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## 2006 IEEE INTERNATIONAL ELECTRON DEVICES MEETING (IEDM)



SAN FRANCISCO CONVENTION & VISITORS BUREAU

The world's premier forum for cutting-edge research into electronic, microelectronic, and nano-electronic devices and processes is the Electron Devices Society's annual technical conference, the International Electron Devices Meeting (IEDM). The 52nd IEDM will be held in San Francisco, California, U.S.A., at the Hilton San Francisco and Towers Hotel. It will run December 11-13, 2006, preceded by a full day of short courses on Sunday, December 10th.

The IEDM draws presentations and attendees from industry, academia, and governmental agencies worldwide. No other meeting presents as much leading work in so many different areas of microelectronics, encom-

*(continued on page 8)*

### YOUR COMMENTS SOLICITED

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

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## EDS AdCom Elected Members-at-Large

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

2006	Term	2007	Term	2008	Term
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T. Hiramoto	(2)	M. J. Chan	(1)	J. Deen	(1)
L. M. Lunardi	(2)	M. Estrada del Cueto	(2)	F. J. Garcia Sanchez	(2)
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X. Zhou	(1)	J. J. Wesler	(1)	J. W. Swart	(1)
				S. Tyagi	(1)

## CONTRIBUTIONS WELCOME

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

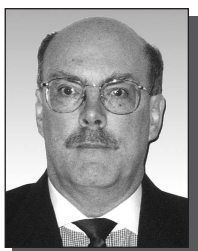
## Newsletter Deadlines

Issue	Due Date
January	October 1st
April	January 1st
July	April 1st
October	July 1st

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## JUNE 2006 ADCom MEETING SUMMARY



John K. Lowell

The 2006 Spring meeting of the IEEE Electron Devices Society was called to order by President Ilesanmi "Ade" Adesida on Sunday, June 4 at the Royal Continental Hotel in

Naples, Italy, in conjunction with the International Symposium on Power Semiconductor Devices & Integrated Circuits.

### Executive Reports

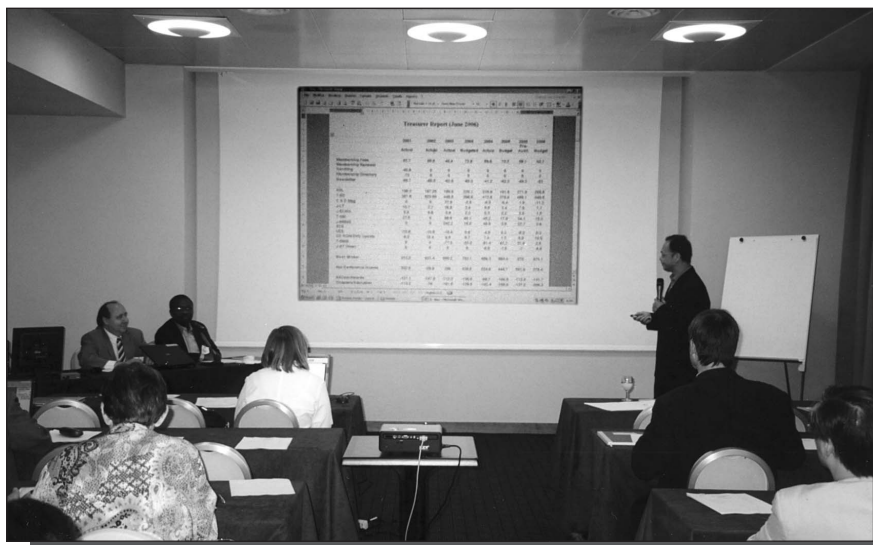
After the December 2005 meeting minutes were approved, Ade's remarks addressed the appointment of Prof. Chang Liu (Univ. of Illinois) as Chair of the new MEMS Technical Committee, and progress on the electronic membership directory to be made available through the web-based, *myIEEE*, replacing the current EDS online roster. In reviewing the November TAB meeting, he mentioned a new date for the November 2006 TAB Committee meetings, and approval of the new algorithm to be used for the distribution of net revenue to societies from the new online short course program (i.e. 90% to the participating societies and 10% to EAB for reinvestment). Other TAB actions reported included the withdrawal of IEEE approval of the *Journal of Product Safety* and granting the Product Safety Engineering Society \$50K (instead of an ASPP payout) for publication support [Note: *T-DMR* and *T-ED* are being examined as alternate publication venues as well.], approved a new indirect infrastructure algorithm under which 25% would be split equally among all societies, and 75% divided based on package product revenues of societies and councils, and raising the upper limit of Society/Council initiatives to \$100K from \$50K. Treasurer Juin Liou reports that EDS did well financially making money on its major publications. However, the financial outlook for *C & D Magazine* continues to be

dim and the magazine will halt publication at the end of 2006. Conference income for 2005 closed at \$541K [Note: All finances given in \$US], Book Broker profits were \$870K, and EDS investments returned \$242K. The final net surplus for 2005 was \$691K. Juin also listed EDS' Initiatives for the 2007 budget (see page 5) with a total cost of \$135.5K, plus the addition of a staff person for the EDS office.

New President-Elect, Cor Claeys, in his ExCom report, discussed the continuation of globalization efforts including "focus visits", that Beijing will be the site for the Spring 2007 AdCom meeting, the organization of the Region 9 meeting in Brazil, a proposal for a new magazine by the Nanotechnology Council, a suggested change to the EDS Field of Interest statement to include biomedical devices and bioelectronics (see below), the continued financial and intellectual health of T-ED & EDL, continued work at establishing an EDS Education Award, proposed changes in the Distinguished Lecturer (DL) program, and the pursuit of a Masters Level Student Fellowship Program.

In his EDS Executive Office report, Bill Van Der Vort, presented a lengthy list of projects, either recently completed, currently working on or soon

to be started. The Office's list of accomplishments include gathering and analyzing attendance data from past Spring AdComs towards improving attendance, reviewing the Meetings Committee for redefining its responsibilities, getting approvals for a revision of the EDS Field of Interest Statement, working with EDS FinCom to develop the list of initiatives for 2007, coordinating a revision of the EDS Constitution and Bylaws to include the definition of the Executive Committee (ExCom) and including the EDS Technical Committees, development of a proposal for an EDS Education Award, working with EdCom on course offerings for IEEE's Expert Now Short Course venue, coordinating the efforts of the Regions & Chapters program to revitalize the Chapter Partners program, beginning to solicit all EDS Fellows towards becoming Distinguished Lecturers, coordinating new rules and procedures for a new DL recognition program to start in December 2007, developing funding rules for chapters covering the DLs, mini-colloquia, and chapter-sponsored conferences, and participating with EDS EduCom on a plan for dispensation of the short course videotape inventory. Also discussed was the Office's work on a plan to convert the short



EDS Treasurer, Juin Liou, presenting his report at the June 2006 AdCom Meeting.

course videotapes to CD/DVD format, the Student Career Guide Booklet, the program to establish a Masters Level Student Fellowship, a plan to digitize legacy proceedings of the IRPS (1970-87), and the VLSI Symposium (1981-87) in IEEE Xplore, formalization of a plan for digitizing other legacy EDS conferences, coordination of a report to show EDS meetings from both a topical and regional perspective, coordination of discussion on getting approvals for seven meetings requesting EDS support, development of both a direct mail affiliate member promotion and an electronic membership directory, implementing changes to the Membership Fee Subsidy Program to allow funding for renewals as well as new memberships. With manuscript handling, Bill's group continued to define the specifications on EDL manuscripts entered and reviewed on the web using Manuscript Central, to set guidelines to pursue best papers from conferences targeted for T-ED, and to allow authors in special issues to have a related picture placed on the T-ED cover. The Executive Office has also been busy with other publications by working with the T-DMR staff to compose an IEEE alias list for IRPS attendees, continuing the phase-out of *C & D Magazine*, and developing financial plans directed at lowering the T-DMR cost.

## Vice-President Reports

Cor Claeys, Regions/Chapters V-P, discussed the prospect of 25 new chapters in addition to the current total of 120. Locations for these prospective chapters include New York (state), Louisiana, New Mexico, Moldova, Belarus, Turkey, India, China, Brazil, Argentina, and Peru. He

also reviewed plans to reinvigorate US-based chapters, and plans to coordinate this with the SRC NAE/NAW groups. He also reviewed the chapter budget. As of April 30, 2006, EDS membership stands at 10,370 members, down 3.7% when compared to the April 30, 2005, figure. Of these, 6,002 are regular members, 3,576 are permanent members, 774 are students, and 18 remain affiliate members. The demographics are shown in the chart below.

Membership V-P, Albert Wang, outlined his group's efforts at recruitment such as conference onsite credit vouchers, TIP mailings, promotional material for Senior Member (SM), and DL promotion. Albert also reviewed an aggressive list of action items for membership including benefits promotion, local-level promotions, focus visits to China and India (possibly Korea and Taiwan too), conference promotions, and student incentives.

Renuka Jindal, V-P of Publications, discussed member hardcopy circulation numbers for both T-ED/EDL which have fallen below 2700. The trend certainly suggests that a near zero paper circulation is not far off. Also included in his talk were remarks on the impact factor (the goal is to be at the top among IEEE publications), adding legacy material on EDS Archival DVD on IEEE Xplore, inadequate referencing of prior art as grounds for rejection and "Best Paper" selection, putting graphics on the front page of T-ED special issues, and the financial status of both *C & D Magazine* and T-DMR. Renuka discussed the work on dispensing the EDS Short Course videos. Some have been given away to chapters, and universities. Converting them to DVD format has been slowed by compression problems

affecting quality. Renuka also reviewed some projected changes to the EDS Field of Interest Statement. Based on the ExCom and AdCom feedback, he will work on a new proposal which will be discussed in December at the IEDM. The prospect of a Nanotechnology Magazine has been discussed by the Publications Committee and ED Nanotechnology Committee with a mild response. The idea is being touted vigorously by the Nanotechnology Council and something should emerge soon.

The IEEE web-based education system, Expert Now, is still in its beginning stage, as explained by Paul Yu, Education V-P. On the DL side, Paul suggested that Chapters holding mini-colloquia might want to include some student posters, to encourage attendance and participation. His group is also encouraging elected Fellows to become DL speakers. Of the 23 new fellows elected this year, 9 have agreed to serve as speakers. Proposals for the EDS Education, and for the Masters Level Graduate Fellowship Awards will be presented to TAB in June for final approval. A selection committee has already been formed for the Education Award, and has started looking into potential candidates. The award is open to academia and industry and government to recognize distinguished contributions to education within the field of interest of EDS. The chosen recipient will receive a certificate, \$2.5K, and travel expenses to IEDM for presentation. Concerning the Student Career Guide Booklet initiative to promote ED to high school and undergrad students, a survey of students indicates their positive reaction to a physics curriculum as preparation, good devoted teacher, hands-on experience, job/internship perspectives, and electron devices as becoming gateways to other areas, optics, nanotechnology and bioinstrumentation. It's important to create a booklet that provides students with realistic answers. Discussion followed on the issue, "Is an ongoing website/magazine about 'career' needed?" A new initiative was introduced paving the way for EDS GOLD members to present at EDS spon-

IEEE Region	Count	% of Total
1-6 (United States)	5,835	56.3
7 (Canada)	178	.7
8 (Europe, Middle East & Africa)	1,829	17.6
9 (Latin America)	142	1.4
10 (Asia & Pacific)	2,386	23
Total	10,370	100

EDS Membership Demographics for 2006 (as of April 30, 2006)



<b>Proposed New EDS Initiatives for 2007</b>	<b>Cost</b>
Society Affiliate Promotion	<b>\$20K</b>
Increase Chapter Subsidy Budget	<b>\$20K</b>
Increase Budget for DL & SRC Development to Support Mini-Colloquia	<b>\$20K</b>
Budget for Expert Now Program	<b>\$40K</b>
Award Plaques for hosting ExCom Visits	<b>Minimal</b>
Develop A Career Guide for Students	<b>\$10K</b>
Annual Reception for T-ED/EDL Reviewers	<b>\$5.5K</b>
Digitize EDS Conference Legacy Material	<b>IEEE funded</b>
Manuscript Central Improvement	<b>\$20K</b>

sored conferences as a way to stimulate and encourage participation. A point of discussion centered on the fact that many industrial companies are reluctant to send young employees to attend meetings and to present new results. If approved, the new proposal would allow EDS to

provide matching funds, up to 50% and \$1500 in the form of registration and/or workshop waiver & travel funds for the EDS GOLD Member if his or her paper had been accepted for oral presentation at an EDS financially sponsored conference. A commitment letter from the company

would also be required. The idea has been tabled for study and will be discussed at the December AdCom.

### **Closing Reports and Summary of AdCom Actions**

The meeting closed with reports from the Compact Modeling Technical Committee, and the SRC North America West. Only the approval of the December 2005 meeting minutes were voted on and approved at this session of AdCom. The next meeting of the EDS AdCom will be on Sunday, December 10, 2006, in conjunction with the 2006 IEDM Meeting in San Francisco at the San Francisco Hilton & Towers Hotel.

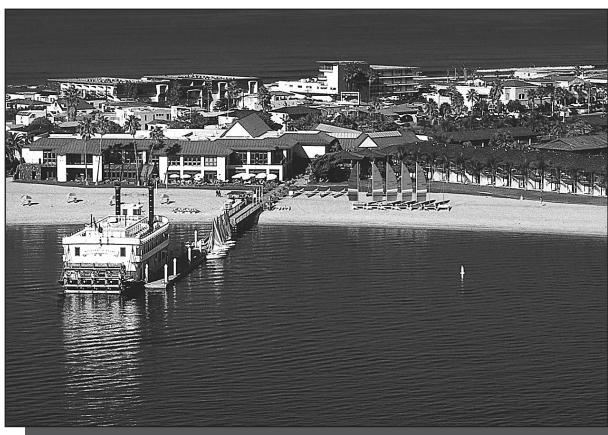
*John K. Lowell  
EDS Secretary  
Lowell Consulting  
Dallas, TX, USA*

## **UPCOMING TECHNICAL MEETINGS**

### **2006 IEEE SEMICONDUCTOR INTERFACE SPECIALISTS CONFERENCE (SISC)**

The 37th IEEE Semiconductor Interface Specialists Conference (SISC) will be held in the Catamaran Hotel, San Diego, CA, December 7-9, 2006, i.e., immediately prior to the International Electron Devices Meeting (IEDM). The SISC is a workshop-style conference that provides a unique forum for device engineers, solid-state physicists, and materials scientists to openly 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.

An important goal of the con-



*Catamaran Hotel, San Diego, CA*

ference 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 stimulate discussion, and conference partic-

ipants enjoy numerous opportunities for social gatherings with leading researchers and experts in the field. The conference alternates between the east and west coasts, and meets just before the IEDM to encourage the participation of IEDM attendees.

#### **Conference focus**

The program includes approximately 50 talks from all areas of MOS science and technology. The topics evolve with the state-of-the-art, and include, but are not limited to the following:

- physics of thin dielectrics and their interfaces
- gate-dielectric conduction and breakdown
- alternative and high-k gate dielectric materials and metal gates

*(continued on page 6)*

- nitrogen-containing oxides and stacked interfaces
- physical and electrical characterization of Si/SiO<sub>2</sub> 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
- theory of oxide and interface defects
- silicon carbide and its interfaces
- insulators on Ge and III-V materials
- ferroelectric layers and stacks on semiconductors

### Invited presentations

This year's invited presentations will include:

- **Dr. Guillaume Ribes**,  
STMicro, France  
*Multi-Vibrational Hydrogen Release: A dielectric breakdown model for ultra-thin SiO<sub>2</sub>/SiON and high-K stack*
- **Prof. Alex Shluger**,  
University College, UK  
*When Defects Approach a Device Size*
- **Dr. Supratik Guha**,  
IBM, USA  
*The Search for a High Performance Metal Gate/High- $\kappa$  MOSFET*
- **Prof. Peter Ye**,  
Purdue University, USA  
*Opportunities and Challenges for high- $\kappa$ /III-V MOSFETs*
- **Dr. Ted Moise**,

Texas Instruments, USA  
*Embedded FRAM Technology*

- **Prof. Kenji Shiraishi**,  
University of Tsukuba, Japan  
*What happens at High- $\kappa$ /Dielectric Interfaces?*
- **Dr. Sri Samavedam**,  
Freescale Semiconductor, USA  
*Topic TBA*

### Unique poster session

A unique feature of SISC is the attention paid to the poster presentations. Each author of a poster presentation has the opportunity to introduce their work orally, using 2-3 visuals, to the entire SISC audience during special poster introduction sessions. The posters are then presented during a separate poster reception on Thursday evening, tentatively scheduled this year at the Aquarium of UCSD's Scripps Institution of Oceanography.

