deadline: 3/15/05, www: www.ieee-bctm.org

October 10 - 15, 2005, T **International Photovoltaic Science & Engineering Conference**, Location: Shanghai International Convention Center, Shanghai, China, Contact: Shengwu Xie, E-Mail: pvsec15@sjtu.edu.cn, Deadline: 5/1/05, www: <http://pvsec15.sjtu.edu.cn>

October 10 - 14, 2005, T **European Symposium on Reliability of Electron Devices, Failure**

Physics and Analysis, Location: Palatium-Arcachon, Arcachon, France, Contact: Andre Touboul, E-Mail: touboul@ixl.u-bordeaux.fr, Deadline: 3/21/05, www: www.esref.org

October 12, 2005, T **Workshop on Compact Modeling for RF/Microwave Applications**, Location: Fess Parker's Double Tree Resort Hotel, Santa Barbara, CA, USA, Contact: Slobodan Mijalkovic, E-Mail: s.mijalkovic@its.tudelft.nl, Deadline: 3/31/05, www: <http://hitec.ewi.tudelft.nl/cmrf05/>

October 17 - 20, 2005, * **IEEE International Integrated Reliability Workshop**, Location: Stanford Sierra Conference Centers, South Lake Tahoe, CA, USA, Contact: Lynett Westergard, E-Mail: lynett_westergard@amis.com, Deadline: 7/1/05, www: www.iirw.org

October 25 - 28, 2005, T **International Microprocesses and Nanotechnology Conference**, Location: Hotel Belclasic Tokyo, Tokyo, Japan, Contact: Hiroaki Masuko, E-Mail: mnc2005@secretaryart.co.jp, Deadline: 7/8/05, www: <http://mnc.rcem.osaka-u.ac.jp>

October 30 - November 2, 2005, * **IEEE Compound Semiconductor IC Symposium**, Location: Hyatt Grand Champions Resort, Indian Wells, CA, Contact: Kevin Kobayashi, E-Mail: kkobayashi@sirenza.com, Deadline: 5/9/05, www: www.csics.org

November 6 - 10, 2005, T **IEEE International Conference on Computer Aided Design**, Location: Doubletree Hotel, San Jose, CA, USA, Contact: Kathy MacLennan, E-Mail: kathy@mpassociates.com, Deadline: 4/20/05, www: <http://www.iccad.com>

November 7 - 10, 2005, T **Non-Volatile Memory Technology Symposium**, Location: Adam's Mack Hotel, Dallas, TX USA, Contact: Aranki Nazeeh, E-Mail: Nazeeh.I.Aranki@jpl.nasa.gov, Deadline: 8/12/05, www: <http://nvm.jpl.nasa.gov>

December 1 - 3, 2005, * **IEEE Semiconductor Interface Specialists Conference**, Location: Key Bridge Marriott, Arlington, VA, USA, Contact: Matthew Copel, E-Mail: mcopel@us.ibm.com, Deadline: 7/22/05, www: www.ieeesisc.com

December 5 - 7, 2005, * **IEEE International Electron Devices Meeting**, Location: Washington Hilton & Towers Hotel, Washington, DC, USA, Contact: Phyllis Mahoney, E-Mail: phyllism@widerkehr.com, Deadline: 6/24/05, www: <http://www.ieee.org/conference/iedm>

December 7 - 9, 2005, T **International Semiconductor Device Research Symposium**, Location: Holiday Inn Select, Bethesda, MD, USA, Contact: Tom Murphy, E-Mail: tem@umd.edu, Deadline: 9/9/05, www: <http://www.ece.umd.edu/isdrs2005/>

December 11 - 14, 2005, T **International Conference on Field-Programmable Technology**, Location: School of Computing, Nat. Univ. of Singapore, Singapore, Singapore, Contact: Weng-Fai Wong, E-Mail: wongwf@comp.nus.edu.sg, Deadline: 6/13/05, www: <http://www.comp.nus.edu.sg/icfpt05>

December 13 - 17, 2005, T **International Workshop on the Physics of Semiconductor Devices**, Location: National Physical Laboratory, New Delhi, India, Contact: Vikram Kumar, E-Mail: vikram_kumar/sspl@ssplnet.org, iwpsd@ndf.vsnl.net.in, Deadline: 6/15/05, www: www.iwpsd.net

