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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. All contact information is listed on the back cover page. Whenever possible, e-mail is the preferred form of submission.

Newsletter Deadlines

<u>Issue</u>	<u>Due Date</u>
January	October 1st
April	January 1st
July	April 1st
October	July 1st

IEEE Electron Devices Society Newsletter

2002 IEEE International Electron Devices Meeting (IEDM)

The 2002 IEEE International Electron Devices Meeting (IEDM) will be held this year in San Francisco, California, U.S.A. at the Hilton San Francisco and Towers, December 9-11, 2002. IEDM is the premiere conference in the world for the presentation of advances in nano- and microelectronics and microelectronic-related devices and processes. IEDM is also the largest semiconductor device conference in the world, drawing presentations and attendees from industry, academia, and governmental agencies in Europe, Asia, Canada, and the U.S. ("the Americas"?)(yes, the Americas is better. What about Australia? I think we have had some papers from Australia before)around the world. It is also the annual technical meeting of the IEEE Electron Devices Society, which this year will be celebrating its 50th anniversary.



The meeting this year will highlight some of the most interesting and important plenary and luncheon speeches in recent memory. During the opening **Plenary Session** of the conference, Dr. Luc Van den hove from IMEC in Belgium will discuss the future for a critical technology that is supporting supports the advancement of semiconductor applications, 'Advanced Lithography'. Dr. Tsugio Makimoto from the Sony Corporation will present a talk on one of the most important and exciting applications that will be driving the development of many new and broadly-based micro-electronic technology platforms, "Chip Technologies for Entertainment Robots: Present and Future". Another important trend that is developing is that of the merging of optical and electronic technologies, enhancing their individual capabilities and broadening the applications for both. Professor Eli Yablonovitch from UCLA has been a pioneer in the field of photonics and optoelectronics and has been featured recently in many world-renown scientific journals discussing the relatively brief history and bright future for this potentially disruptive and breakthrough technology. He will present "Photonic Bandgap Based Designs for Nano-Photonic Integrated Circuits".

Our **Keynote Luncheon Speaker** this year will be Dr. Andrew S. Grove, Chairman of the Board of the Intel Corporation, who has been one of the world's pioneers and leader of the microelectronic technology and business revolution, as well as a world renowned educator through his textbooks, which are still at the heart of many semiconductor classes around the

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Your Comments Solicited

Your comments are most welcome. Please write directly to the Editor-in-Chief of the Newsletter at the address given on the back cover page.

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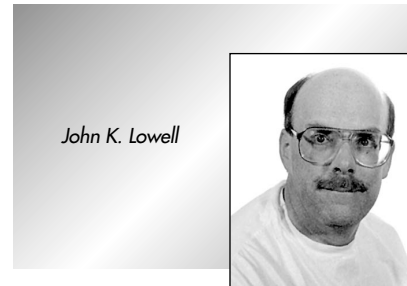
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Spring 2002 AdCom Meeting Summary



John K. Lowell

President Steve Hillenius called the Spring Meeting of the IEEE Electron Devices Society to order on June 8th, 2002 in Honolulu prior to the 2002 VLSI Symposia.

Chair Reports

Following the approval of the December 2001 AdCom minutes, Steve updated the current state of the IEEE TAB budget. Again this year, a deficit is anticipated given the existing infrastructure costs, and the June TAB meeting will propose how to charge the technical societies and committees for their share.

In other actions, the EDS ExCom held a strategic planning meeting the previous Friday to look at several future society issues. The topics included what areas (of technology) will EDS emphasize in the future, profiling who future EDS members might be, what society benefits will be included with membership (such as periodical access), and reassessing the current technical committees. In particular, EDS must broaden the base of technical interests to embrace emerging research areas such as nanotechnology, and ensure that these activities reflect the global interest and participation of its members. EDS must also determine its role in two new (proposed) TAB technical committees on Semiconductor Manufacturing and Display Technology, respectively.