### Student participation encouraged

SISC is a popular conference with students, who can get immediate and candid feedback on their latest results from the experts in the field. In addition to a strongly reduced registration fee for students, a Best Student Presentation award is given every year in memory of E.H. Nicollian, who made many important contributions to

the field and had a strong presence within the SISC.

### Accompanying program

The scientific content of the conference is complemented by informal events designed to encourage lively discussion and debate. A hospitality suite with complimentary drinks is available to attendees to continue their discussions on every evening of the conference. Friday afternoon has no scheduled talks, to allow time to meet informally, relax on the beach, or visit one of San Diego's numerous attractions. On Friday evening the conference hosts a banquet and awards ceremony, complete with the now-famous (and always riotous) limerick contest. The limericks never fail to give the conference presentations, people and events an entirely new perspective!

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

*Ben Kaczer*  
*2006 SISC Arrangements Chair*  
*IMEC*  
*Leuven, Belgium*

## 2007 INTERNATIONAL CONFERENCE ON MICROELECTRONIC TEST STRUCTURES (ICMTS)

The 2007 International Conference on Microelectronic Test Structures (ICMTS 2007), will be held at Takeda Hall of the University of Tokyo, Japan, March 19-22, 2007. This is the 20th anniversary of the ICMTS. The conference is technically co-sponsored by the IEEE Electron Devices Society and sponsored by the Association for Promotion of Electrical, Electronic and Information Engineering in cooperation with the Institute of

Electronics, Information and Communication Engineers, the Japan Society of Applied Physics, the VLSI Design and Education Center, and the University of Tokyo.

The ICMTS has been advanced with the progress of the semiconductor integrated circuits. Test structure is the key for research and development of new integrated circuits. Those for new process, device and circuit develop-

ments become more important as the feature size is scaled down into sub-100 nanometer. Furthermore, they can provide the rapid technology transfer and quick yield improvements of new LSIs. Topics of the ICMTS have been increasing steadily from the fundamental fields to the new fields: Low- $\kappa$  and high- $\kappa$  materials for high-performance LSIs, MEMS devices for sensors and RF ICs, etc.

The first ICMTS was held in Long Beach in 1988, and has since taken place in Europe, North America, and Asia, cyclically. In Asia, there were 5 conferences in Japan. ICMTS 2007 is organized by: General Chair, Y. Tamaki (Hitachi Ltd.), Technical Chair, Y. Mita (The Univ. of Tokyo), Local Arrangements Chair, T. Ohguro (Toshiba Corp.), Tutorial Chair, K. Takeuchi (NEC Corp.), and Equipment Chair, S. Habu (Agilent Tech. Japan).

The purpose of the conference is to bring together designers and users of test structures to discuss recent developments and future directions. The conference usually consists of 50 papers in 9 oral sessions and 1 poster session. Session topics will include: "Device Characterization", "Yield & Process Characterization", "Interconnect", "Reliability", "Parameter Extraction", "Matching", "RF Measurements", "Capacitance", and "MEMS". Oral presentations are 15 minutes long with 5 minutes for questions. The poster session is preceded by a 5 minute oral presentation by the author.

The one-day Tutorial Short Course will be held on March 19th. The course is intended to provide the participants with a guideline on good design, test and analysis. The instructors have many years of experience in the field of test structures. The Tutorial will cover the test structure fundamental which includes the history and topics of the ICMTS, Lithography, Parameter extraction, SPICE model-

ing, High mobility Devices, RF Measurements and MEMS.

There will be an equipment exhibition relating to the latest test structure measurements: measurement instruments, wafer probing equipment, computer software for data analysis, parameter extraction and measure-



*The historical red gate, 'Akamon', on the campus of the University of Tokyo, Japan*

ment control.

As you know, Tokyo is the capital and largest city in Japan. Its population is 12 million and it is the center of politics, economy and culture in Japan. The ICMTS will be held at the University of Tokyo and this is the first time the conference is being held at a university campus in Japan. The University of Tokyo was founded in 1877 and celebrating its 130th anniversary in 2007. The location of the conference was formerly the mansion of an old 'samurai' leader. There are many historical buildings on campus: the red gate 'Akamon', which was built about 300 years ago, is an important cultural property in Japan; Yasuda Hall and

the General Library were built about 100 years ago; and there is also a natural garden with a Sanshiro-ike pond.

The 2007 ICMTS will be held in Takeda Hall. In the Takeda Building, which was built three years ago, we have a super clean room with good equipment for making fine Si test devices. The VLSI Design and Education Center (namely VDEC) is working here, and fabrication of various devices, including MEMS and material research, are being performed actively.

Just near the university, there is Ueno Park, a large cultural park which was opened to the public in 1873. Also nearby is the famous electric town, Akihabara, with many electronic parts shops and big discount stores offering all sorts of consumer electronic products. The official conference hotel, Juraku at Ochanomizu, is located between Akihabara and Tokyo University. It only takes 5 minutes from Tokyo Station to Ochanomizu Station, by train. From Ochanomizu you can go to the university by subway or bus in 10 minutes. For visitors from overseas, travel from Tokyo International Airport (Narita) to the Tokyo train station takes about one hour.

For further information, please visit the ICMTS web site at <http://www.ee.ed.ac.uk/ICMTS/>. We are looking forward to seeing you in Tokyo.

*Yoichi Tamaki  
2007 ICMTS General Chair  
Hitachi Ltd.  
Tokyo, Japan*

## 2007 IEEE NON-VOLATILE SEMICONDUCTOR MEMORY WORKSHOP (NVSMW)

The 2007 IEEE Non-Volatile Semiconductor Memory Workshop (NVSMW) will be held August 26-30th, 2007, 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 non-volatile 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; program-

mable 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 lively

evening panel discussions on hot topics 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 22nd meeting of NVSMW. The workshop is held every 18 months, alternating between February and August. For many years, the attendance for the workshop was around 100. In recent years, however,



*Pacific Grove Coastline, Monterey-Carmel*

the attendance has grown considerably, 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 in the 250-300 range. 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. The 2006 NVSMW program can be found on the conference Web site — [www.ewh.ieee.org/soc/eds/nvsmw/](http://www.ewh.ieee.org/soc/eds/nvsmw/).

The 2007 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  
2007 NVSMW General Chair  
Intel Corporation  
Leixlip, Ireland*

## 2006 IEEE INTERNATIONAL ELECTRON DEVICES MEETING (IEDM)

*(continued from page 1)*

passing both silicon and non-silicon device and process technology, molecular electronics, nanotechnology, optoelectronics and MEMS (microelectromechanical system) technology.

IEDM 2006 will offer a full slate of short courses, evening panel debates, invited plenary talks and presentation of prestigious IEEE/EDS awards, in addition to an outstanding technical program.

### Emerging Technology Session

IEDM 2006 will feature a special session with papers focused on the use of self-assembly and nanopatterning for device fabrication.

### Short Courses

This year the Short Courses will be: "32 nm CMOS Technology" and "Advanced Memory Devices and Technology." These courses will 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.

### 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 advance-

ments in device physics; novel MOS device structures (such as multiple-gate and non-planar FETs); circuit/device co-optimization; CMOS scaling issues; high-performance, low-power and analog/RF devices; SOI; high-mobility channel devices such as strained silicon and SiGe MOS devices; noise behavior of MOS structures and device measurements and characterization.

**CMOS and Interconnect Reliability** will cover all areas of reliability for both the front- and back-end of the process. Topics will include, but are not limited to 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; interconnect reliability, electromigration, and the impact of back-end processing on devices; manufactur-



ing technologies for reliability; physics of failure analysis; and reliability issues for memory and logic technologies.

**Displays, Sensors and MEMS** sessions will cover critical devices, structures and integration for imaging, displays, detectors, sensors, and MEMS. A subset of key topics would include CMOS imagers; CCDs; TFTs; organic, amorphous and polycrystalline devices; vacuum microelectronics; emissive displays; and sensors for chemical, molecular and biological detection. MEMS topics include resonators, switches and passives for RF applications; integrated sensors; micro-optical and 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; full process integration for memory, logic and mixed-mode (SOC) applications; and manufacturing. Areas of interest include process architecture for performance and manufacturing, high-speed logic, advanced memories and multifunction integrated circuits; and integrated passives, low-power, low-noise, analog, RF and mixed signal ICs. Topics also include IC manufacturing technology and methodology, 3-D integrated circuits, process control, yield enhancements and modeling.

**Modeling and Simulation** sessions will discuss all areas of analytical, numerical, and statistical approaches to the modeling of electronic, optical and multiphysical devices, their isolation and interconnection; physical and circuit models for devices and interconnects; and the modeling of fabrication processes and equipment, including simulation algo-

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

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

**Solid State and Nanoelectronic Devices** sessions will focus on novel solid state and nanoelectronic devices for both logic and memory applications, such as nanowires, nanotubes and quantum dots; devices for bioelectronic applications; spintronic-based devices; MEMS-based logic and memory devices; and molecu-

lar devices. Papers on new device and material characterization techniques also will be presented.

## Plenary Presentations

This year's plenary talks will be given by Dr. C.G. Hwang of Samsung Electronics, Dr. Maarten Vertregt of Philips Research and Prof. Kensall Wise of the University of Michigan.

## Evening Panel Sessions

IEDM 2006 will feature two evening panel sessions on Tuesday, December 12th. One, organized and moderated by Stefan Lai of Intel, will deal with the question, "Will NAND Flash Replace Logic to be the Technology Driver for the Semiconductor Industry?" Another, organized and moderated by Clement Wann of IBM, is on the topic, "Who Will Solve the Variability Challenge?"

For **Registration and other information**, visit the IEDM 2006 home page at [www.ieee.org/conference/iedm](http://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 email: [phyllism@widerkehr.com](mailto: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 12, 2006.

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

*Vivek Subramanian  
2006 IEDM Publicity Chair  
University of California  
at Berkeley  
Berkeley, CA, USA*

*Meikei Leong  
2006 IEDM Publicity Vice-Chair  
IBM  
Yorktown Heights, NY, USA*

## SOCIETY NEWS

### REPORT ON THE IEEE EDS MINI-COLLOQUIUM - NAPLES, ITALY

The Electron Devices Society SRC-EAM hosted a Mini-Colloquium event on Thursday, June 1, 2006, in the Faculty of Engineering at the University of Naples, Italy.

The Mini-Colloquium was the first of a number of EDS related events held in Naples, including the EDS ExCom Meeting and EDS Region 8 Chapters Meeting on June 3, the EDS AdCom Meeting on June 4, and the ISPSD (International Symposium on Power Semiconductor Devices and Integrated Circuits) on June 4-7.

The purpose of the Mini-Colloquium was to gather together a number of highly recognized EDS Distinguished Lecturers and offer their technical presentations to an audience composed of students from the local University of Naples and of scientists who planned on attending the EDS Meetings later in the week.

The Program of the Mini-Colloquium included ten very dense presentations and commenced with a talk entitled "Quasi Ballistic Transport in Nano-MOSFETs", by Enrico Sangiorgi from the University of Bologna. Dr. Sangiorgi illustrated the main features of the current transport mechanisms in modern nanometric MOSFETs. The second lecture, entitled "Future CMOS Scaling and It's Manufacturing", was given by Prof. Hiroshi Iwai, from the Tokyo Institute of Technology and EDS Jr. Past-President. Prof. Iwai described the technology and manufacturing issues for future CMOS down-scaling towards its limits and confirmed the need for the introduction of quite new technologies such as new materials, processes, and structures. The third speaker, Prof. Mikael Ostling from the Royal Institute of Technology in Sweden (KTH), reported on recent technology advances in the fabrication of decananometer MOSFETS with non-conventional channel material (strained silicon on SiGe). The morning program continued with Dr. Hisayo Momose from Toshiba Corporation, whose talk enti-

tled 'CMOS Technology for sub-50 nm Generation', analyzed the difficulties and road blocks opposing CMOS technology development and concentrated on the gate stack issues. In particular Dr. Momose illustrated the present development status of high-k materials for the gate dielectric and compatible metal gate materials and how these technologies stand compared to the traditional PolySi-SiO<sub>2</sub> stacks to Metal Gate-High K stacks. Dr. Gady Golan, from the Holon Institute of Technology, Israel, completed the morning program with his talk entitled: "Novel Sheet Plasma Sputtering and Vacuum Photo-Thermal Annealing". Dr. Golan described how sheet plasma sputtering enables the production of fine controlled thin film coatings with predefined properties while Vacuum Photo-thermal Processing enables homogenization and modification of deposited thin films, curing of complex multilayer systems, fine control on mechanical properties of thin films. Joint application of both described methods enables to produce various thin film systems with predefined and fine controlled physical properties, several key technological steps which are needed to fabricate flexible and affordable solar cell arrays.

After lunch served on the premises, the very busy scheduled continued with a presentation given by Prof. Massimo Rudan, from the University of Bologna, on "Advanced Modeling for Emerging Nanoscale Devices". Prof. Rudan illustrated recent advances in the state of the art of modeling new emerging devices for the post CMOS

devices including FINFET, Double-Gate SOI, Silicon Nanowires (SNW), and Carbon Nanotubes (CNT). The Mini-Colloquium continued with a report from Prof. Juin Liou, from the University of Central Florida, entitled "TCAD Methodology for Design and Implementation of Advanced Electrostatic Discharge (ESD) Devices". Dr. Liou described the methods and tools to design efficient ESD protection devices. A similar topic was tackled by Prof. Albert Wang from the Illinois University of Technology, who illustrated the problem of designing ESD protection devices for RF Integrated Circuits.

After the afternoon coffee break, the last two lectures of the day were focused on optoelectronics applications. The first talk entitled "Optoelectronic sensors for optical fiber networks", by Prof. Antonello Cutolo, from the University of Sannio, reported on recent exiting developments on new optical sensors which can be directly integrated in optical fiber networks. The program of the day was closed by Prof. Paul Yu who spoke on "Advances in Photonic Devices for Analog Fiber Link Applications"; he gave a very thorough overview of the field.

The Mini-Colloquium, attended by nearly 40 graduate students and EDS scientists, both from the local Southern Italy Chapter and from abroad, was organized by Enrico Sangiorgi, EDS SRC-EAM Vice-Chair.

*Enrico Sangiorgi  
EDS SRC-EAM Vice-Chair  
University of Bologna  
Forlì-Cesena, Italy*



*Attendees of the EDS Mini-Colloquium held June 1, 2006, at the University of Naples*

## EDS MEETINGS COMMITTEE REPORT



*Jon J. Candelaria*

Technical meetings, conferences, and symposia sponsored by the Electron Devices Society are at the core of the value being delivered to our IEEE EDS membership as well as to the

technical community at large.

Given the importance of the technical conferences and meetings, the EDS Meetings Committee is made up of members from the leadership of the EDS including the Vice-President of Technical Activities, the Vice-President of Regions/Chapters, and the Society Treasurer. In addition, the committee receives outstanding support from the EDS Executive Office. The primary purpose of the Committee is to develop and execute a strategic plan which creates guidance and oversight for existing and newly-created conferences, meetings, and symposia which seek support from the Electron Devices Society. This strategic plan encourages fiscal responsibility, continuous improvement, alignment amongst the meetings and with the core values and goals of the EDS and IEEE, and helps to ensure that they provide the tremendous technical value our Society's members have come to expect and appreciate over the past several decades of our existence.

Starting in 2006, EDS will financially sponsor or co-sponsor 26 meetings and will be technical co-sponsor for another 133, for a total of 159.

This total number is up about 10% over last year and is up over 50% within the last 10 years! This year EDS became involved with new meetings in regions of the world as diverse as Siberia, Serbia & Montenegro, Spain, Australia, Ukraine, and Switzerland.

In terms of attendance, the International Electron Devices Meeting (IEDM) is usually the largest EDS meeting with as many as 2000 attendees and then there are workshops or regional meetings with as few as 40-50 in attendance.