December 13 - 17, 2005, T **International High Power Microwave Electronics: Measurement, Identification, Application Conference**, Location: Novosibirsk State Technical Univ. Conference Center, Novosibirsk, Russia, Contact: Alexander Gridchin, E-Mail: ieeensk@yandex.ru, Deadline: Not Available, www: <http://iee.sib-sutis.ru/>

December 13 - 15, 2005, T **International Conference on Microelectronics**, Location: Sarena Hotel, Islamabad, Pakistan, Contact: Muid Mufti, E-

Mail: muid@uettaxila.edu.pk, Deadline: 7/1/05, www: <http://vlsi.uwaterloo.ca/~icm/index.htm>

December 19 - 21, 2005, T **IEEE Conference on Electron Devices and Solid State Circuits**, Location: New World Renaissance Hotel, Tsimshatsui, Kowloon, Hong Kong, Contact: Mansun Chan, E-Mail: mchan@ee.ust.hk, Deadline: 8/26/05, www: www.ee.ust.hk/ieeeds/edsoc/

January 10 - 13, 2006, T **IEEE Emerging Technologies - Nanoelectronics**, Location: Meritus Mandarin Hotel, Singapore, Singapore, Contact: Cher Tan, E-Mail: ecmtan@ntu.edu.sg, Deadline: 6/30/05, www: www.ieeect.org

February 4-8, 2006, T **IEEE International Solid-State Circuits Conference**, Location: San Francisco Marriott Hotel, San Francisco, CA, USA, Contact: Diane Melton, E-Mail: isscc@courtesyasoc.com, Deadline: 9/19/05, www: <http://www.isscc.org/isscc/>

February 5 - 9, 2006, T **IEEE International Solid-State Circuits Conference**, Location: San Francisco Marriott Hotel, San Francisco, CA, USA, Contact: Diane Melton, E-Mail: isscc@courtesyasoc.com, Deadline: Not Available, www: <http://www.isscc.org/isscc/>

February 13 - 15, 2006, @ **IEEE Non-Volatile Semiconductor Memory Workshop**, Location: Hyatt Regency, Monterey, CA, USA, Contact: Richard Eguchi, E-Mail: richard.eguchi@freyscale.com, Deadline: 10/14/05, www: www.ewh.ieee.org/soc/eds/nvsmw/

March 6 - 9, 2006, @ **IEEE International Conference on Microelectronic Test Structures**, Location: Hyatt Regency on Town Lake, Austin, TX, USA, Contact: Wendy Walker, E-Mail: wendyw@widerkehr.com, Deadline: 9/14/05, www: www.ed.ed.ac.uk/ICMTS/

March 26 - 30, 2006, * **IEEE International Reliability Physics Symposium**, Location: San Jose Marriott, San Jose, CA, USA, Contact: Carole Graas, E-Mail: grass@us.ibm.com, Deadline: 10/7/05, www: <http://www.irps.org/>

April 25 - 27, 2006, @ **International Vacuum Electronics Conference**, Location: Portola Plaza Hotel, Monterey, CA, USA, Contact: Ralph Nadell, E-Mail: rnadell@pcm411.com, Deadline: Not Available, www: www.ivec2006.org

April 26 - 28, 2006, T **VLSI-TSA International Symposium on VLSI Design, Automation & Test**, Location: Ambassador Hotel, Hsinchu, Hsinchu, Taiwan, Contact: Jyuo-Min Shyu, E-Mail: shyu@itri.org.tw, Deadline: 10/15/05, www: <http://vlsitsa.itri.org.tw/2006/>

May 8 - 12, 2006, @ **IEEE World Conference on Photovoltaic Energy Conversion**, Location: Hilton Waikoloa Village, Waikoloa, HI, USA, Contact: Americo Forestieri, E-Mail: moeforestieri@att.net, Deadline: Not Available, www: www.ieeeepvsc.org