Treasurer, Paul Yu's report addressed EDS' financial position for 2001 and 2002. Due primarily to the 2001 TAB infrastructure charges of \$1,986.1K and a negative return from investments (\$408K), EDS reserves went down by \$2,384.6K for 2001. For 2002, with projected IEEE fees of \$1,384.9K, and conference revenue of only \$130K, EDS projects a net loss of \$790.8K. Paul has worked with the IEEE office to implement several cost saving measures to offset this financial condition. Paul stated that the IEEE TAB might require that EDS take measures to improve our future finances by increasing EDS membership from \$6 to \$10, increase the fees for *EDL* and *T-ED*, and eliminate future permanent memberships. AdCom discussion on this topic centered on three main issues; what is IEEE doing to eliminate their budget problems, where is EDS revenue actually coming

(continued on page 8)

EDS ADCOM ELECTED MEMBERS-AT-LARGE

Term Expires:

2002

C. L. Claeys (1)
J. A. Dayton, Jr. (1)
M. Fukuma (1)
K. M. Lau (1)
K. Lee (1)
M. L. Ostling (1)
D. L. Pulfrey (1)
K. Shenai (2)

2003

I. Adesida (2)
T. Hiramoto (1)
L. Lunardi (1)
A. A. Santos (2)
S. C. Sun (2)
H. S. P. Wong (1)
P. K. L. Yu (2)

*2004

M. Estrada del Cueto (1)
K. F. Galloway (2)
S. J. Hillenius (2)
C. Jagadish (2)
J. K. O. Sin (1)
R. Singh (2)
N.D. Stojadinovic (1)

Number in parenthesis represents term.

* Members elected 12/01

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Upcoming Technical Meetings

IEEE IEDM

(continued from page 1)

world. His talk on the "Changing Vectors of Moore's Law" will be a highlight of our conference this year.

The heart of IEDM is its **Technical Program**. No other meeting presents as much leading edge work in such a broad variety of microelectronic-related topics. It offers students and their professors, scientists, and engineers a unique opportunity to hear about the latest work being done in their disciplines and related areas, as well as an opportunity to speak directly with other experts and colleagues working in these fields. An example of the breadth of topics to be discussed at this year's meeting is that participation by leaders in the fields of MEMS, bioelectronic sensors and systems, and optoelectronic technologies are expected amongst these core areas:

- CMOS Devices
- CMOS and Interconnect Reliability
- Detectors, Sensors and Displays
- Integrated Circuits and Manufacturing
- Modeling and Simulation
- Processing Technology
- Quantum Electronics and Compound Semiconductors
- Solid State Devices

As an important central core of our conference, the **CMOS Device** sessions will cover the new breakthroughs and advancements in the areas of device physics, novel MOS device structures, CMOS scaling issues, high performance, low power devices, and analog/RF devices. Other topics of interest are SOI, strained silicon and SiGe device issues, noise behavior of MOS structures and device measurement and characterization.

CMOS and Interconnect Reliability will cover all areas of IC and device reliability, both the 'front-end' and 'back-end' of the processes. Specific topics will include hot carriers, gate dielectric wear-out and breakdown, process charging damage, latch-up, ESD and soft errors. In addition, interconnect reliability, electromigration, the impact of back-end processing on devices, manufacturing technologies for reliability, as well as reliability issues for SOI and BICMOS will also be addressed.

The **Detectors, Sensors and Displays** sessions will cover the design, fabrication, reliability, theory, and modeling of the devices, structures, and integration technology used for imaging, displays, detectors, sensors, and microelectromechanical systems (MEMS). A subset of these key topics includes CMOS imagers, CCD's, TFT's, organic, amorphous and polycrystalline devices, vacuum microelectronics, emissive displays and sensors for chemical, molecular and biological applications.

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

Modeling and Simulation papers will include analytical, numerical, and statistical approaches to modeling electron devices operation, their isolation and interconnection. Other topics include the modeling of fabrication processes and equipment, simulation algorithms, process characterization, and parameter extraction.

The **Processing Technology** sessions will cover front-end and back-end process modules for the fabrication of CMOS logic, memory, and BICMOS devices. Topics related to front-end processing will include substrate technologies, lithography, etching, isolation technologies, thin dielectrics, high dielectric constant materials for transistor and MIM capacitors, shallow junctions, RTP, silicides, and new materials. Topics related to back-end processing will include interconnect systems, low dielectric constant materials, contact and via processes, planarization, and design considerations for multilevel interconnects.