The EDS support falls into two categories: ones where the EDS is the primary sponsor or co-sponsor (with another IEEE Society or another professional society) for which we share financial responsibility, or ones where EDS is just a technical co-sponsor (with another IEEE Society or another professional society). In the former cases, EDS usually provides a financial advance to assist with meeting organization and planning and also provides a financial backstop for the meeting and liability insurance. In return, EDS expects the advance to be repaid and to receive any budget surplus from these conferences which then goes back to support such meetings in the future. This return of budget surplus is one of our major revenue streams, and for an average calendar year, this typically amounts to approximately \$350,000 or more.

Technical sponsorship refers to meetings that the EDS has determined align with the technical scope

of the Society and allows for the use of the IEEE and EDS logos, advance notices in calendars and official lists of EDS and IEEE meetings. These types of meetings again are deemed to be of technical interest to the membership with typically some membership involvement, but the EDS has no financial liability or stake in these types of meetings.

For an established EDS sponsored or co-sponsored meeting, plans for the meeting's next occurrence and their proposed budget is reviewed by the Executive Office, the Vice-President for Meetings, and the Treasurer. EDS repeat meetings scheduled for 2007 were approved at the 2005 December AdCom Meeting held at the IEDM. Repeat occurrences of meetings that receive technical co-sponsorship only are approved on the same schedule. Proposed new meetings with or without financial involvement are required to provide organizational information and plans to the EDS Executive Office (contact Joyce Lombardini, [j.lombardini@ieee.org](mailto:j.lombardini@ieee.org)) and this information is reviewed by the Meetings Committee members and relevant EDS Technical Committees to determine what, if any, EDS involvement should occur.

We welcome your comments and suggestions for continuously improving the operations of the Meetings Committee; and in turn, provide a valuable service to our EDS membership.

*Jon J. Candelaria*

*EDS Vice-President of Meetings*

*Motorola Labs*

*Tempe, AZ, USA*

## EDS MEMBERSHIP COMMITTEE REPORT



*Albert Wang*

At the end of 2005, the total number of EDS members was 11,219. While Membership related activities have been strong in the past year, we did see a decline in the

total EDS member count – of 6.5%. In general, the loss of members has been a problem for IEEE as a whole and the declining rate for EDS members was at the average level for IEEE societies. Apparently, this is a big problem that must be studied thoroughly and addressed actively in order for the IEEE to survive in the new Internet Age. As a breakdown analysis, the

number of Regular EDS members increased slightly compared to 2004. However, we lost about 235 Permanent Members and 48 Student members. Though the loss of Permanent Members was in our expectation because EDS stopped the offering of Permanent Membership, we do need to worry about the status of student membership. In fact, feedback from

local universities and university branch chapters indicate that to convince students to join EDS (and IEEE) and to keep graduating students within EDS has been a challenging task in recent years. This indeed is a huge potential problem and challenge to the Society, because maintaining students' strong interests in EDS in their early career period shall be very critical to the future well-being of the Society. The Society as a whole must think creatively and work harder to promote the value of EDS to students in the field. Regionally, the United States (Regions 1-6) still accounts for about 50% of the total EDS members; however, these regions lost more than 200 members in 2005. Regions 7 (Canada) and 8 (Europe, Middle East, & Africa) also saw a loss as well, while Regions 9 (Latin America) and 10 (Asia & Pacific) enjoyed a moderate increase in membership counts. By the end of 2005, members in Asia and the Pacific (Region 10) increased to around 22.6% of the total EDS members, which is in agreement with the fact that the semiconductor industry in Region 10 becomes more and more important. There is no question that EDS must pay more attention to the Region 10 for the future prosperity of the Society.

In 2005, the Membership Committee had been working hard and collaborating with the Regions/Chapters Committee and the Education Committee to promote the EDS membership. In 2005, we held the annual on-site Membership Credit Voucher promotion at the IEDM that rewarded us with

a net gain of 69 new members. As a similar effort, we distributed EDS membership promotional materials to about 30 EDS sponsored conferences. We also provided EDS membership promotional packets to many Distinguished Lecturers over the past year. EDS continues the Membership Fee Subsidy Program (MFSP), which subsidizes IEEE and EDS memberships for individuals who have an annual income lower than US\$11,600. In 2005, 13 Chapters participated in the MFSP program with a total of 101 members that received the benefit. The program cost EDS about \$4.7K in 2005. This MFSP initiative proves to be a good way to help jump-start a new chapter and we will continue this program as long as EDS maintains healthy financials. EDS also continues to coordinate the EDS Senior Member Program to encourage EDS members to apply for Senior Membership. In this effort, EDS sent emails to approximately 5,800 EDS members with the grade of 'M' encouraging them to apply for advancement to Senior Member grade. As a result, 69 EDS Members were promoted to Senior Member grade in the first four months of 2006. EDS will keep this Senior Membership promotion effort because it is believed to be a critical way to maintain the member interests in the Society. It has been suggested recently that the high cost of IEEE membership dues and assessment fees may be a killer to many professionals joining EDS. To address this possible problem, EDS started a new Affiliate Membership Program that was

designed to provide people the opportunity of just joining EDS but not IEEE. An individual just needs to be a member of another technical society, outside of the IEEE, to qualify for becoming an EDS Affiliate Member and pays a much reduced fee of \$71. An Affiliate Member is not eligible for IEEE benefits, however, does enjoy all the EDS benefits as a regular member, with a few exceptions such as an individual cannot run for an 'elected' AdCom position, yet may still hold an appointed position. EDS recently mailed the EDS promotional packets to approximately 12,000 non-IEEE/ED members in May 2006 and we will see how this new promotional program will work.

In 2006, I was appointed as the new membership Vice-President; and in turn, I made some new appointments to the Membership Committee. The Membership Committee and the EDS as a whole will certainly keep the efforts to promote EDS membership, in particular, to enhance our promotional thrusts in Region 10 and all student communities while maintaining our attentions in all other Regions. We kindly challenge every society member to contribute to this critical membership drive and offer us your creative suggestions. Together, we can certainly make our beloved Society better and stronger!

*Albert Wang*

*EDS Vice-President of Membership  
Illinois Institute of Technology  
Chicago, IL, USA*

## EDS COMPACT MODELING COMMITTEE REPORT



*Samar Saha*

The Compact Modeling Technical Committee (CMTC) of EDS was founded in 2001 to objectively identify, examine, and evaluate emerging compact models for circuit simulation and

promote interactions among Compact model developers, technology developers, and circuit designers. The first

Chair, Dr. Narain Arora, served for two terms. The present CMTC consists of 20 members worldwide who are actively involved in R&D as well as real time application of compact modeling.

The major accomplishment of the 2005-2006 committee is the publication of a Special Issue (September 2006), of *IEEE Transactions on Electron Devices* on "advanced compact models and 45-nm modeling challenges," to bring together a diversity of R&D activities and advancement in compact MOS and emerging device models as well as

models for passive components. The Special Issue included a total of 24 rigorously reviewed papers with 11 invited and 13 regular papers. The major highlights of the Special Issue paper are advanced surface-potential based MOS models for circuit simulation of sub-90 nm technologies, advanced models for non-quasi-static (NQS) effects to apply in conjunction with surface-potential as well as charged based basic MOS compact models, advanced compact models to account for quantum-mechanical (QM) effects in



advanced circuit design, noise modeling, modeling process variations and layout proximity effects in advanced circuits, and so on.

Another accomplishment of CMTC is the annual Workshop on Compact Modeling (WCM) under the active involvement of its committee members. This year WCM 2006 was held concurrently with MSM 2006 at Haynes Convention Center, Boston, MA, under the General Chair, Prof. X. Zhou, an active CMTC member. The workshop brought together compact model developers and users community together worldwide.

The future plan of CMTC is to propose a new online journal, *IEEE Trans-*

*actions on Applied Compact Modeling* (T-ACM), aimed at reporting leading edge information that is critical to the industrial usage of compact models for advanced circuit simulation. The objective of the online publication is to offer compact model developers and practitioners the electronic media to rapidly report alternative modeling choices, model validation, accuracy, applications, numerical issues, and so on for the current and the next generation of industry standard compact transistor models as well as models for passive components. The other intended feature of the proposed journal is to bring interactivity – offer readers' capabilities to perform simulation and

model verification in real time. The scheduled plan to re-submit the proposal in the second half of 2006 with an anticipation to bring out the publication in the year 2007.

The other important goals are to facilitate collaboration among model developers and foundries for the characterization of emerging compact models and facilitate IEEE seminars distinguished lecturers, conference sessions, etc., on compact modeling.

*Samar Saha  
EDS Compact Modeling Technical  
Committee Chair  
Synopsys, Inc.  
Mountain View, CA, USA*

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## EDS MICROELECTROMECHANICAL SYSTEMS (MEMS) COMMITTEE REPORT



*Chang Liu*

Prof. Chang Liu of the Electrical and Computer Engineering Department of the University of Illinois has taken on the responsibility as the new chair of the EDS MEMS technical committee in March 2006. Subsequently, a new committee has been formed. The committee is well balanced in terms of technical areas (sensors, displays, and MEMS), professions (academia, industry, and government), and geographical regions.

Today, the field of MEMS is as exciting as ever in terms of achievement and potentials. Both the state of art MEMS technology and industrialization has been changed significantly from those of ten years ago. Many MEMS products, such as digital light projectors (DLP), accelerometers, pressure sensors, and ink jet printers, are now entering the main stream of society and their respective industries. For example, DLP projectors are now competing in the market of large screen TVs for homes. Ink jet printers are now being used to print large banners and posters instead of merely home photos. MEMS display and sensor technol-

ogy is projected to grow faster in the next ten years, coinciding with the new industrial and societal trend of mobile and smart electronics (e.g., cell phones, motion-sensitive game players, and smart shoes). The cell phone market is a natural fit for MEMS technology, for its large volume demand, low cost mandate, and small form factor requirements. It is expected to spur the growth of MEMS sensor, display, RF MEMS, and bioMEMS.

MEMS technology is advancing rapidly with several important trends, including IC compatibility, packaging simplicity, and new functional materials. Ten years ago, the MEMS community struggled with issues such as whether and how to integrate micro-mechanical elements with circuitry, and lacked powerful methods of packaging. Today, many exciting new paths have been demonstrated. MEMS processes that seamlessly integrate circuits and micromechanical elements can result in lower cost and better performance. Many innovative solutions for packaging micro mechanical components have been developed in recent years to increase the reach of use. New materials such as organic polymers and nano composite materials are being introduced to augment the existing metal-semiconductor material paradigm.

The MEMS technology is also playing strong roles in the areas of biotechnology and nanotechnology. MEMS products and microfabrication processes are permeating many areas. For example, ink jet devices and DLP are being used for patterning biomolecules. Micro-scale fabrication technologies are being used for and in conjunction with nanofabrication techniques.

In the next two years, the EDS MEMS Technical Committee will implement initiatives and plan activities along two primary agendas: (1) representing and communicating state of the art MEMS research and commercialization strongly to the main stream of the EDS; and (2) increasing the level of interaction between researchers in the MEMS area and those in other EDS areas. We intend to increase the representation of high quality MEMS work in main conferences and journals. We will also encourage interaction of MEMS researchers with the rest of the society through participation in national-, regional- or local-level conferences and seminars.

*Chang Liu  
EDS MEMS Committee Chair  
Univ. of Illinois at Urbana-  
Champaign  
Urbana, IL, USA*

## 2005 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 329 manuscripts that were published in 2005. The article is entitled, "Impact Ionization MOS (I-MOS) - Part I: Device and Circuit Simulations and Part II: Experimental Results". This paper was published in the January, 2005 issue of the *IEEE Transactions on Electron Devices*, and was authored by Kailash Gopalakrishnan, Peter B. Griffin, James D. Plummer, Raymond Woo and Christoph Jungemann. The award will be presented in the plenary session of the International Electron Devices Meeting to be held on December 11, 2006, in San Francisco, CA. In addition to the award certificate, the authors will receive a check for \$2,500. On behalf of the Electron Devices Society I would like to congratulate the authors for this achievement. Brief biographies of the authors are given below.



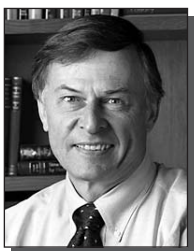
**KAILASH GOPALAKRISHNAN**

was born in Bombay, India. He received the B.S. degree from the Indian Institute of Technology, Bombay, India, and the M.S. and Ph.D. degrees in electrical engineering from Stanford University, Stanford, CA. Since July 2004, he has been a Research Staff Member at the IBM Almaden Research Center, San Jose, CA. His main research interests are novel "beyond the roadmap" logic and memory devices, device modeling and simulation, and nanoimprint lithography.

**PETER B. GRIFFIN**

(No photo available)

received the B.E. and M.E. degrees from University College, Cork, Ireland, in 1981 and 1983, respectively, and the Ph.D. degree from Stanford University, Stanford, CA, in 1989. He is currently with Stanford University. His research interests include process integration and scaling of MOS transistors, compound semiconductors, and biomems.



**JAMES D. PLUMMER**

was born in Toronto, ON, Canada. He received the B.S. degree from the University of California, Los Angeles, and the M.S. and Ph.D. degrees in electrical engineering from Stanford University, Stanford, CA. He is currently the John Fluke Professor of Electrical Engineering, the Frederick E. Terman Professor of Engineering, and Dean of the School of Engineering at Stanford University. He has authored or coauthored over 300 technical papers. His current research interests focus on silicon devices and technology. He is particularly interested in the limits of silicon devices and technology, new application areas for chips, and in exploring possible replacement technologies for silicon chips. He consults for and serves on the boards of a number of semiconductor companies. Dr. Plummer has received three Best Paper Awards at the International Solid State Circuits Conference. In 1991, he received the Solid State Science and Technology Award from the Electrochemical Society. He has also received several teaching awards at Stanford University. He was elected to the National Academy of Engineering in 1996, and recently received the Semiconductor Industry Association's 2001 University Research Award.



**RAYMOND WOO**

was born in Paoli, Pennsylvania in 1981. He received the B.S.E. degree in electrical engineering and computer science from Duke University in 2002. He is currently a National Science Foundation Graduate Research Fellow and Ph.D. student in the Electrical Engineering Department at Stanford University.



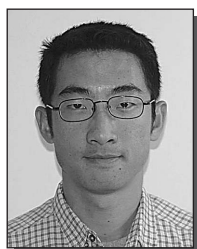
**CHRISTOPH JUGEMANN**

(M'97) received the Dipl.-Ing. and the Dr.-Ing. degrees in electrical engineering in 1990 and 1995, respectively, from the RWTH Aachen (Technical University of Aachen), Aachen, Germany and the "venia legendi" for "Theoretische Elektrotechnik" in 2001 from the University of Bremen, Bremen, Germany, respectively. From 1990 to 1995 he was a Research and Teaching Assistant at the "Institut für Theoretische Elektrotechnik," RWTH Aachen. From 1995 until 1997 he was with the Research and Development facility of Fujitsu Limited, Kawasaki, Japan. He served as a Chief Engineer at the "Institut für Theoretische Elektrotechnik und Mikroelektronik," University of Bremen, from 1997 until 2002. From 2002 to 2003 he spent a one-year sabbatical at the Center for Integrated Systems, Stanford University, Stanford, CA. Since 2003, he has been a Research Associate at the Technical University of Braunschweig, Braunschweig, Germany. His main research interests are full-band MC simulation of Si and SiGe devices, numerical device modeling, transport in inversion layers, and noise modeling.

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

## 2005 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 2005 George E. Smith Award was selected from among 270 manuscripts that were published in 2005. The article is entitled "Pentacene TFT Driven AM OLED Displays". This paper appeared in the September, 2005 issue of *Electron Device Letters* and was authored by Lisong Zhou, Sungkyu Park, Bo Bai, Jie Sun, Sheng-Chu Wu, Thomas N. Jackson, Shelby Nelson, Diane Freeman and Yongtaek Hong. The award will be presented in the plenary session of the International Electron Devices Meeting to be held on December 11th, 2006 in San Francisco, CA. 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.



### LISONG ZHOU

received the B.S. and Ph.D. degrees in Electronic Engineering from Tsinghua University, Beijing, China, and Electrical Engineering from

Pennsylvania State University, PA, USA, in 1996 and 2006, respectively. He joined Applied Materials in 2006. His research interests are a-Si:H and organic thin film transistors, photovoltaic devices, flexible thin film electronics, microfabrication techniques.