May 8 - 11, 2006, @ **IEEE International Conference on Indium Phosphide and Related Materials**, Location: Princeton University, Princeton, NJ, USA, Contact: Gregory Olsen, E-Mail: golsen@sensorsinc.com, Deadline: Not Available, www: Not Available

May 14 - 17, 2006, T **International Workshop on Expert Evaluation & Control of Compound Semiconductor Materials & Technologies**, Location: Hotel Atlantico, Cadiz, Spain, Contact: Daniel Araujo, E-Mail: daniel.araujo@insa-lyon.fr, Deadline: Not Available, www: Not Available

May 14 - 17, 2006, * **International Conference on Microelectronics**, Location: University of Nis, Nis, Yugoslavia, Contact: Ninoslav Stojadinovic, E-Mail: nstojadinovic@elfak.ni.ac.yu, Deadline: 10/10/05, www: <http://europa.elfak.ni.ac.yu/miel/>

May 16 - 18, 2006, T **International High Temperature Electronics Conference**, Location: Santa Fe, NM, USA, Contact: R Johnson, E-Mail: johnson@eng.auburn.edu, Deadline: Not Available, www: Not Available

May 22 - 24, 2006, T **International Conference on Microwaves, Radar and Wireless Communication**, Location: Krakow, Poland, Contact: Elzbieta Sedek, E-Mail: godlewska@pit.edu.pl, Deadline: Not Available, www: Not Available

May 22 - 24, 2006, * **IEEE/SEMI Advanced Semiconductor Manufacturing Conference and Workshop**, Location: The Sheraton Hotel, Boston, MA, USA, Contact: Margaret Kindling, E-Mail: mkindling@semi.org, Deadline: 9/22/05, www: www.semi.org/asmc

May 24 - 27, 2006, @ **International Conference on Perspective Technologies and Methods in MEMS Design**, Location: Transkarpathian spa Polyana, Lviv-Polyana,

Ukraine, Contact: Mykhalyo Andriychuk, E-Mail: andr@iapmm.lviv.ua, Deadline: Not Available, www: <http://www.lp.edu.ua/Institute/IKN/CAD/MEMSTECH>

May 25-27, 2006, T **International Workshop on Computational Electronics**, Location: Vienna University of Technology, Vienna, Austria, Contact: Hans Kosina, E-Mail: kosina@iue.tuwien.ac.at, Deadline: 1/15/06, www: <http://www.iwce.org>

June 4 - 8, 2006, @ **International Symposium on Power Semiconductor Devices & Integrated Circuits**, Location: University of Naples "Federico II", Naples, Italy, Contact: Paolo Spirito, E-Mail: paolo.spirito@unina.it, Deadline: 10/24/05, www: www.ispsd2006.it

June 11 - 12, 2006, @ **IEEE Silicon Nanoelectronics Workshop**, Location: Hilton Hawaiian Village, Honolulu, HI, USA, Contact: Wolfgang Porod, E-Mail: porod@nd.edu, Deadline: Not Available, www: Not Available

June 13 - 17, 2006, T **IEEE Symposium on VLSI Circuits**, Location: Hilton Hawaiian Village, Honolulu, HI, USA, Contact: Phyllis Mahoney, E-Mail: phyllism@widerkehr.com, Deadline: Not Available, www: Not Available

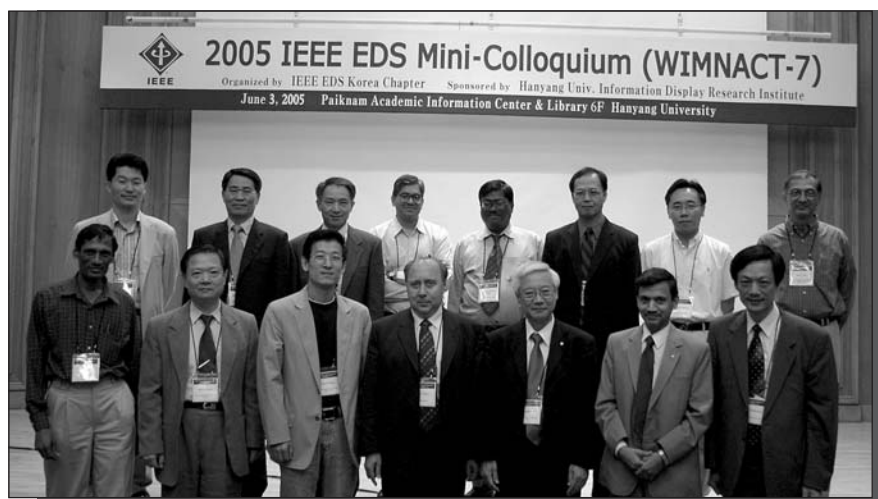
June 13 - 17, 2006, @ **IEEE Symposium on VLSI Technology**, Location: Hilton Hawaiian Village, Honolulu, HI, USA, Contact: Phyllis Mahoney, E-Mail: phyllism@widerkehr.com, Deadline: Not Available, www: Not Available