Quantum Electronics and Com-

pound Semiconductors will be covered including wide bandgap materials with electronic and photonic device applications. Specific device structures include FET's, HBT's, high-power transistors, and devices with quantum, single electron, ballistic or spin effects. Also included are bioelectronics, self-assembly, nano- and molecular-scale devices, LED's, lasers, external modulators, photodetectors, optoelectronic and photonic integrated circuits, and optical interconnects.

The **Solid State Device** sessions will discuss discrete and integrated high power/current/voltage devices, silicon (Si) and silicon germanium (SiGe) bipolar transistors, novel analog and digital devices and technology, and high speed Si devices. Other integrated RF component developments to be described will include inductors, capacitors and switches, and single electron devices in silicon or silicon germanium materials systems. Other even more novel silicon-based structures may be included as well new methods of assessing silicon device and material performance.

The **Emerging Technologies** session highlights breakthroughs in important new technologies that will have a major impact on a broad variety of applications and this year it will feature invited talks from leading experts from around the world on *Bioelectronic Devices and Systems*. As we enter the 21st century, it is projected that this fascinating new area of emerging technology will play a very important role in the sensing, evaluating, controlling, and communicating of critical information in our everyday lives.

Another traditional and very popular part of IEDM is the **Short Course sessions**. Many critical topics have been described in detail to general as well as expert audiences during this set of seminars over the years. This year there will be two short courses entitled "RF Device Technologies for Communication Systems" and "The Future of Semiconductor Manufacturing".

The very informative and often entertaining **Evening Panel Discussions** at IEDM will this year discuss and debate the following questions: "Will SOI ever become a mainstream technology?" and "Embed-

ded Memories, what makes sense (cents)?"

For **Registration and other information**, visit the IEDM 2002 Home Page on the World Wide Web at <http://www.ieee.org/conference/iedm>, or contact Conference Managers Melissa Widerkehr and 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

The world famous San Francisco area provides many attractions for visitors and we encourage attendees to explore them in the off hours of the conference. The IEDM organizers and committee members look forward to seeing you in December 2002.

Jon Candelaria
IEDM Publicity Chair
Motorola Labs, Motorola Inc.
Tempe, AZ, USA

Philip Wong
IEDM Publicity Vice-Chair
IBM T.J. Watson Research Center
Yorktown Heights, NY, USA

2002 IEEE International Integrated Reliability Workshop (IRW)

The 2002 International Integrated Reliability Workshop (IRW), sponsored by the IEEE Reliability Society and the IEEE Electron Devices Society, will be held at the Stanford Sierra Camp on the shore of Fallen Leaf Lake near South Lake Tahoe, CA from October 21st to 24th, 2002. This workshop provides a unique forum for open and frank discussions of all areas of reliability research and technology for present and future semiconductor applications.

The technical portion of the 2002 workshop is being organized by Dr. Genadi Bersuker of International SEMATECH and will focus on six main areas:

- Wafer Level Reliability Tests and Test Approaches
- Electrical Characterization of Advanced Processes and Novel Materials
- New or Existing Reliability Prediction Models and Simulations
- Customer Product Reliability Requirements / Manufacturer Reliability Tasks
- Designing-in-Reliability (Circuits, Processes, Products)

Hot topics include Cu interconnects; reliability of deep sub-micron; high speed, high frequency devices; new dielectric materials; and reliability modeling and simulation.

The IRW is quite a bit different from a typical technical conference. From the moment you arrive, after winding slowly back to the south shore of Fallen Leaf Lake, you realize that you are taking part in something special. Attendees stay in cabins without TVs or phones, dress is casual (suits, ties and high heels are shunned), affiliations are downplayed, and meals are provided at the lodge dining room, family-style. Attendees of the workshop are expected to participate actively. You feel yourself drawn into technical discussions from the start. Every aspect of this conference, from the isolated location to the for-



mat of the technical program, is designed to get attendees to interact.

Located just a short scenic drive (less than two hours) from Reno, the Stanford Sierra Camp is situated at 6000 ft in the High Sierra on Fallen Leaf Lake. All cabins nestled amid the pines and cedars along the shoreline have decks and breath-taking views of the lake and surrounding peaks (don't worry, the cabins also have warm beds and hot showers; phone booths are available in the lodge). This peaceful setting, free from the distractions and annoyances of modern life, presents a terrific opportunity to get to know your colleagues, including internationally renowned experts. This is an opportunity not usually available at bigger, more hectic conferences. Instead of watching TV, participants spend their evenings at poster sessions, discussion groups, and special interest groups (SIGs), all with refreshments provided to stimulate discussions.