### SUNG KYU PARK

(M'01) received the B.S. and M.S. degrees in electronic engineering from Kyung-Hee University, Korea, in 1995 and 1997,

respectively. He worked at Korea Electronics Technology Institute (KETI), Kyunggi, Korea from 1997 to 2003, where he worked on organic transistor on plastic substrate and plastic flat panel display. In 2003, he joined the Pennsylvania state university and now is working toward Ph.D. degree. His current research interests have centered on the field of the semiconductor devices, thin-film processing technology, and fabrication of flat panel displays such as flexible display. He is now researching in the field of solution processed organic thin-film transistors and circuits on various substrates.



### BO BAI

is currently a Ph.D. student in the Department of Electrical Engineering, Penn State University. His thesis topic is on metal to

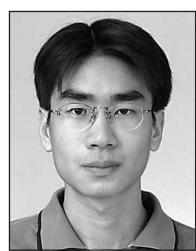
organic semiconductor contacts. He has also been involved in varieties of research works during the school years, such as a-Si:H active matrix thin-film transistor (TFTs) array for x-ray imaging system on rigid and flexible substrate, pentacene TFT driven organic LED displays, organic sensor arrays on flexible substrate.



### JIE SUN

received the B.S. from Nankai University, P.R. China in 1996. He has worked as a customer service representative in Motorola, GITUP

(China) Co. Ltd, and as a senior process engineer in Vishay General Semiconductor (China), Co. Ltd, from 1996 to 2000. He received his M.S. in Electrical Engineering Department, University of South Carolina, in 2003. He is now currently a Ph.D. student in the Department of Electrical Engineering, Pennsylvania State University. His research interest is focused on thin film electronics and semiconductor fabrications.



### SHENG-CHU WU

was born in Taipei, Taiwan in 1979. He received the B.S. and M.S. degree from National Tsing-Hwa University,

Hsinchu, Taiwan and the Pennsylvania State University-University Park in 2001 and 2005 respectively, all in electrical engineering. His M.S. work focused on AMOLED display on flexible substrate and OLED encapsulation.

He is now working as a senior engineer in Sitronix Technology, Taipei, Taiwan on the driving circuit design for various display technology.



### THOMAS N. JACKSON

is the Robert E. Kirby Chair Professor of Electrical Engineering at Penn State University. Dr. Jackson's

research focuses on exploratory electronic devices and microfabrication techniques. Dr. Jackson is a Fellow of the Institute of Electrical and Electronic Engineers, and a member of the American Vacuum Society, the Electrochemical Society, the Materials Society, and the Society for Information Display.





**SHELBY F. NELSON**

has been a Research Scientist in the Display Science and Technology Center in the Eastman Kodak

Research Laboratory since 2001. Her career has included employment at Xerox Corporation, IBM's Watson Research Center, AT&T Bell Labs, and as a tenured professor of physics at Colby College.



**DIANE C. FREEMAN**

has been a Research Scientist in the Display Science and Technology Center in the Eastman Kodak Research Laboratory since 2001. She received

her Ph.D. in Nuclear Physics at the University of Rochester in 1997. She gained expertise in image analysis and inkjet technology before specializing in plastic electronics in 2001.



**YONGTAEK HONG**

was born in Busan, South Korea, in 1971. He received B.S. and M.S. in electronics engineering, from Seoul

National University, Seoul, South Korea, in 1994 and 1996, and Ph.D. in Electrical Engineering from University of Michigan, Ann Arbor, Michigan, USA, in 2003. Based on his Ph.D. research regarding a-Si:H TFT active-matrix polymer light-emitting displays, he authored and co-authored in more than 20 journal papers and conference presentations.

He has been an assistant professor at School of EECS, Seoul National University, Seoul, Korea, since 2006. From 2003 to 2006, he was a senior research scientist at Display Science & Technology Center, Eastman Kodak Company, Rochester, New York, USA. His research interests are thin-film electronic devices, and low-cost back plane technologies for robust, flexible flat panel displays and digital radiography sensor arrays.

Dr. Hong received Korea Foundation for Advanced Studies Scholarship from 1997 to 2002 and College of Engineering Graduate Student Distinguished Achievement Awards from University of Michigan in 2003. He is a member of SID.

*Renuka P. Jindal*

*EDS Vice-President of Publications  
University of Louisiana*

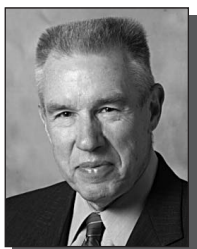
*at Lafayette*

*Lafayette, LA, USA*

## FOUR EDS MEMBERS WERE THE RECIPIENTS OF PRESTIGIOUS 2006 IEEE MEDALS

Four EDS members won 2006 IEEE Medals. James D. Meindl won the IEEE Medal of Honor and Hideo Sunami, Mitsumasa Koyanagi, and Kiyoo Itoh won the IEEE Jun-ichi Nishizawa Medal.

### IEEE Medal of Honor



*James D. Meindl*

"For pioneering contributions to microelectronics, including low power, biomedical, physical limits and on-chip interconnect networks"

During his career as a scientist, educator and high-level technology executive, **Dr. James D. Meindl**, Director and Pettit Chair Professor of the Joseph M. Pettit Microelectronic Research Center at Georgia Institute of Technology in Atlanta, has logged a string of exceptional accomplishments.

Early in his career, Dr. Meindl

developed micropower integrated circuits for portable military equipment at the U.S. Army Electronics Laboratory in Fort Monmouth, New Jersey. He then joined Stanford University in Palo Alto, California, where he developed low-power integrated circuits and sensors for a portable electronic reading aid for the blind, miniature wireless radio telemetry systems for biomedical research, and non-invasive ultrasonic imaging and blood-flow measurement systems. Dr. Meindl was the founding director of the Integrated Circuits Laboratory and a founding co-director of the Center for Integrated Systems at Stanford. The latter was a model for university and industry cooperative research in microelectronics.

From 1986 to 1993, Dr. Meindl was senior vice president for academic affairs and provost of Rensselaer Polytechnic Institute in Troy, New York. In this role he was responsible for all teaching and research.

He joined Georgia Tech in 1993 as director of its Microelectronic Research Center. In 1998, he became the founding director of the Interconnect Focus Center, where he led a team of more than 60 faculty members from MIT, Stanford, Rensselaer, SUNY Albany, and Georgia Tech in a partnership with industry and government. His research at Georgia Tech includes exploring different solutions for solving interconnectivity problems that arise from trying to interconnect billions of transistors within a tiny chip.

Over his career, Dr. Meindl has supervised over 80 Ph.D. graduates at Stanford University, Rensselaer Polytechnic Institute and Georgia Tech, who have gone on to have a profound impact on the semiconductor industry.

An IEEE Life Fellow, Dr. Meindl is the recipient of the Benjamin Garver Lamme Medal of the American Association for Engineering Education, the J.J. Ebers Award of the IEEE Electron Devices Society, the



IEEE Education Medal and the IEEE Solid State Circuits Award.

### IEEE Jun-ichi Nishizawa Medal

"For pioneering contributions to dynamic random access memory (DRAM) cell structures and architecture"

### Hideo Sunami, Mitsumasa Koyanagi and Kiyoo Itoh

are responsible for three of the major milestones in the evolution of modern dynamic random access memories (DRAMs). Their development of trench and stacked capacitor cells and folded data line cells resulted in unmatched high signal-to-noise ratio. Today, three decades after their invention, these cells remain the de facto standard for the DRAM industry.



Hideo Sunami

**Dr. Sunami** was, in 1975, clearly ahead of his time when he invented the trench capacitor cell while the 4Kb DRAM was still the industry standard. This capacitor ultimately

drove the development of dry etching, defect control and inspection associated with high-aspect ratio trenches. Today, the trench capacitor cell is used widely in commodity DRAM products and embedded applications. The concept also includes present cylindrical stack capacitor cells. He is currently a pro-

fessor at the Research Center for Nanodevices and Systems, Hiroshima University in Hiroshima, Japan.

An IEEE Fellow, Dr. Sunami is the recipient of the IEEE Cleo Brunetti Award, the IEEE Electron Devices Society (EDS) Paul Rappaport Award and the Tokyo Governor's Award - Distinguished Inventor.



Mitsumasa Koyanagi

Dr. Koyanagi, in 1976, devised the stacked capacity cell, the dominant DRAM cell since the 1-Mb generation came into being. His work has stimulated research and development on a variety of stacked capacitor cell structures, capacitor insulators and capacitor electrode structures, including those using hemispherical grain, high-k material and metal/insulator/metal. His work has also been successfully applied to other memory devices with three-dimensional stacked structures, such as ferroelectric RAM (FRAM). He is currently a professor in the Department of Bioengineering and Robotics, Tohoku University in Sendai, Japan.

An IEEE Fellow, Dr. Koyanagi is the recipient of the IEEE Cleo Brunetti Award, SSDM Award of the International Conference on Solid-State Devices and Materials, Commendation by the Ministry of Education, Culture, Sports, Science and Technology

- Person of science and technological merits (Japan), and the Okochi Memorial Technology Prize.



Kiyoo Itoh

**Dr. Itoh**, in 1974, conceived the concept of the folded data-line cell, which uses a pair of balanced data lines to eliminate various noise components. Since that time, this cell has been

adopted for nearly all DRAM chips since produced. A Fellow at Hitachi, Ltd. in Tokyo, where he is responsible for all research and development, he has also developed key DRAM devices and circuits such as the triple-well structure, on-chip voltage down-converters and subthreshold-current reduction circuits.

An IEEE Fellow, Dr. Itoh has received the IEEE Solid State Circuits Award, the EDS Paul Rappaport Award, Commendation by the Minister of State for Science and Technology - Person of science and technological merits (Japan), the National Invention Award - Prize of the Patent Attorney's Association of Japan, and the national Medal of Honor with Purple Ribbon (Japan).

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

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

William L. Ahlgren	Ravi Droopad	Akira Inoue	Wen-Chin Lee	Li Qian	Eui-Hyeok Yang
Babak AmirParviz	Sandeep L. D'Souza	Marwan H. Khater*	Felix Lustenberger	Reza Sharifi	Ali Zojaji*
Chagaan Baatar*	Heather M.B. Dussault	Keunwoo Kim*	Bhaskar L. Mantha*	James Henry Stathis	Yun Zou*
Marian Bartek*	Jinjun Feng	Gerhard Knoblinger*	Wisik Min*	Armin Tilke	
Gianluca Boselli	Steven K. Groothuis	Mayuresh V. Kothare	Mireille Mouis	Alastair David Trigg*	
Shoumian Chen*	Horst E. Gruening	Oleh B. Krutko*	James Olson*	Khodadad Varahramyan	
Cornelis H. de Groot	Thomas M. Hall*	Ravindar M. Lall	Radivoje S. Popovic	Rajah V. Vysyaraju	

\* = 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](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>.



## NEW EDS STUDENT FELLOWSHIP PROGRAM – MASTERS LEVEL!

### 2007 IEEE EDS MASTERS STUDENT FELLOWSHIP CALL FOR NOMINATIONS

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

**Description:** One-year fellowships awarded to promote, recognize, and support graduate Masters level study and research within the Electron Devices Society's field of interest: elemental and compound semiconductor devices, organic and other merging materials based devices, quantum effect devices, optical devices, displays and imaging devices, photovoltaics, solid-state sensors and actuators, solid-state power devices, high frequency devices, micromechanics, tubes and other vacuum devices. Five fellowships will be awarded, with at least one fellowship being given to students in each of the following geographical regions every year: Americas, Europe/Mid-East/Africa, Asia & Pacific. Only one candidate can win per educational institution.

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

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

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

#### Nomination Package:

- Nominating letter by an EDS member who served as candidate's mentor or faculty advisor.
- Two-page (maximum) statement by the student describing his or her education and research interests and accomplishments
- One-page biographical sketch of the student (including student's mailing address and e-mail address)
- One copy of the student's transcripts/grades
- A letter of recommendation from an individual familiar with the student's research and educational credentials. Letters of recommendation cannot be from the nominator.

#### Timetable:

- Nomination packages are due at the EDS Executive Office no later than March 15, 2007
- Recipients will be notified by May 1, 2007
- Monetary awards will be presented by the Dean or Department Chair of the recipient's graduate program at the beginning of the next academic term.
- Nomination packages can be submitted by mail, fax or e-mail, but a hard copy must be received at the EDS Office.

#### Send completed package to:

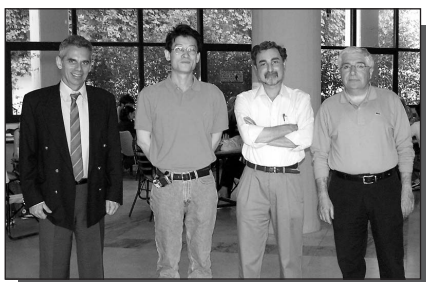
IEEE Operations Center  
EDS Executive Office  
EDS Masters Student Fellowship Program  
445 Hoes Lane, Piscataway, NJ 08854 USA

#### For more information contact:

edsfellowship@ieee.org  
or visit: <http://www.ieee.org/society/eds/education/fellowship.xml>

## EDS DISTINGUISHED LECTURER VISITS THE ED GREECE CHAPTER

Professor Albert Wang of the Illinois Institute of Technology and Vice President of Membership for the Electron Devices Society, visited the ED Greece Chapter in Athens and delivered a DL seminar at the National Technical University of Athens (NTUA) on May 19, 2006. Prof. Wang was hosted by the



(from right) Prof. Michael Theologou, Prof. John Xanthakis, Prof. Albert Wang and Prof. Nick Theodorou

Greece ED Chapter Chair, Prof. John Xanthakis of the National Technical University of Athens. Prof. Wang's DL talk, entitled "Advanced ESD Protection Design for RF ICs", was well received by the audience of about fifty, despite the "bad luck" that the university was almost shut down on that day due to a mass student protest event on campus demanding quality education (like this IEEE DL lecture? Maybe?). Prior to the DL seminar, Prof. Wang held a meeting with the chapter officers including Prof. Michael Theologou, Prof. Nick Hatzigargyriou, Chair of IEEE Greece Section, and Prof. Nick Theodorou, Chairman of the Department of Electrical and Computer Engineering at NTUA, to discuss various concerns related to local IEEE and ED chapter activities. A general discussion session with

the audience followed the DL seminar where the group discussed many ED related issues, such as, IEEE membership fees and transition of student membership into regular ED membership upon graduation, etc.

- by Albert Wang



The DL seminar scene

## 2006 EDS REGION 8 CHAPTERS MEETING SUMMARY

The 2006 EDS Region 8 Chapters Meeting was held at the Hotel Royal Continental, Naples, Italy, on Saturday, June 3, in conjunction with a series of EDS meetings including the EDS Administrative Committee (AdCom) Meeting. The meeting gathered about 35 people in total, with a very high chapter representation - 22 chapters from the entire Region 8 area. The previous EDS Region 8 Chapters Meeting was held two years ago in Madrid, Spain.

The meeting was hosted and opened with a welcome to the participants by Professor Mikael Östling, Chair of the Sub-Committee for Regional Chapters in Europe, Africa and the Middle East (SRC-EAM). Professor Cor Claeys, EDS President-Elect and also Regions/Chapters Vice-President, gave an overview of the Regional Chapter Coordination Program.

Mikael then presented the detailed

plan for the activities and also proposed the appointment of an additional SRC-EAM Vice-Chair, Professor Jan Vobecky, from the Microelectronics Department FEE-CTU, in Prague. With Region 8 being by far the



Prof. Andrzej Napieralski, Chapter Chair ED Poland, Josep Pallares, ED Spain Chapter Chair and Nikos Konofaos, ED/MTT Greece Chapter representative, enjoying a coffee break at the EDS Region 8 Chapters Meeting

largest geographical region of the IEEE EDS, it has clearly been seen that we need an additional vice-chair. EDS has 39 chapters in Region 8 and there are plans for new student chapters in the future.

This year's meeting included 12 excellent chapter presentations.

The first chapter presentation was given by **Dr. Margarita F. Sitnikova**, regarding the joint **MTT/ED/AP ST. Petersburg Chapter** activities. She talked about the 9th All-Russia student conference in Radiophysics, Peterhoff, December, 2005, having 26 oral presentations by graduate students. The chapter also hosted a DL presentation by Prof. Vijay K. Arora, "Quantum Engineering of Nanoelectronic Devices".