June 21 - 23, 2006, T **European Workshop on Low Temperature Electronics**, Location: European Space & Technology Center, Noordwijk, The Netherlands, Contact: Bruno Leone, E-Mail: bruno.leone@esa.int, Deadline: Not Available, www: <http://www.congrex.nl/06c01>

September 10 - 13, 2006, T **IEEE Custom Integrated Circuits Conference**, Location: Double Tree Hotel, San Jose, CA, USA, Contact: Melissa Widerkehr, E-Mail: melissaw@widerkehr.com, Deadline: Not Available, www: <http://www.ieee-cicc.org>

September 18-22, 2006, T **European Solid-State Device Research Conference**, Location: Montreux, Switzerland, Contact: Yusuf Leblebici, E-Mail: yusuf.leblebici@epfl.ch, Deadline: 4/7/06, www: <http://www.esscirc2006.com>

EDS DISTINGUISHED LECTURERS PARTICIPATE IN THE 7TH WIMNACT – KOREA



Some attendees of the 7th WIMNACT in Korea: DLs, AdCom Members, Region 10 Chapter Chairs, and ED Korea Chapter officers

The 7th Workshop and IEEE EDS Mini-colloquia on Nanometer CMOS Technology (WIMNACT – Korea) was held on June 3, 2005 in Seoul, Korea. It was organized and sponsored by the IEEE ED Korea Chapter and the EDS Distinguished Lecturer Program. The one-day event was held at Hanyang University. The EDS Region 10 Chapters Meeting and the EDS Administrative Committee (AdCom) Meeting were held at the Conference and Exhibition Center (COEX), Seoul, on June 4th and 5th, respectively. Many Region 10 Chapter Chairs and EDS AdCom Members were able to attend the workshop due to the temporal proximity of these events.

The EDS President, Prof. Iwai of Tokyo Institute of Technology, gave an opening remark. The workshop included talks from three Distinguished Lec-

turers (DLs) from the United States, (Prof. Renuka Jindal of the University of Louisiana at Lafayette, Prof. Albert Wang of the Illinois Institute of Technology, and Prof. Juin J. Liou of the University of Central Florida), one DL from Taiwan (Prof. Steve Chung of the National Chiao-Tung University), one DL from Belgium (Dr. Cor Claeys of IMEC) and one IEEE Fellow from Korea (Dr. Kinam Kim of Samsung). The workshop covered a wide range of topics, including "From Millibits to Terabits and Beyond - Over 50 years of Innovation," "Advanced on-Chip ESD Protection Design for Integrated Circuits, Robust Electrostatic Discharge (ESD) Protection in CMOS Technology," "New Development and Challenges for Ultra-Thin Gate Oxide Nano-CMOS Device Reliability Studies," "Defect Engineering in High-

Mobility Substrates for Advanced CMOS Technologies," and "Memory Technologies in Nano-era: Challenges and Opportunities."

The event was very successful, receiving an enthusiastic response from more than 120 attendees, including IEEE members and non-members. Many expressed their satisfaction with the organization of the workshop and praised the usefulness of the topics to their research and development. After the workshop, there were discussions between the DLs, EDS AdCom Members, and several Korean representatives to promote the inter and intra-regional collaboration in EDS.

*Byung G. Park
ED Korea Chapter Chair
Seoul National University
Seoul, Korea*