One unique aspect of this workshop is the opportunity for every attendee to present a poster of his or her own research, no matter what state it is in. Just arrange for space when you register or bring last-minute results in your briefcase or backpack. Your ideas will be accommodated. This a great way to share that new project you are working on and to get

world-class feedback. The poster presentations are even eligible for a two page write up in the conference proceedings. The **open poster sessions** are but one example of the opportunities for interaction that sets the IRW apart from other conferences.

Another distinction of the IRW is the moderated **Discussion Groups** that are held in the evenings. Organized this year by Prasad Chaparala of National Semiconductor, the Discussion Groups topics are: 1) Single Event Upsets (SEU), 2) WLR Monitoring, 3) Product Qualification / Burn In, 4) Gate Oxide Integrity, 5) Electromigration, and 6) Designing for Reliability. Lively conversation and debate among participants is promised and written summaries will be included in the workshop proceedings.

For those with the stamina, the Discussion Groups are followed by the **Special Interest Group** meetings or SIGs (as attendees refer to them). The SIGs are composed of small groups of researchers and engineers who often continue their conversations and collaborations even after they leave the workshop. Every attendee has the opportunity to become part of an existing SIG or suggest a new topic and start one of their own. One particularly successful example is the Thin Oxide Integrity SIG which has met for several years and collaborated to produce award winning presentations at other reliability meetings. Be warned, remnants of the SIG discussions sometimes rage on into the wee hours of the morning.

Yet, another advantage of attending the IRW is the extensive **Tutorial Course**, presented by world-class experts and included at no additional cost. This year tutorial course organized by Doug Menke of Motorola covers such diverse topics as molecular electronics,

physical characterization of dielectric materials, devices/processes simulation, Cu electromigration, Low-K characterization/reliability, NBTI and NVM. Tutorials are designed to be beneficial to newcomers as well as experienced members of the reliability community.

Last, but certainly not least, attendees have Wednesday afternoon off to enjoy activities such as hiking (with the annual trek to the top of Mt. Tallac as a favorite goal), volleyball, canoeing or sailing,

biking, walking, or just conversing by the lake, all in the fresh clean mountain air. This free afternoon is a great way not only to network, but also to build long-lasting friendships.

Additional information about the workshop is available on the IRW website at www.irps.org/irw, or by contacting SAR Associates at 301 N. Madison Street; Rome, NY 13440, Phone: 315-339-3968; fax: 315-336-9134. Note: If you want to take part in this event,

please register early as space at the Stanford Sierra Camp is limited to roughly 120 attendees and the workshop has sold out in the past.

On behalf of the 2002 International Integrated Reliability Workshop Committee, we look forward to meeting you in Lake Tahoe!

*Dr. Rolf-Peter Vollertsen
Communication Chair, 2002 IRW
Infineon Technologies NA Corp.
Essex Junction, VT, USA*

2002 IEEE Gallium Arsenide Integrated Circuits Symposium (GaAs IC)

As wireless and optical communications become more important in today's economy, GaAs and other compound semiconductors such as InP have become a critical part of the world's electronics infrastructure. Over the last 24 years, the IEEE Gallium Arsenide Integrated Circuits Symposium has become the preeminent international forum on developments in compound semiconductor integrated circuits. In addition to our traditional emphasis in GaAs and InP, the Symposium is broadening its range to include the latest developments in SiGe, GaN, SiC and other compound semiconductor device technologies. In 2002, the Symposium continues its tradition of presenting the best from around the world in high frequency/high-speed microelectronics. Technologists who are working in ultra high performance system, circuit and device technology, or those who simply want to stay abreast of the latest trends, will definitely want to attend. This year's symposium will be held October 20th to the 23rd in beautiful Monterey, California at the DoubleTree Hotel.

The Symposium will begin on Sunday, October 20, with a short course taught by five experts in the field of IC design for receivers. Brad Nelson has organized the course with an emphasis in the latest trends in IC design for both wireless and wired receivers and the architectures that drive them. An overview of system architectures and their enabling technologies will be addressed. Specific areas to be discussed include cable modem, set top



box, 3G basestations, WLAN, and broadband and millimeter wave receivers.