In April this year they arranged a seminar "Modern Problems of Microwave Engineering and Electronics", in St. Petersburg



Dr. Margarita F. Sitnikova presenting for the joint MTT/ED/AP ST. Petersburg Chapter

**Dr. Nikita Ryskin** presented the **MTT/ED/AP/CPMT Saratov-Penza Chapter** report. During the past period the chapter hosted an annual symposium on "Electromagnetics of Microwaves, Submillimeter and Optical Waves" with more than 40 participants. Several other workshops were held and Prof. Arora also gave a DL for the chapter.

**Dr. Yuri Poplavko** presented for the joint chapter **MTT/ED/CPMT/SSC/COM Central Ukraine**. His presentation mentioned many technical activities including the annual conference CriMiCo-2005, that had 240 reports from 17 countries. This particular conference has also supported some

selected young scientists economically. He also alluded to the practical problems existing in the post-soviet republics, such as getting a Visa, very low annual incomes, etc. He urged the IEEE to continue its valuable support to young engineers.

The **MTT/ED/AP/CPMT Bulgaria-Sofia** report was presented by **Dr. Katya Asparuhova**. This chapter is the oldest chapter in Bulgaria, founded in 1995 and has established collaboration with national societies. Also, here the problems with low average (200\$ /month) income is apparent.

**Dr. Arttu Luukanen** is the new chapter chair of the **MTT/AP/ED Finland Chapter** and he gave a good account for the activities of the 100 members' strong chapter. They have focused on Terahertz technology as well as MEMS.

The **MTT/ED/AP Lithuanian Chapter** report was presented by **Dr. Sandra Pralgauskaite**, who showed a very impressive list of activities. This chapter is 11 years old and based in Vilnius. They also have a student branch, with about 25 members. Over the past year, 10 technical meetings and 3 international workshops were organized.

We also heard **Prof. Gady Golan** presenting for the **ED Israel Chapter** and **Prof. Ali**

**Rezazadeh** for the joint chapter **AP/ED/LEO/MTT United Kingdom & Republic of Ireland**. Both chapters have very established activities and are well known to the EDS community.

**Prof. Salvatore Bellone** presented a report for the **ED Central & Southern Italy Chapter** and showed very good progress on the activation of the student branch in Salerno with 12 new members, by promoting a one week stage for students at MICRON in Avezzano.

The joint chapter **AP/ED/MTT Northern Italy** report was presented by **Prof. Giovanni Ghione**. The chapter is based in Torino since its start in 1988. Several restructuring events have been done and today the ED membership is very small. The chapter is analyzing the situation and will suggest some action points.

The final presentation was given by **Dr. Josep Pallares**, Chair of the **ED Spain Chapter**. The Chapter now has 30 members and 5 student members. The main focus has been on a nanoelectronics and photonics systems workshops and several DL talks, as well as co-arranging the Spanish IEEE chapter chairs meeting.

In all, comparing with the previous meeting in Madrid all chapters showed good progress and technical activities have been intensified.

An open forum discussion was led by Mikael and covered several important issues like meeting forms and frequency, relation with the region and activation of ED members. One issue that intensified the discussion was how to bring more value to EDS members. The discussion was very constructive. The meeting finished with an excellent buffet dinner, hosted by EDS. In summary, the EDS Region 8 Chapters Meeting was much appreciated and it was considered to be a very important forum for EDS activities.

Mikael Ostling  
Chair, SRC-EAM

KTH, Royal Institute of Technology  
Kista, Sweden



Attendees of the EDS Region 8 Chapters Meeting, held June 3, 2006



## IEEE ELECTION - DID YOU VOTE YET?

This is a reminder for EDS members to vote in the 2006 IEEE Election for the following positions and candidates. Listed below are the positions and candidates that will appear on the 2006 IEEE Annual Election ballot.

Position	Candidates
IEEE President-Elect, 2007	Lewis Terman (Nominated by IEEE Board of Directors) John Vig (Nominated by IEEE Board of Directors)
Division I Delegate-Elect/Director-Elect, 2007	Giovanni (Nanni) De Micheli (Nominated by Division I) Richard C. Jaeger (Nominated by Division I)
Region 2 Delegate-Elect/Director-Elect, 2007-2008	Amarjeet S. Basra (Nominated by Region 2) William P. Walsh, Jr. (Nominated by Region 2)
Region 4 Delegate-Elect/Director-Elect, 2007-2008	Don C. Bramlett (Nominated by Region 4) S. Hossein Mousavinezhad (Nominated by Region 4)
Region 6 Delegate-Elect/Director-Elect, 2007-2008	Leonard J. Bond (Nominated by Region 6) S.K. Ramesh (Nominated by Region 6)
Region 10 Delegate-Elect/Director-Elect, 2007-2008	Y.W. Liu (Nominated by Region 10) R. Muralidharan (Nominated by Region 10) Yong Jin Park (Nominated by Region 10)
Standards Association Board of Governors Member-at-Large, 2007-2008	H. Landis (Lanny) Floyd, II (Nominated by Standards Association) Richard H. Hulett (Nominated by Standards Association)
Standards Association Board of Governors Member-at-Large, 2007-2008	Dennis B. Brophy (Nominated by Standards Association) Paul Nikolich (Nominated by Standards Association)
Technical Activities Vice President-Elect, 2007	Jose R. (Roberto) Boisson de Marca (Nominated by Technical Activities) Harold L. Flescher (Nominated by Technical Activities) Robert (Bob) C. Rassa (Nominated by Technical Activities)
IEEE-USA President-Elect, 2007	Russell J. Lefevre (Nominated by IEEE-USA) Joseph V. Lillie (Nominated by IEEE-USA)
IEEE-USA Member-at-Large, 2007-2008	Gary L. Blank (Nominated by IEEE-USA) Gregg L. Vaughn (Nominated by IEEE-USA)

### Petition Candidates

There are no petition candidates for any elective position in the 2006 IEEE Annual Election.

Ballots are mailed to all eligible voting members by 1 September and must be returned before 12:00 noon on 1 November. For more information concerning the election (including biographies), please visit the IEEE website at <http://www.ieee.org/elections>.

## EDS MEMBERSHIP FEE SUBSIDY PROGRAM (MFSP)

The EDS Membership Fee Subsidy Program (MFSP) is a chapter program that enables chapters in low income geographical areas to increase their membership. This program is also used to help launch new IEEE EDS chapters. The MFSP guidelines are as follows:

IEEE policy currently allows a 50% discount on IEEE dues and one society membership for any individual whose annual salary is less than US\$11,900. This offering is referred to as the Minimum Income Special Considerations Option. The Electron Devices Society currently has a program for its chapters called the Membership Fee Subsidy Program (MFSP), which both complements the IEEE Minimum Income offering and provides a significant additional benefit for qualified individuals.

With the EDS Membership Fee Subsidy Program, EDS will pay 50% of the IEEE and EDS dues for any **new/existing** member or student qualifying for the Minimum Income option. EDS will cover up to twelve (12) chapter members/students per year. Each member/student can only be covered 'one time' under this program and four of the twelve members/students each year must be new IEEE/EDS members/students. The individuals can be applying for either regular membership or student membership. This program is also available to all unemployed members. Although the IEEE Minimum Income option allows individuals to purchase publication subscriptions for one society at a 50% reduced rate, the EDS MFSP does not cover the payment of publication subscriptions.

If a chapter has individuals who

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

For any questions concerning the program, please contact Laura Riello (l.riello@ieee.org) of the EDS Executive Office.

*Albert Wang*  
*EDS Membership Vice President*  
*Illinois Institute of Technology*  
*Chicago, IL, USA*

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## HOW TO FORM AN IEEE STUDENT BRANCH AND STUDENT BRANCH CHAPTER

An IEEE Student Branch gives students the opportunity to meet and learn from fellow students, as well as faculty members and professionals in the field. A good IEEE Student Branch can be one of the most positive elements in an Electrical Engineering, Computer Engineering or Engineering Technology department. IEEE Student Branches are established at over 1,000 universities and colleges throughout the world. Student Branch activities offer numerous educational, technical, and professional advantages of IEEE membership through special projects, activities, meetings, tours and field trips.

Establishing an IEEE Student Branch requires the signatures of 20 IEEE Student members on a petition. The petition must specify the name of the Branch, and the names of the Interim Student Chair and faculty member who will serve as Counselor of the Branch. The petition must also be approved by the Department Chair and two faculty members, who are also IEEE members above student grade. Submit the petition to IEEE Student Services to begin the approval process, which includes verification of the IEEE membership of the students and the faculty members on the petition, review of the programs offered at the educational institution,

review and approval by the IEEE Regional Director, the Regional Student Activities Committee Chair and the IEEE Regional Activities Board (RAB). If further information is required, please contact: IEEE Student Services, Phone +1 732 562 5527/5392, Fax +1 732 463 3657 or e-mail: student-services@ieee.org

Once a university/college has established an IEEE Student Branch, an affiliation can be made with one or more of IEEE's technical societies to form a Student Branch 'Chapter'. There are currently over 300 IEEE Student Branch Chapters, with the Electron Devices Society having 10 at various institutions in a number of regions. The requirements for the establishment of an IEEE Student Branch Chapter for EDS are as follows:

- A petition by not less than twelve (12) Student Branch members, who are members of the IEEE technical Society, must be submitted to Laura Riello of the EDS Executive Office at 445 Hoes Lane, Piscataway, NJ 08854 USA or via fax at 732-235-1626.
- The petition must specify the name of the Student Branch, the name of the technical Society with which the Student Branch

Chapter will be affiliated, the name of the interim Branch Chapter Chair and the name of the faculty Advisor, who must be a member of IEEE and the technical Society above student grade.

- After the Advisor and the IEEE Student Branch Executive Committee have approved the petition, it should be sent to the EDS Executive Office.
- Upon receipt of the petition, the EDS Office will forward it to IEEE Student Services to verify the IEEE and technical Society membership of individuals who signed the petition. If the petition is in order, Student Services staff will take the necessary action to obtain formal approval of the petition by the Society President, the Regional Director and the Regional Student Activities Committee Chair. Student Services staff will acknowledge receipt of the petition and will keep the faculty advisor informed of the status of the request.

EDS welcomes the formation of new Student Branch Chapters and we look forward to hearing from you. If you have any further questions, please contact Laura Riello (l.riello@ieee.org).

## ON-LINE ACCESS TO IEEE JOURNALS AVAILABLE TO EDS MEMBERS



Renuka P. Jindal

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***
- ***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, from an integrated-circuit schematic to a topographic map to a photograph of a new crystalline structure

- Full-text search allows you to search metadata fields and the associated full-text journal/transaction
- Links to references and cross linking between EDS publications and other IEEE publications is available in articles
- CrossRef search offers outbound links to publications by other leading publishers, employing the google search engine
- Online 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 com-

bined paper and on-line subscription to *Transactions on Device and Materials Reliability*, *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/](http://www.ieee.org/web/accounts/). IEEE members can go to the Xplore site through the URL [www.ieeexplore.ieee.org](http://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.

## ANNUAL DVD UPDATE PACKAGE AVAILABLE TO EDS MEMBERS

The 2005 Annual DVD update package is now ready for distribution. It includes all issues from 2004 through 2005 of *Electron Device Letters* (EDL) and *Transactions on Electron Devices* (T-ED), as well as the proceedings of the International Electron Devices Meeting (IEDM) over the same period. This update is fully compatible with the EDS Archival Collection DVD and the two products work together seamlessly providing extensive search capabilities to all issues of EDL, T-ED and all technical digests of the IEDM. The DVDs include comprehensive author, subject and publications indices, abstract pages and all articles are in searchable PDF format.

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

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Renuka P. Jindal

EDS Vice-President of Publications  
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# REGIONAL AND CHAPTER NEWS

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

### ED/CPMT Orlando

- Ravi Todi

The ED/CPMT Chapter of Orlando co-sponsored the 2006 Joint Symposium of the Florida Chapter of the American Vacuum Society with the Florida Society for Microscopy, March 12-16, 2006, at the University of Central Florida (UCF) in Orlando. The symposium featured about 65 posters and 40 invited/contributed oral presentations from students and professionals across Florida. Cash prizes were awarded to 9 graduate and 3 undergraduate students in different categories as part of the poster

competition. A student mixer was organized on March 12, Sunday evening, providing an opportunity for the student to interact with fellow students from universities across Florida. Several short courses on vacuum science and technology were offered by experts in the field in conjunction with the technical program. In addition to this, a special high and middle school teacher workshop was organized on Monday, March 13, to provide hands on education about microelectronics and microscopy.

With the IEEE UCF Student Branch and the IEEE Orlando Section, ED/CPMT Chapter organized a summer picnic on May 20, 2006, at Lake Mills Park, Orlando, FL. The event was a great success with over 70 participants. Students and members enjoyed the

great Florida summer with family and friends.

In an effort to have industry participation, the ED/CPMT Chapter organized the following invited seminars with support from the School of Electrical Engineering and Computer Science at UCF:

- Dr. Donna Robinson-Hahn from Fairchild Semiconductor presented a talk on "Electrostatic Discharge (ESD); Test Methodologies & Control Techniques" on March 24, 2006.
- Dr. Sameer Pendharkar from Texas Instruments Inc., presented a seminar on "Mixed Signal and Power IC Technology" on April 7, 2006.
- Dr. Subramanian S. Iyer from IBM Microelectronics Division presented a talk on "Beyond Scaling - Realizing Value through the Integration of Memory and Autonomic Chip Features" on April 14, 2006.
- Dr. Richard W. Cernosek from Sandia National Laboratories presented an interesting talk on "Micro-Analytical Systems for National Security Applications" on April 21, 2006.
- Dr. Ronghua Zhu from Freescale Semiconductor, Inc., presented a seminar on "Smart Power IC Technology: Status, Challenges and Future Trends" on May 19, 2006.

~ Ibrahim Abdel-Motaleb, Editor



Symposium poster session and evening student mixer at the University of Central Florida



The summer picnic at Lake Mills Park

### ICCDCS 2006

- by Francisco J. García Sánchez

The Sixth International Caribbean Conference on Devices, Circuits and Systems (ICCDCS 2006), was held in Playa del Carmen, Mexico, April 26-28, 2006. ICCDCS is an EDS and CASS, technically co-sponsored international conference held biannually since its first edition (Caracas, 1995) at different locations within the Caribbean basin. Over time this conference has acquired a prestigious position as the outstanding international conference dealing with Electron Devices and Circuits and Systems



*Participants of the Sixth International Caribbean Conference on Devices, Circuits and Systems, held in Playa del Carmen, Mexico*

which takes place within the Latin American Region. Its main objective is to serve as a significant meeting point and technical forum to initiate, renew and maintain direct personal relations aimed at sharing relevant technical know-how among Latin American and rest-of-the-world professionals involved in the disciplines that it covers. Participants from Industry, universities and R&D institutions attended 73 oral presentations by authors from: Argentina, Austria, Brazil, Belgium, Canada, Chile, China, Colombia, France, Germany, Hong Kong, India, Japan, Mexico, Peru, Portugal, Puerto Rico, Spain, Taiwan, USA, and Venezuela.

In addition to the regular paper sessions, the conference featured plenary keynote presentations by Prof. Michael Shur, Rensselaer Polytechnic Institute ("Terahertz Electronics and Photonics: Closing the Gap"), Prof. Jamal Deen, McMaster University ("High Sensitivity Detection of Biological Species via the Field Effect"), and Dr. Shekhar Borkar, Corporate Technology Group Director, Microprocessor Technology Lab, Intel ("VLSI Design Challenges for Gigascale Integration.")

This edition of ICCDCS was organized by the Institute of Astrophysics, Optics and Electronics (Mexico), the University of the Illes

Balears (Spain) and Simón Bolívar University (Venezuela), with the support of Intel, Freescale Semiconductor, and the Ibero American Science & Technology Education Consortium. The next edition of this conference will be held in Costa Rica, Central America, on the first quarter of 2008. Its motivational theme will be "The Caribbean looks at the Pacific."

*~ Jacobus W. Swart, Editor*

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

### ED/MTT/AP St. Petersburg

*- by Margarita F. Sitnikova*

Activities of the ED/MTT/AP St. Petersburg Chapter (IEEE Russia Northwest Section) are mainly directed to organization and support of student scientific activities, in particular involving the students to participate in scientific seminars and conferences.

Our chapter membership is rising steadily, with a total of 42 members, including students.

Some important events technically supported by our chapter will be presented below.

Annual Student competition in problem solving for junior students studying radio engineering

in St. Petersburg universities, April 23, 2006 (meeting type - technical and educational), was organized by St. Petersburg State Technical University and St. Petersburg State Electrotechnical University. Over 41 students (including 6 IEEE student members) from 4 universities took part in the competition.

An IEEE EDS Distinguished Lecture by Professor Vijay K. Arora, Division of Engineering, Wilkes University, was organized. Professor Arora came to St. Petersburg, where he was welcomed by Professor Margarita Sitnikova. May 21st was for rest and sightseeing as Professor Svetlana Zubko and student, Yuri Yamshikov, accompanied Professor Arora to various points of interest in St. Petersburg. On May 22, 2006, Professor Arora gave a lecture on "Quantum Engineering of Nanoelectronic Devices, then he visited the museum of Professor Popov, who was an earlier pioneer in radio communications and the museum of the History of Saint Petersburg State Electrotechnical University (LETI). Six IEEE Members and 18 guests visited this lecture.

The 12th International Student Seminar on Microwave Applications of Novel Physical Phenomena, was organized in St. Petersburg, October 17-19, 2005, by the St. Petersburg State Electrotechnical University. Over 185 participants presented 60 oral papers (including 6 lecturers and 21 IEEE members) from Italy, Spain, France, Germany, Great Britain, Sweden, Ukraine and Russia. (Seminar Web site <http://www.mwlab.spb.ru/>). The abstracts of all papers were published in the volume of Proceedings of the 2005 student seminar. The first seminar was held in 1994 at Chalmers University of Technology in the city of Goteborg (Sweden) and was called the International Student Seminar on High Temperature Superconductors at Microwaves. The International Student Seminar has also been held in the following European countries: Sweden (1994), France (1996), Germany (1997), Great Britain (2000), twice in Finland (1999, 2003), and five times in Russia (1995, 1998, 2001, 2002, 2004, 2005).



The Annual International Seminar on mathematical methods in the diffraction theory, 'Days on Diffraction 2005', was organized in St. Petersburg June 28 – July 1, 2005, by the Faculty of Physics at St. Petersburg State University, as well as the St. Petersburg Branch of Steklov Mathematical Institute and Euler International Mathematical Institute. Over 136 participants presented 118 oral papers, including 5 IEEE members and student members. (Seminar Web site <http://math.nw.ru/DD>) Abstracts of all papers were published in the volume of Proceedings.

The Seminar 'Modern Problems of Microwave Engineering and Electronic' was held at St. Petersburg Electrotechnical University (LETI) on April 18–19, 2006. The Seminar is intended to present the latest results and achievements in the field of computational electrodynamics and to discuss modern problems existing in the field. Fifteen IEEE members and 60 guests participated in this seminar.

The 9th All-Russia Student Conference in Radiophysics, Peterhoff, December 6–7, 2005, was organized by St. Petersburg State University. About 26 participants presented 26 oral papers (including 5 IEEE members and student members) from 3 universities in 2 cities of Russia (see Conference Web page <http://radio.stu.neva.ru/studconf.htm>). Abstracts of all papers were published in the proceedings and publication of abstracts of the three best paper award winners in *IEEE Microwave Magazine*.

Some interactive administrative meetings were held on December 5, 2005, December 16, 2005 and May 11, 2006.

~ **Alexander V. Gridchin, Editor**

## ED Israel

- by Gady Golan

On Monday, April 24, 2006, Prof. Y. Nemirovsky, Israel Institute of Technology, Israel, delivered his seminar on "The Fascinating World of MEMS" to around 90 attendees at the Holon Institute of Technology (HIT) - Holon, Israel. The seminar was chaired by Prof. Gady

Golan (EDS Israel Chapter Chair).

The talk covers the main micro-machining technologies and presents several illustrating examples classified by markets: Optics/Electro-Optics; Uncooled IR Imagers; Inertial Sensors; Displays; RF MEMS and BIOMEMS.

On Monday, May 22, 2006, Prof. David Mendelovic, School of Electrical Engineering, Tel-Aviv University, Israel, presented his seminar on "From Computer Generated Holograms Towards Partially Coherent Optical Signal Processors" to around 90 audience at HIT. The seminar was chaired by Prof. Gady Golan.

On Wednesday, June 21, 2006, Dr. Eli Gershon, Dept. of Electrical Engineering, Holon Institute of

Technology, Israel, gave a talk on "Control and Estimation of State-Multiplicative Linear Systems" to 40 audience at HIT. The session was chaired by Prof. Gady Golan.

~ **Zhirun Hu, Editor**

## 2006 International Conference on Microelectronics (MIEL)

- by Ninoslav Stojadinovic

The 25th International Conference on Microelectronics (MIEL 2006) was held 14–17 May 2006, in the "Park" Hotel, Belgrade, Serbia. The conference was organized by the IEEE ED/SSC Serbia and Montenegro Chapter in cooperation with the Faculty of Electronic Engineering (University of Nis), Ei-Holding Co., and the National



*Professor Ninoslav Stojadinovic addressing the audience at MIEL 2006 Opening Session*



*Some of MIEL 2006 distinguished attendees. From left: Prof. Cor Claeys, his wife Mrs. Rita Rooyackers, Prof. Ninoslav Stojadinovic, Prof. Magali Estrada, and Prof. Antonio Cerdeira*

Society for ETRAN, under co-sponsorship of the IEEE Electron Devices Society, with cooperation from the IEEE Solid-State Circuits Society, and under auspices of the Serbian Ministry of Science and Environment Protection, Serbian Academy of Science and Arts, Academy of Engineering Sciences of Serbia and Montenegro, and City Assembly of Nis.

The Workshop on Nanotechnologies, held on 14 May, attracted a lot of interest and was an excellent introduction to the main technical program, which consisted of nine sessions: Power Devices and ICs, Nanotechnologies, Microsystem Technologies, Opto and Microwave Devices, Processes and Technologies, Physics and Modeling, Modeling and Simulation, Reliability Physics, and Circuit and System Design. The attendees, 42 domestic and 88 foreign, came from 32 different countries. The total of 23 keynote invited papers and 118 regular contributions (70 in oral sessions and 48 posters) were presented. The conference proceedings (two volumes, 753 pages) were published through the IEEE Conference Publications Program.

The keynote invited speakers were: V. Arora (Wilkes University, USA), E. Atanassova (Bulgarian Academy of Sciences, Bulgaria), K. Arshak (University of Limerick, Ireland), C. Claes (IMEC, Belgium), Z. Djuri (IHTM-CMTM, Serbia), M. Estrada (CINVESTAV-IPN, Mexico), D. Fleetwood (Vanderbilt University, USA), G. Ghibaudo (IMEP ENSERG, France), P. Hurley (Tyn-

dall Institute, Ireland), K. Itoh (Hitachi Ltd., Japan), J. Kuo (National Taiwan University, Taiwan), P.A. Mawby (University of Warwick, UK), S. Mijalkovic (Delft University of Technology, The Netherlands), A. Nakagawa (Toshiba Co., Japan), M. Ostling (Royal Institute of Technology, Sweden), who also presented the paper by R. Singh (Clemson University, USA), Z. Petrovi (University of Belgrade, Serbia), S. Selberherr (Vienna Technical University, Austria), Z. Stamenkovic (IHP GmbH, Germany), J. Stathis (IBM Research, USA), A. Vaseashta (Marshall University, USA), A. Wang (Illinois Institute of Technology, USA), and H. Wong (City University of Hong Kong, China).

Based on evaluation of the quality of the papers and presentations, three Best Paper Awards were presented to K. Arshak (University of Limerick, Ireland) for an oral paper, to Z. Jaksic (IHTM-CMTM, Serbia) for a poster paper, and to U. Abelein (University of Bundeswehr Munich, Germany) for a student paper. In addition, Microelectronics Reliability journal awarded the paper by D. Pic (STMicroelectronics, Rousset, France).

The social program of this year's conference issue was particularly rich, with a conference banquet and gala-dinner as highlights. Besides the high quality of presentations, MIEL is generally flavored by a friendly atmosphere and the great hospitality of the local people. This special charm adds to very positive impressions of the attendees, and that's why one

rarely attends MIEL just once. So, we are very much looking forward to welcoming old and new friends at MIEL 2008.

## International Conference "Mixed Design of Integrated Circuits and Systems" - MIXDES 2006

- by Andrzej Napieralski

On June 22-24, 2006, Gdynia, Poland, the annual International Conference MIXDES 2006, took place. The event was organized by the Technical University of Lodz, together with the Gdynia Maritime University and the Warsaw University of Technology, Poland. The conference was co-sponsored by The Institute of Electrical and Electronics Engineers, IEEE ED & CAS Poland Chapters, the CARE Project (Coordinated Accelerator Research in Europe), the Ministry of Scientific Research and Information Technology, and the Polish Academy of Sciences, Committee of Electronics and Telecommunication, Section of Microelectronics and Section of Signals, Electronic Circuits and Systems.



Conference Chairmen: Prof. Augustin Martinez (left) and Prof. Andrzej Napieralski (right) during the Best Paper Award Ceremony



The MIXDES 2006 participants just before boarding the Dar Pomorza sailing frigate, currently preserved in Gdynia as a museum ship



In addition to the regular program two special sessions were organized:

- "Compact Models - The "Heart of Mixed-Signal Design Flow", organized by Wladyslaw Grabinski (GMC Suisse, Switzerland) and Hiroshi Iwai (Tokyo Institute of Technology, Japan),
- CARE Project Special Session organized by Stefan Simrock (Deutsches Elektronensynchrotron DESY, Germany) and Mariusz Grecki (Technical University of Lodz, Poland).

The conference was attended by over 150 scientists coming from 37 countries all over the world. During the conference six invited papers and 149 regular papers were presented at oral, poster, and special sessions. The conference proceedings (808 pages, ISBN: 83-922632-1-9) and CD ROM were published by the Technical University of Lodz.

The following invited keynote presentations were given:

- "Thermoelectric and Thermionic Microgenerators: Chances, Challenges and Limitations" - Gerhard Wachutka (Munich University of Technology, Germany) and York C. Gerstenmaier (Siemens AG, Germany)
- "The New Generation of the Photoelectric Measurement Methods of MOS Structure Parameters" - Henryk M. Przewocki (Institute of Electron Technology, Poland)
- "Physical Models for Smart-Power Devices" - Massimo Rudan (University of Bologna, Italy)
- "Silicon Carbide Devices and Processes - Present Status and Future Perspective" - Mikael Östling (Royal Institute of Technology, Sweden)
- "TUNNETT Diode Oscillators for mm-Wave Wideband Communication and for Terahertz Electronics" - Piotr Potka (Semiconductor Research Institute, Japan)
- "New Directions in Technology for High-Speed Wireless Data Communications" - Daniel Foty

(Gilgamesh Associates/Sarissa Radio, Inc., USA)

Based on evaluation of the quality of the papers and presentations, seventeen of the papers received the Best Paper Award. Additionally, the paper entitled "MOS Translinear Principle Based Analogue Multiplier Divider" (R. Garg, J. Govil and P. Goel, University of Delhi, India) received the IEEE ED Poland Chapter Special Award from the Section Chairman.

All the conference participants enjoyed the social program comprising of a Welcome Party and Closing Ceremony. The Closing Ceremony took place on the deck of "Dar Pomorza" frigate, during the second conference day, the participants had the opportunity to visit the most interesting places in Gdansk and listen to an organ concert in the Oliva Cathedral.

The next MIXDES 2007 Conference will take place in Ciechocinek, the beautiful spa city by the Vistula River in central Poland. The Preliminary Call for Papers is already available at <http://www.mixdes.org/downloads/call2007.pdf>. More information about the past and next MIXDES Conferences can be found at <http://www.mixdes.org>.

## ED Poland

- by Andrzej Napieralski

On June 9, 2006, the Department of Microelectronics and Computer Science, Technical University of Lodz, celebrated its 10th anniversary.



Prof. Gilbert de Mey presenting the most "funteresting" past memories of the Department collaboration

Sary. Scientists from all over the world, including the IEEE ED Poland Chapter members were invited to this ceremony. During the open meeting Professor Andrzej Napieralski presented the most important achievements of the Department. Professor Gilbert de Mey from the University of Ghent, Belgium and Professor Wieslaw Kuzmich from the Warsaw University of Technology, Poland, gave short talks about the decade long collaboration between the Department and their Universities. During the break the anniversary cake was shared. After the official part, all the invited guests moved the debates to the department backyard and continued them over a barbecue. Over 160 guests took part in the celebration.

~ Andrzej Napieralski, Editor

## ASIA & PACIFIC (REGION 10)

### ED Kansai

- by Masaaki Kuzuhara

The ED Kansai Chapter held the 4th International Meeting for Future of Electron Devices, Kansai (2006 IMFEDK) at Kyoto University Clock Tower Centennial Hall, Kyoto, Japan, April 24-26, 2006.

This year, Dr. Hisatsune Watanabe, President of Semiconductor Leading Edge Technologies, Inc. and Prof. Masahiko Tsukamoto from Kobe University, delivered keynote speeches concerning the strategy of new semiconductor R&D consortium and wearable



Dr. Hisatsune Watanabe and Prof. Masahiko Tsukamoto at the 2006 IMFEDK, April 24, Kyoto, Japan



Some of the attendees of the 6th International Workshop on Junction Technology( IWJT), held May 15-16, 2006

computing, respectively. The meeting included four regular sessions: 1) Silicon Technology, 2) Compound Semiconductors, 3) Emerging Devices and Sensors, and 4) Modeling, Simulation, Characterization and Testing Technologies. There was also one poster session. Prior to the sessions, we had four tutorial lectures focusing on Sensing technologies. About 200 attendees participated in the sessions. It was a great opportunity to promote cross disciplinary interactions among the participants with different backgrounds, which was one of the main purposes of holding the meeting in Kansai.

Four papers were selected for the IMFEDK Awards. Dr. Daisuke Ueda, Chair of Executive Committee of 2006 IMFEDK, honored Dr. Hiromitsu Kimura (Rohm Co.) for the Grand Award, Dr. Marcin Miczek (Hokkaido Univ.) for the Best Paper Award, Mr. Masatoshi Koyama (Osaka Inst. of Tech.) and Helmy Fitriawan (Kobe Univ.) for the Student Award. Related information is available at the conference website (<http://www.imfedk.org>).

## ED Korea

– by *Hyungcheol Shin*

Professor Hyungcheol Shin at



Prof. Hyungcheol Shin

The IEEE ED Korea Chapter awarded two 'Best Poster Awards' to Oh Chang Suk at Chonbuk National University, and Kwak Seung Wook at Hynix Semiconductor, at the 13th Korean Conference on Semiconductors which was held in Jeju, Korea, from February 23-24, 2006. The two papers, "A Pre-DBI(PDBI) method for Giga Hz DRAM's" written by Oh Chang Suk, H.J Ahn, K.J. Lee, J.W. Yang, G.M Yang, K.Y. Lim and "Reduction of gate leakage currents in ALGaIn/GaN MOSFET using NiO" written by Kwak Seung Wook, G.U. Kim, G.C. Gwon, Y.K. Choi, H.W. Lee, D.W. Lee, H.W. Moon, S.D. Gang, S.H. Shin, Y.J. Choi, J.S. Ki, were accepted by the 12th conference on February 2005 and selected as 'Best Poster Papers' by review among its' committee.

Oh Chang Suk, Chonbuk National University and Kwak Seung

Seoul National University has taken over as the Chair of the ED Korea Chapter. The previous Chair, Prof. Byung-Gook Park, served in the position for two years.



Oh Chang Suk, Chonbuk National University and Kwak Seung Wook, Hynix Semiconductor, receiving the Best Poster Awards

Wook, Hynix Semiconductor, received the Best Poster Awards.

~ **Kazuo Tsutsui, Editor**

## ED Shanghai

– by *Guo-Ping Ru*

ED Shanghai organized the 6th International Workshop on Junction Technology (IWJT-2006) during May 15-16, 2006. IWJT is an annual event; the first three and the fifth workshops were held in Japan and the fourth was held in China. IWJT-2006 was sponsored by the Chinese Institute of Electronics and the Japan Society of Applied Physics (Silicon Technology Division), and technically co-sponsored by the IEEE Electron Devices Society, IEEE ED Shanghai Chapter, in cooperation with the International SEMATECH & SEMI and the Electrochemical Society, supported by the School of Microelectronics at Fudan University and Nissin Ion Equipment.