On Sunday evening, Stephen Long and Donald Estreich will once again present the Symposium Primer Course, an excellent overview of the basics of GaAs, InP and SiGe RFICs. The course is good as both an introduction to those with little or no experience in the compound semiconductor industry, and as a refresher for those with more experience. Among the topics covered will be III/V materials; fabrication technology; FET and bipolar devices; and digital and analog/RF/microwave circuits. As always, the material will be tailored to fit the context of this year's technical program.

The Symposium Opening Reception will be held Sunday night in the DoubleTree Hotel. Come meet with old friends and make some new ones as you sample

light hors d'oeuvres and wine, beer or soft drinks.

On Monday morning, the Technical Program, assembled by Chris Bozada and the Technical Program Committee, will open with our plenary session. This session features five invited papers by world-renowned experts in their fields. First, Paul Kempf of Jazz Semiconductor will give an overview of SiGe BiCMOS process technology. Next, Edgar Martinez of DARPA/MTO will speak on the evolution of MMIC technology. Following that, Bill McFarland of Atheros Communications will describe a Dual Band 802.11 WLAN, Ben Velsher of Kyocera America will describe the latest in high-speed optoelectronic IC packaging, and John Sitch of Nortel Networks will review high speed ICs for fiber communications.

Following the Plenary Session, there will be thirteen more sessions featuring both contributed and invited papers, which will run from Monday afternoon to Wednesday afternoon. These sessions will consist of papers that are focussed on a particular topic, such as IC's for Microwave/Millimeter-wave applications; Optical front end IC's; Device reliability; Broadband amplifiers and optical modulator drivers; Frequency Conversion Techniques; Emerging technologies; Power amplifiers; 40 Gb/s IC's; Modeling and simulation; Applications of novel circuits; High Performance HBTs; and Analog and Digital high-speed IC's. A separate session will also be dedicated to late news papers featuring particularly outstanding results.

In addition to the paper sessions, the Symposium also features six panel sessions on controversial topics of high interest. Panels will feature a moderator and up to six speakers. The moderator will set the tone of the discussion and the panelists will each spend three to five minutes staking out a position. Following that, it will be a free-for-all as audience members make their own points and question the panelists. Panel session topics are: The market for compound semiconductors in defense applications; The future of 10Gb/s vs. 40 Gb/s systems; Alternative substrate technology (GaAs, InP, GaAs on Si?); The controversy over radio on chip vs. radio in a module; A WLAN power amplifier technology shootout, and InP vs. SiGe for 40 Gb/s communications. There will also be a new feature, our "Fab Forum" which will provide an opportunity for potential customers, business partners, or other interested parties to learn about some of the latest IC fab capabilities in our industry.

Another way to keep abreast of the latest developments in the field will be by attending the GaAs IC Technology Exhibition, which will be held on October 21 and 22 in the Monterey Conference Center, located adjacent to the DoubleTree Hotel. The Exhibition is open to all conference registrants, and features a wide variety of companies who offer state-of-the-art compound semiconductor IC's as well as those that products and services to the compound semiconductor IC industry. An early listing of the exhibition included 30 names, with more to come. The exhibitors will host an Exhibition Opening Reception on Monday evening, as well as an Exhibition Luncheon on Tuesday.

Of course, conference attendees will also have an opportunity to relax and learn about life outside of high-speed electronics. Tuesday evening is the Symposium Theme Party at the Outer Bay Wing of the Monterey Bay Aquarium.

The Outer Bay Wing has been open for only five years and features marine life 60 miles offshore in the Monterey Canyon. A new feature attraction that has been added just this year is a stunning exhibit on jellyfish. Many of the unique animals featured at the Aquarium are not currently on live display anywhere else in the world. Naturally, in addition to the spectacular displays of nature, the Theme Party will also offer a dinner buffet featuring the best of California cuisine, beer, and wine.

On behalf of the organizing committee and the IEEE EDS, MTT-S, and SSCS, I invite you to be a part of the upcoming 2002 IEEE GaAs IC Symposium. For more information, try our website at <http://www.gaasic.org>. See you in Monterey. You won't want to miss it!