IWJT-2006 consists of one plenary, eight parallel, and one poster session with a total of 75 papers, including 56 oral and 19 poster papers, accepted for presentation. Over 130 participants

from 12 countries or regions attended the workshop. Dr. M. Jurczak from IMEC delivered a keynote speech entitled "MUGFET – alternative transistor architecture for 32 nm CMOS generation", Mr. Nobuo Nagai, the vice president of Nissin Ion Equipment, gave a keynote speech on "China for semiconductor equipment supplier", and Dr. Qing-Tang Jiang, the vice president of Shanghai Hua Hong NEC, presented a keynote speech on "Recent development of semiconductor technology in China". In addition, 28 invited talks were presented in the parallel sessions by prominent scientists from France, Germany, Hong Kong, Japan, Korea, Singapore, Taiwan, UK, USA, and Mainland China. Critical issues on junction technology for nanometer CMOS, such as novel doping techniques, annealing process, salicide, and characterization, were discussed extensively at the workshop. After the two-day technical program, a tour to Shanghai Hua Hong NEC and Zhangjiang Campus of Fudan University was arranged.

IWJT-2006 has provided a very good opportunity for Chinese scientists and engineers in the area of junction technology to have a close contact with the world's pioneering scientists. Meanwhile, it gave an opportunity for overseas researchers to have a vivid view on the rapid growth of microelectronics research and industry in Mainland China.



Symposium Chair, Prof. G. P. Li (left) presenting the Best Student Paper Award to the winner Mr. C.-H. Lin (right) at the VLSI-TSA 2005

## ED Taipei

- by Steve Chung

The ED Taipei Chapter organized and co-sponsored two big events: International Conference of VLSI-TSA, and International Workshop on Next-Generation Nanoelectronics (IWNE) in the second quarter of 2006.

The one-day International Workshop on Next-Generation Nanoelectronics (IWNE), held April 20-21, at the Southern Taiwan University of Technology (STUT). This workshop was initiated by Dr. J. J. Liou (University of Central Florida). The Technical Chair was Prof. T. K. Chiang of STUT. Eight speakers, including 6 EDS DL's and 3 distinguished professors from Taiwan were invited. The topics included: (1) CMOS Scaling and Future Manufacturing (Hiroshi Iwai, TIT); (2) Carbon Nanofibers as On-chip Interconnects (Cary Yang, Santa Clara Univ.); (3) Besides CMOS Transistors, What Else Can One Do with Advanced Gate Dielectrics? (T. P. Ma, Yale); (4) Advanced Simulations of Nanoscale Semiconductor Devices (Mark Lundstrom, Purdue); (5) Robust Electrostatic Discharge (ESD) Protection in CMOS Technology (Juin J. Liou, Univ. Central Florida); (6) Mobility Enhancement Schemes for High Performance Nanoscale CMOS Technologies (Steve Chung, NCTU); (7) Advanced Nanodevice Structures with CdSe and/or Au

Nanoparticles for Photo-Sensing Applications (Chung-Yu Wu, NCTU); (8) The Research Status of Gallium Nitride-Based Light Emitting Diodes (Yan-Kuin Su, NCKU), and (9) Recent Developments on GaAs-based materials MISFET (Y. H. Wang, NCKU). The workshop attracted more than 200 participants. Inviting a large group of EDS DL's and holding such a workshop in southern Taiwan, where a new Science-Based Park was established a few years ago, is a new experience for the Taipei Chapter. The Chapter plans to organize this workshop biannually in the southern Taiwan region.

The International Symposium on VLSI Technology, Systems, and Applications (VLSI-TSA), co-sponsored by IEEE and EDS, was held April 24-26, at the Ambassador Hotel, Hsinchu. In the plenary session, Hiroshi Iwai (TIT) addressed the Semiconductor Manufacturing Technology in the 21st Century; Hans Stork (TI) presented Challenges for Process and Product Integration at 45nm; Eric Beyne (IMEC), delivered a talk on 3D System Integration Technologies. To encourage more students to participate, a student best paper award was established for the first time. The first winner, Chung-Hsun Lin, a Ph.D. student from UC-Berkeley, presented a paper entitled, "Compact Modeling of FinFETs Featuring Independent-Gate Operation Mode" at the 2005 VLSI-TSA. Two



Invited speakers at the 2006 International Workshop on Next-Generation Nanoelectronics. Second row from left to right: K. H. Yu (host, and Dean of STUT), Steve Chung, Peter Wu, H. Iwai, Cary Yang, T. P. Ma, M. Lundstrom, and Juin J. Liou



half-day short courses focusing on: (1) Flash memory (Chung Lam, IBM), (2) DRAM Technology (Wolfgang Mueller, Infineon), (3) Advanced CMOS (M. leong, IBM), and (4) CMOS Manufacturing (Y. J. Mii, TSMC), ran parallel during the VLSI-TSA.

The 2006 VLSI-TSA successfully attracted over 550 attendees in the technical sessions and more than 300 in the short course, with 75% of the attendees from the industry and 25% from academic. For your information, next year the conference will again be held in Hsinchu, Taiwan, April 23-25, 2007. The Conference will be hosted by the Industrial Technology Research Institute (ITRI). For further information, please visit the conference website <http://vlsitsa.itri.org.tw/2007>.

## AP/ED Bombay

- by Mahesh Patil

For the period, February – June 2006, the Bombay Chapter organized two events:

- Professor Ajay Malshe, University of Arkansas, talked on “Nano and Micro Structures, Processes and Packaging for Advanced Integrated Systems: Research, Education and Entrepreneurship” on June 12.
- Professor R.S. Tomar, LNM Institute of Information Technology, Jaipur, gave a lecture on “Microwave High Power Amplifiers for Satellite Communication” on June 22.

## REL/CPMT/ED Singapore

- by Wilson Tan

As of June 15, 2006, the chapter participated in the following activities:

- 1) **Short Courses** - April 21, 2006, Failure Mechanisms and Reliability in Integrated Circuits, Dr. M.K. Radhakrishnan, CTO of NanoRel – Technical Consultants. This short course attracted 29 participants, 22 from the industry and 7 from academia.
- 2) **11th WIMNACT – Singapore Workshop** - was held July 4,

2006, in conjunction with the IPFA'2006 conference, with cross publicity for both events. Six invited Distinguished Lecturers from overseas (Professors Hiroshi Iwai, Supriyo Datta, Cary Yang, Mitiko Miura-Mattausch, Mansun Chan & Dr. Shih-Wei Sun) and 2 Local speakers (Dr. N. Balasubramanian & Dr. Chih-Hang Tung), participated in this event (see separate article on this event).

- 3) **Chapter meeting with EDS partner** - After the 11th WIMNACT on July 4, 2006, the Chapter had a one hour meeting with its Chapter Partner, Professor Hiroshi Iwai. Prof. Iwai gave the members a 53 page presentation on EDS overall structure and activities. He praised the Chapter for its outstanding performance and discussed detailed suggestions for further promoting EDS activities in Singapore.

## 4) Conferences

### IPFA2006

The 13th IPFA was held on July 3-7, in the Meritus Mandarin Hotel, in the heart of Singapore's central business district. The technical sessions were:

- FEOL (gate dielectrics, NBTI, hot carriers, etc.)
- BEOL (Cu and Al interconnects, low-k and ultra-low-k, stress migration and electromigration, etc.)

- Packaging (flip chip, system-on-chip, SIP, etc.)
- Novel device architectures, design, processes, and characterization (SGOI, FinFET, nanowires, CNT, etc.)
- Advanced instrumentation or methodology for Failure Analysis
- Advances in reliability evaluation and approaches (methodology for novel new devices, design-in/build-in reliability, wafer level reliability, etc.)

Of the approximately 100 abstracts submitted, 44 papers were accepted for oral presentation and 25 for the poster session. As well as the submitted papers, we had 5 invited papers and exchange papers from ISTFA and ESREF. This year we are particularly fortunate and honored to have two keynote papers given by very prominent experts in their fields, Professor Hiroshi Iwai of Frontier Collaborative Research Center, Tokyo and Dr. Chih-Yuan Lu, Senior Vice-President of Microelectronics & Memory Solution Group, Macronix in Taiwan.

In a paper exchange arrangement, the best papers from ESREF 2005 and ISTFA 2005 will be presented at IPFA 2006, while the best papers in reliability and failure analysis from IPFA 2006 will be presented at the corresponding ESREF & ISTFA conferences.

In conjunction with the three day technical symposium, two



Chapter meeting with Prof. Hiroshi Iwai (middle), chapter partner



days of tutorials were held July 3-4, 2006:

The exhibition was held in parallel with the symposium between July 5-7 and drew just under 30 companies. For more information, please visit the IPFA website: <http://137.132.146.155/ipfa/>.

### EPTC2006

The 8th Electronics Packaging Technology Conference (EPTC 2006), will be held from December 6-8, 2006, at the Pan Pacific Hotel, Singapore. The 1st Call for Papers was recently announced.

EPTC 2006 is an International event organized by the IEEE Reliability/CPMT/ED Singapore Chapter, sponsored by the IEEE CPMT Society with technical sponsorship from IMAPS.

EPTC 2006 will feature technical sessions, short courses and exhibitions. It aims to provide a good coverage of technological developments in all areas of electronic packaging from design to manufacturing and operation. It is a major forum for the exchange of knowledge and provides opportunities to network and meet leading experts in the field. For more information, please visit the EPTC website: <http://www.eptc-ieee.net/>.

### 5) Others

IPFA 20th Year - The IPFA Board met on April 21, 2006, to discuss the hosting of the "20th Year of IPFA" celebration since its first inception in 1987 in Singapore. A task force committee has been setup to plan for this celebration in conjunction with the 13th IPFA Conference to be held from July 3-7, 2006, at the Meritus Mandarin Hotel, Singapore.

### ED SJCE Student Branch

- by Karthik Y

"When the going gets tough, the tough gets going!" being the motive of the IEEE EDS student chapter, has proved to be very true during the academic year 2005-06. Working successfully on the fast track, the chapter has organized a series of events with the steering from Dr. Navakanta Bhat, Prof. Ilsc, Bangalore and Dr. C. R. Venugopal,



*Dr. Navakanta Bhat, during his talk on "Giga scale integration using Nano scale building blocks" at SJCE*

Prof., Dept. of Electronics and Communication, SJCE, Mysore.

The blinds were unfurled on the November 15, 2005, by PAPER PANACEA (answers to all queries on presenting a technical paper) on November 15, 2005. Students turned up in good number. There were 4 technical papers on topics such as steganography, foveation, image processing and soft switching of brushless motors. The session gave the students a clear idea as to how a paper should be, its contents and how to carry about an effective presentation. It also enlightened the students more about the choice of topics, the standards to be followed and implementation of the concepts involved in the paper.

A district level "Hardware Design Contest" was conducted on November 19, 2005, presided over by Dr. Navakanta Bhat, Prof., IISc, Bangalore. The inauguration was followed by a talk on "Giga Scale Integration using Nano scale building blocks", by Dr. Navakanta Bhat, which touched upon the not so frequently used integration techniques and shrinking transistor technology. The students were also introduced to the first transistors of 1947 and also about the first integrated circuits of 1958. Our Branch Mentor also spoke about VLSI, scaling, MOSFET, CMOS, silicon technology and fabrication. The talk attracted a large inquisitive crowd, where the students got the details about the upcoming field nanotechnology. The talk was followed by a hardware-designing contest, inaugurated by Dr. Navakanta Bhat; the first of its kind under the events undertaken by

EDS SJCE. There was a good response from the students who tested their basic skills and their hands on hardware designing.

The hardware designing contest consisted of two rounds. The Preliminary round was written consisting of various basic questions on electron devices from diode to higher end application of these devices. The students who got short listed in the first round were selected for the finals, wherein the students were asked to implement a particular task practically in the Electronics lab. The person who came out with the most efficient design was rewarded with a prize.

To keep up the momentum, weekly tests and quizzes were being conducted on Basic Electronics to refresh and review the basic designing skills of the students and generate hands-on practical exposure. The test comprises various questions on Basic Electronics, Signals and Systems, Network Analysis, Digital Signal Processing. This test is especially for the students of Hardware branches, which can be called as a step towards technical excellence.

As part of the activities during "CYBERIA 2006", a national level technical fest conducted by the IEEE SJCE Student Chapter, the EDS subchapter coordinated and engineered two events:

- "X86", National level assembly level programming contest, on April 1-2, 2006, and
- "Impedance", National level hardware design contest based on basic analog and digital electronics, on April, 2, 2006.

The Inauguration of CYBERIA'06 was followed by the lively Panel Discussion which noticed an exchange of views by the eminent personalities representing both industry and academia. Dr. Navakanta Bhat, the branch mentor, actively took part in the discussion and expressed his views.

This being the activities to date, this subchapter aims to channel a gamut of events for this academic year and broaden the motley with new ideas.

~ Xing Zhou, Editor

# EDS MEETINGS CALENDAR

## (AS OF SEPTEMBER 5, 2006)

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

October 1 - 4, 2006, T **IEEE International Conference on Computer Design**, Location: Doubletree Hotel, San Jose, CA, USA, Contact: Pranav Ashar, E-Mail: [ashar@realintent.com](mailto:ashar@realintent.com), Deadline: 6/6/06, www: <http://www.iccd-conference.org>

October 2 - 5, 2006, \* **IEEE International SOI Conference**, Location: Holiday Inn Select Niagara Falls, Niagara Falls, NY, USA, Contact: Bobbi Armbruster, E-Mail: [bobbi@bacminc.com](mailto:bobbi@bacminc.com), Deadline 5/5/06, www: [www.soiconference.org](http://www.soiconference.org)

October 3 - 6, 2006, T **European Symposium on Reliability of Electron Devices**, Failure Physics and Analysis, Location: Historische Stadthalle Wuppertal, Wuppertal, Germany, Contact: Mechthild Knippschild, E-Mail: [knipp-sch@uni-wuppertal.de](mailto:knipp-sch@uni-wuppertal.de), Deadline: 3/31/06, www: [www.esref.org](http://www.esref.org)

October 4 - 6, 2006, T **International Symposium on Low-Power Electronics and Design**, Location: Rothach-Egern Conference Center, Tegernsee, Germany, Contact: Mircea Stan, E-Mail: [mircea@virginia.edu](mailto:mircea@virginia.edu), Deadline 3/3/06, www: <http://www.islpd.org>

October 8 - 10, 2006, @ **Bipolar/BiCMOS Circuits and Technology Meeting**, Location: Maastricht Exposition and Congress Centre, Maastricht, The Netherlands, Contact: John Long, E-Mail: [j.r.long@ewi.tudelft.nl](mailto:j.r.long@ewi.tudelft.nl), Deadline 3/12/06, www: [www.ieee-bctm.org](http://www.ieee-bctm.org)

October 10 - 13, 2006, T **International Conference on Advanced Thermal Processing of Semiconductors**, Location: Kyoto Brighton Hotel, Kyoto, Japan, Contact: Bo Lojek, E-Mail: [blojek@atmel.com](mailto:blojek@atmel.com), Deadline 5/31/06, www: [www.ieee-rtip.org](http://www.ieee-rtip.org)

October 11 - 11, 2006, T **Workshop on Compact Modeling for RF/Microwave Applications**, Location: Maastricht Expo. And Congress Center (MECC), Maastricht, The Netherlands, Contact: Slobodan Mijalkovic, E-Mail: [slobodan@ieee.org](mailto:slobodan@ieee.org), Deadline Not Available, www: <http://hitec.ewi.tudelft.nl/cmrf06>

October 12 - 13, 2006, T **IEEE International Seminar/Workshop on Direct and**

**Inverse Problems of Electromagnetic and Acoustic Wave Theory**, Location: Tbilisi State University, Tbilisi, Ukraine, Contact: Mykhalyo Andriychuk, E-Mail: [andr@iap-mm.lviv.ua](mailto:andr@iap-mm.lviv.ua), Deadline: 7/1/06, www: <http://www.ewh.ieee.org/soc/cpmt/ukraine/>

October 15 - 19, 2006, T **International Advanced Research Workshop - "Nanoscaled Semiconductor-on-Insulator Structures and Devices"**, Location: Sudak, Crimea, Ukraine, Contact: Yuri Houk, E-Mail: [hok@lab15.kiev.ua](mailto:hok@lab15.kiev.ua), Deadline 7/15/06, www: <http://www.liv.ac.uk/eee/SOIWorkshop/SOI-Workshop.htm>

October 16 - 18, 2006, T **International Conference on Advanced Semiconductor Devices and Microsystems**, Location: The Castle of Smolenice, Bratislava, Slovak Republic, Contact: Erik Vavrinsky, E-Mail: [erik.vavrinsky@stuba.sk](mailto:erik.vavrinsky@stuba.sk), Deadline 5/15/06, www: <http://www.kme.elf.stuba.sk/asdam/index.php>

October 16 - 19, 2006, \* **IEEE International Integrated Reliability Workshop**, Location: Stanford Sierra Conference Centers, South Lake Tahoe, CA, USA, Contact: Roy and Becky Walker, E-Mail: [roy@sar101.com](mailto:roy@sar101.com), Deadline 7/12/06, www: [www.iirw.org](http://www.iirw.org)

October 18 - 20, 2006, T **International Forum on Strategic Technology**, Location: Lotte Hotel, Ulsan, Korea, Contact: Ui Pil Chong, E-Mail: [upchong@ulsan.ac.kr](mailto:upchong@ulsan.ac.kr), Deadline 6/15/06, www: <http://ifost.ulsan.ac.kr>

October 22 - 25, 2006, T **IEEE International Conference on Sensors**, Location: Daegu Exhibition & Convention Center, Daegu, Korea, Contact: Sukhan Lee, E-Mail: [lsh@ece.skku.ac.kr](mailto:lsh@ece.skku.ac.kr), Deadline 5/1/06, www: [www.ieee-sensors2006.org](http://www.ieee-sensors2006.org)

October 23 - 26, 2006, T **International Conference on Solid-State & Integrated Circuits Technology**, Location: Hotel Equator Shanghai, Shanghai, China, Contact: Mengqi Zhou, E-Mail: [mqzhou@public3.bta.net.cn](mailto:mqzhou@public3.bta.net.cn), Deadline 7/15/06, www: <http://www.ICSICT2006.com>

October 24 - 27, 2006, T **International Microprocesses and Nanotechnology Conference**, Location: Kamakura Prince Hotel, Kamakura-shi, Japan, Contact: Hiroaki Masuko, E-Mail: [mnc2005@secretaryart.co.jp](mailto:mnc2005@secretaryart.co.jp), Deadline 7/5/06, www: <http://imnc.jp/>

October 26 - 27, 2006, T **International SoC Design Conference**, Location: COEX, Seoul, Korea, Contact: EuiYoung Chung, E-Mail: [eychung@yonsei.ac.kr](mailto:eychung@yonsei.ac.kr), Deadline 6/30/06, www: [www.isocc.org](http://www.isocc.org)

November 5 - 9, 2006, T **IEEE International Conference on Computer Aided Design**, Location: DoubleTree Hotel, San Jose, CA, USA, Contact: Kathy MacLennan, E-Mail: [kathy@mpassociates.com](mailto:kathy@mpassociates.com), Deadline 4/19/06, www: <http://www.iccad.com/future.html>

November 5 - 8, 2006, T **Non-Volatile Memory Technology Symposium**, Location: San Mateo Marriott, at San Francisco Airport, San Francisco, CA, USA, Contact: Jeffrey Peloquin, E-Mail: [jpeloquin@chem.boisestate.edu](mailto:jpeloquin@chem.boisestate.edu), Deadline 6/9/06, www: <http://coen.boisestate.edu/nvmts/>

November 7, 2006, T **IEEE Electron Devices Activities in Western New York Conference**, Location: University of Rochester, Rochester, NY, USA, Contact: Karl Hirschman, E-Mail: [kdhemc@rit.edu](mailto:kdhemc@rit.edu), Deadline: 10/13/06, www: <http://www.microe.rit.edu/eds.html>

November 8 - 10, 2006, T **International Workshop on Dielectric Thin Films for Future ULSI Devices: Science and Technology**, Location: Kawasaki City Industrial Promotion Hall, Kanagawa, Japan, Contact: Takanobu Watanabe, E-Mail: [watanabe-t@waseda.jp](mailto:watanabe-t@waseda.jp), Deadline 7/24/06, www: <http://home.hiroshima-u.ac.jp/iwdtf/>

November 12 - 15, 2006, \* **IEEE Compound Semiconductor IC Symposium**, Location: Marriott Riverwalk Hotel, San Antonio, TX, USA, Contact: Mitchell Shifrin, E-Mail: [mitchs@hittite.com](mailto:mitchs@hittite.com), Deadline 5/15/06, www: <http://www.csics.org>

November 12 - 12, 2006, T **Reliability of Compound Semiconductors Workshop**, Location: Marriott Riverwalk Hotel, San Antonio, TX, USA, Contact: Anthony Immorlica, E-Mail: anthony.a.immorlica@baesystems.com, Deadline Not Available, www: <http://www.jedec.org/home/gaas>

December 4 - 5, 2006, T **IEEE Wireless and Microwave Technology Conference**, Location: Marriott Suites Sand Key, Clearwater, FL, USA, Contact: John Conrad, E-Mail: john.conrad@ieee.org, Deadline 6/23/06, www: <http://wamicon.eng.usf.edu>

December 6 - 8, 2006, T **Conference on Optoelectronic and Microelectronic Materials & Devices**, Location: The University of Western Australia, Crawley (Perth), Australia, Contact: Sabine Betts, E-Mail: com-mad06@ee.uwa.edu.au, Deadline 5/31/06, www: <http://commad06.ee.uwa.edu.au/>

December 6 - 8, 2006, T **IEEE International Conference on Semiconductor Electronics**, Location: Hyatt Regency Kinabalu, Kota Kinabalu, Malaysia, Contact: Burhanuddin Yeop Majlis, E-Mail: burhan@vlsi.eng.ukm.my, Deadline 8/1/06, www: <http://www.eng.ukm.my/~eds/>

December 7 - 9, 2006, \* **IEEE Semiconductor Interface Specialists Conference**, Location: The Catamaran Resort Hotel, San Diego, CA, USA, Contact: Ben Kaczer, E-Mail: kaczer@imec.be, Deadline Not Available, www: [www.ieeesisc.org](http://www.ieeesisc.org)

December 11 - 13, 2006, \* **IEEE International Electron Devices Meeting**, Location: San Francisco Hilton and Towers, San Francisco, CA, USA, Contact: Phyllis Mahoney, E-Mail: phyllism@widerkehr.com, Deadline 6/23/06, www: [www.ieee.org/conference/iedm](http://www.ieee.org/conference/iedm)

December 13 - 16, 2006, T **International Conference on Fibre Optics and Photonics**, Location: Hyderabad International Conventin Center, Hyderabad, India, Contact: Narayana Rao, E-Mail: convenor@photonics2006.co.in, Deadline: 8/21/06, www: <http://www.photonics2006.co.in/>

December 16 - 19, 2006, T **International Conference on Microelectronics**, Location: King Fahd University of Petroleum and Minerals, Dhahran, Saudi Arabia, Contact: Alaa Hussein, E-Mail: husseina@kfupm.edu.sa, Deadline 8/1/06, www: <http://icm2006.kfupm.edu.sa/>

December 18 - 20, 2006, T **International Conference on Computers and Devices for**

**Communication**, Location: SINP Convention Center, Kolkata, Kolkata, India, Contact: Animesh Maitra, E-Mail: codec2006@yahoo.com, Deadline: 5/31/06, www: <http://www.irpel.org/php-files/codec06.php>

January 6 - 10, 2007, T **International Conference on VLSI Design**, Location: NIMHANS Convention Center, Bangalore, India, Contact: S Uma Mahesh, E-Mail: sum\_mahesh@yahoo.co.in, Deadline 7/14/06, www: <http://www.vlsiconference.com/>

February 19 - 24, 2007, T **IEEE International Conference on the Experience of Designing and Application of CAD Systems in Microelectronics**, Location: Lviv Polytechnic National University, Lviv, Ukraine, Contact: Vasyl Teslyuk, E-Mail: cadsm@polynet.lviv.ua, Deadline 10/30/06, www: <http://www.lp.edu.ua/CADSM>

March 19 - 22, 2007, @ **International Conference on Microelectronic Test Structures**, Location: Takeda Hall, University of Tokyo, Bunkyo-ku, Japan, Contact: Yoichi Tamaki, E-Mail: yoichi.tamaki.ga@hitachi.com, Deadline 9/15/06, www: <http://www.ee.ed.ac.uk/ICMTS>

March 25 - 27, 2007, \* **IEEE International Conference on Portable Information Devices**, Location: Orange County Convention Center, Orlando, FL, USA, Contact: Debora Kingston, E-Mail: d.kingston@comsoc.org, Deadline 7/15/06, www: <http://www.ieee-portable.org/2007/>

March 26 - 28, 2007, T **IEEE International Symposium on Quality Electronic Design**, Location: Double Tree Hotel, San Jose, CA, USA, Contact: Ali Iranmanesh, E-Mail: ali@isqed.org, Deadline 9/30/06, www: [www.isqed.org](http://www.isqed.org)

March 28 - 29, 2007, T **IEEE International Conference on RFID**, Location: Gaylord Texan Resort & Convention Center, Grapevine, TX, USA, Contact: Bichlien Hoang, E-Mail: b.hoang@ieee.org, Deadline: 11/17/06, www: <http://www.ieeerfid.org/2007/>

April 15 - 19, 2007, \* **IEEE International Reliability Physics Symposium**, Location: Hyatt Regency Phoenix at Civic Plaza, Phoenix, AZ, USA, Contact: Edward Cole, Jr., E-Mail: coleei@sandia.gov, Deadline Not Available, www: [www.irps.org](http://www.irps.org)

April 20 - 21, 2007, T **IEEE International Siberian Conference on Control and Communication**, Location: Tomsk Polytechnic University, Tomsk, Russia, Contact: Oleg Stukach, E-Mail: tomsk@ieee.org, Deadline 1/23/07, www: <http://www.comsoc.org/tomsk>

April 23 - 25, 2007, T **International Symposium on VLSI Technology, Systems and Applications**, Location: Ambassador Hotel Hsinchu, Hsinchu, Taiwan, Contact: Stacey Hsieh, E-Mail: stacey@itri.org.tw, Deadline 10/15/06, www: <http://vlsitsa.itri.org.tw>

April 25 - 27, 2007, T **International Symposium on VLSI Design, Automation and Test**, Location: Ambassador Hotel Hsinchu, Hsinchu, Taiwan, Contact: Elodie Ho, E-Mail: elodieho@itri.org.tw, Deadline 10/15/06, www: <http://vlsidat.itri.org.tw>

April 30 - May 2, 2007, T **IEEE Sarnoff Symposium on Advances in Wired and Wireless Communications**, Location: Nassau Inn, Princeton, NJ, USA, Contact: Gerhard Franz, E-Mail: sarnoff2005@agfranz.com, Deadline 12/4/06, www: <http://www.sarnoff-symposium.org>

May 7 - 10, 2007, T **International Conference on Memory Technology and Design**, Location: Village Vacances Familles (VVF) "La Badine", Hyeres Les Palmiers, France, Contact: Liesbet Massant, E-Mail: massant@imec.be, Deadline 1/23/07, www: <http://www.icmtd.com>

May 14 - 18, 2007, @ **International Conference on Indium Phosphide and Related Materials**, Location: Kunibiki Messe, Matsue, Japan, Contact: Shigehisa Arai, E-Mail: arai@pe.titech.ac.jp, Deadline Not Available, www: <http://www.iprm.jp/index.html>

May 15 - 17, 2007, @ **IEEE International Vacuum Electronics Conference**, Location: Kitakyushu International Conference Center, Kitakyushu, Japan, Contact: Takao Kageyama, E-Mail: tkageyama@ksrp.or.jp, Deadline 1/12/07, www: <http://www.ivec2007.org>

May 23 - 26, 2007, T **International Conference on Perspective Technologies and Methods in MEMS Design**, Location: Lviv Polytechnic National University, Lviv, Ukraine, Contact: Mykola Pereyma, E-Mail: memstech@polynet.lviv.ua, Deadline 2/1/07, www: <http://www.lp.edu.ua/Institute/IKN/CAD/MEMSTECH>

May 27 - 31, 2007, @ **IEEE International Symposium on Power Semiconductor Devices & Integrated Circuits**, Location: Ramada Plaza Jeju Hotel, Jeju, South Korea, Contact: Min-Koo Han, E-Mail: mkh@snu.ac.kr, Deadline: Not Available, www: <http://www.ipspd07.org>

## EDS DISTINGUISHED LECTURERS PARTICIPATE IN THE 11TH WIMNACT - SINGAPORE



From left to right: Shih-Wei Sun (DL speaker, UMC), Chih-Hang Tung (DL speaker and Chapter member), Mansun Chan (DL speaker, HKUST), Hiroshi Iwai (DL speaker, Tokyo Inst. Tech.), Mitiko Miura-Mattausch (DL speaker, Hiroshima Univ.), Supriyo Datta (DL speaker, Purdue Univ.), Wilson Tan (Chapter Chair), Kin-Leong Pey (Chapter Secretary), Steve Chung (SRC-AP Vice-Chair), Xing Zhou (Organizer and Chapter member)

The 11th Workshop and IEEE EDS Mini-colloquium on NANometer CMOS Technology (WIMNACT-Singapore) was successfully held on July 4, 2006, at the Meritus Mandarin Hotel in Singapore. This mini-colloquium is the 4th one organized and sponsored by the IEEE Rel/CPMT/ED Singapore Chapter, with co-sponsorship from the EDS Distinguished Lecturer (DL) Program. The event was held together with the 13th International Symposium on the Physical & Failure Analysis of Integrated Circuits (IPFA'2006), in celebration of the 20th anniversary of IPFA. After the welcome address by the Chapter Chair, Mr. Wilson Tan, Prof. Hiroshi Iwai, EDS Jr. Past President and founder of the WIMNACT series, delivered an opening address with a brief history of all the past WIMNACT's.

There were eight invited speakers, including six DLs from overseas. The Workshop started with a talk given by Prof. Hiroshi Iwai from the Tokyo Institute of Technology, entitled "High Dielectric Constant Gate Insulator Technology," followed by a talk on "Electrical Resistance: A Bottom-up View", given by Prof. Supriyo Datta from Purdue University. Prof. Cary Yang from Santa Clara University gave a talk on "Carbon Nanofibers as On-chip Interconnect and Thermal Interface Materials." The morning session concluded with a talk on "Silicon Nanowire Devices and Their Applications to Biosensors" by Dr. N. Balasubramanian from the Institute of Microelectronics (IME, Singapore). The afternoon session had four DL talks: "MOSFET Modeling Beyond 100nm Technology" by Prof. Mitiko Miura-Mattausch from Hiroshima University, "Multi-Gate MOSFET Based Non-volatile Memory Design" by Prof. Mansun Chan from Hong Kong University of Science & Technology, "Partnering for SoC Foundry" by Dr. Shih-Wei Sun from UMC, and "Atomic Scale Characterization for Nanoelectronic Devices" by Mr. Chih-Hang Tung of the IME, Singapore. The Workshop ended with a concluding remark by the Chapter Secretary, Prof. Kin-Leong Pey, and presentation of tokens of appreciation to all the speakers by the Chapter Chair, Mr. Wilson Tan.

The Workshop was attended by more than 80 participants from local industries and academic institutions. A membership drive was also held in



The 11th WIMNACT-Singapore

conjunction with the WIMNACT and IPFA, with many new IEEE members signed up. The 11th WIMNACT-Singapore has been another successful event, which the Singapore Chapter has contributed towards EDS and its members. The complete information on the 11th WIMNACT - Singapore, including slides and snapshots, as well as links to the past WIMNACT series, has been made available on the following website: <http://www.ntu.edu.sg/eee/eee6/conf/WIMNACT06.htm>.

Wilson Tan  
Rel/CPMT/ED Singapore Chapter Chair  
Micron Semiconductor Asia Pte Ltd.  
Singapore

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

Xing Zhou  
WIMNACT Organizing Committee  
Nanyang Technological University  
Singapore