*Tim Henderson
GaAs IC Symposium Chairman
TriQuint Semiconductor
Richardson, TX, USA*

2002 IEEE Semiconductor Interface Specialists Conference (SISC)

The **2002 IEEE Semiconductor Interface Specialists Conference (SISC)** will be held December 5-7, 2002 in San Diego, CA, immediately prior to the IEDM. The SISC provides a unique forum for device engineers, solid-state physicists, and materials scientists to discuss issues of common interest. Principal topics for discussion at SISC are semiconductor/insulator interfaces, the physics of insulating thin films, and the interaction among materials science, device physics, and state-of-the-art technology.

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



encourage discussion, and conference participants enjoy numerous opportunities for social gatherings with renown scientists and engineers. Abstracts for contributed talks are typically due in early August.

The 2002 SISC will be held at the Catamaran Resort Hotel, 3999 Mission Boulevard, San Diego, CA 92109, phone (619) 488-1081. The Catamaran is on Mission Bay, and one block from the Pacific Ocean (see photo). San Diego typically has fabulous weather, which

complements the Catamaran's luxurious Hawaiian decor. The hotel grounds are beautifully lush with colorful fish and tropical birds. San Diego also boasts Sea World', a world-class zoo and historic monuments, all within an easy drive from the Catamaran. Bike and boat rentals are offered on the Catamaran premises.

The conference emphasis is on silicon-based devices, including the SiC and SiGe systems, and topics evolve with the state-of-the-art. Invited talks at this year's conference highlight the many areas dis-

cussed at the SISC; a preliminary list of invited presentations follows:

- Dr. Eduard Cartier, IBM and IMEC, *Charge trapping, mobility degradation and reliability of high-k gate stacks*
- Professor Hiroshi Iwai, Tokyo Institute of Technology, *CMOS scaling and requested new technologies*
- Professor Tsu-Jae King, UC Berkeley, *Gate material issues for high-k gate dielectrics*
- Professor Jack C. Lee, UT Austin, *Effects of Interface States and Charge Trapping on the Performance of High-K Gate Dielectrics Devices*
- Professor Gerry Lucovsky, NC State, *Electronic structure at Si/high-k dielectric interfaces*
- Professor John Robertson, Cambridge, *Electronic structure and band offsets in high-k dielectrics*
- Dr. Hiroshi Yano, Nara Institute of Science and Technology, *SiC MOSFETS and their interfaces*

The invited and contributed talks are complemented by informal events designed to encourage lively discussion and debate. Generous hospitality allows attendants to focus on enjoying the conference. Hors d'oeuvres, wine, and cheese encourage interaction among poster authors and other conference participants at Thursday's poster session. Friday afternoon has no scheduled talks, to allow time to meet informally, relax 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!

This year's SISC will continue the tradition of presenting an award memorializing Prof. E. H. Nicollian. The award will be given for the best student presentation. Ed Nicollian was a pioneer in the

exploration of metal oxide semiconductor (MOS) systems. His contributions were important to establishing SISC in its early years, and he served as the Technical Chair in 1982. With John Brews, he wrote the definitive book *MOS Physics and Technology*.

For registration information and general inquiries about SISC, please contact the Arrangements Chair, Carl-Mikael Zetterling, at KTH, Royal Institute of Technology, Department of Microelectronics and Information Technology, Electrum 229, SE-16440 Kista, SWEDEN. Phone: +46 8 752 1409, Fax: +46 8 752 7850, E-mail: bellman@imit.kth.se. Also, for updates on the 2002 IEEE SISC, including travel, technical program, and registration information, visit our web site at <http://www.IEESISC.com>

Carl-Mikael Zetterling
SISC Arrangements Chair
KTH, Royal Institute of Technology
Kista, SWEDEN

2003 IEEE Non-Volatile Semiconductor Memory Workshop (NVSMW)

The 2003 IEEE Non-Volatile Semiconductor Memory Workshop (NVSMW) will be held February 16 - 20, 2003 in Monterey, California. The workshop is sponsored by the IEEE Electron Devices Society. NVSMW is a unique forum for both specialists in all aspects of nonvolatile memory microelectronics and novices wanting to gain a broader understanding of the field. Attendees represent professional and academic researchers involved with semiconductor non-volatile memory development and production along with end users of memory products.

Principal topics for discussion at NVSMW are: device physics; silicon processing; product testing; new technologies, including multi-level-cell approaches; programmable logic; memory cell design; integrated circuits; solid state disks and memory cards; memory reliability; and new applications.

An important goal of NVSMW is to provide an informal environment to



encourage discussions among participants and lively interactions. There will be morning and afternoon technical sessions, along with a lively evening panel discussion on a hot topic in the non-volatile memory field. Technical interaction among presenters and attendees is encouraged through question and answer sessions and allotting ample time after the formal paper presentations for

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

This year will be the 19th meeting of NVSMW. The workshop is held every 18 months, alternating between February and August. The February meeting is usually held the week after ISSCC and the August meeting in the early weeks of the month. The 2003 meeting will be held in the third week of February - the week after ISSCC. Early workshops alternated between Monterey, California for the February meeting and Vail, Colorado for the August meeting. The Vail venue was dropped a number of years ago, to facilitate attendance and travel from the near-

by Silicon Valley. For many years, the attendance for the workshop was around 100. In recent years, however, the attendance has grown considerably, reflecting the large growth in the nonvolatile memory market, particularly flash memory and embedded memory on logic cores, with the attendance at the last several workshops being well in excess of 200. In order to maintain the workshop atmosphere of the forum, the maximum attendance is limited to 300. Therefore, advance registration is highly recommended. NVSMW is attended by a wide international community from North America, Europe, Japan and other Asian countries. The past several workshops have had featured sessions to address the growth of segments of the memory market.

The last workshop, in 2001, featured the keynote speech presented by Alan Niebel of Web-Foot Research, Inc. on the impact of the Flash and other emerging nonvolatile memory technologies on market for the next five years. There were two invited papers. One of the invited papers by Dr. Stewart Parkin of IBM discussed high performance magnetic random access memory using magnetic tunnel junction storage elements. Another invited paper by Dr. Loren Lancaster of Cypress discussed the re-emergence of SONOS memory for embedded applications. There were two panel discussions. One was on Multi Bit Storage, moderated by Dr. John Caywood of SubMicron Circuits, to discuss the challenges of and solutions to multi-bit storage. The second was on Alter-

native Non-Volatile Memory Technologies, moderated by Dr. Jan Van Houdt of IMEC, to compare and contrast the various emerging NVM Technologies including FeRAM, MRAM, Nano Crystals, NROM, and SONOS. In addition, there were paper sessions on Circuit and Product Design, Process Technology, Alternative Memory Technologies, Device Technology, and Device Reliability.

For this year's workshop, the deadline for submitting abstracts to the Technical Chairman is October 25, 2002. Electronic submission of the abstract using either Microsoft Word or Adobe Acrobat is highly encouraged. Proceedings consisting of bound copies of all abstracts will be handed out to attendees at the conference, along with a list of attendees and their phone numbers and e-mail addresses to allow future contact of workshop colleagues. It is anticipated that the format of the 2003 workshop will be similar to that of the past year's, with an expected 30-40 technical paper presentations. The last workshop consisted of six technical sessions over a three day period. The workshop opened with a Sunday evening registration reception, consisting of drinks and hors d'oeuvres. Breakfast opened each day, while a workshop reception dinner and evening panel discussion closed out Tuesday evening. The workshop formally closed on Wednesday afternoon. Breakfast was also provided on Thursday morning, for those remaining in the Monterey area.

The 2003 NVSMW will be held at the

Hyatt Regency in Monterey, California. The hotel is conveniently situated in the Monterey peninsula and allows easy 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 TEL: (831) 372-1234.

For registration information and general inquiries about NVSMW, please contact any of the workshop chairmen. General Chairman: Krishna Parat, M/S RN3-01, Intel, 2200 Mission College Blvd., Santa Clara, CA 95054, USA, Phone: (408) 765-9381, Fax: (408) 765-5775, E-mail: Krishna.Parat@intel.com; Technical Chairman: Kelly Baker, Motorola, Inc., Mail Drop OE341, 6501 William Cannon Dr. West, Austin, TX 78735, USA, Phone: (512)-895-8335, Fax: (512)-895-2722, E-mail: Kelly.baker@motorola.com; Finance Chairman: Dr. John Caywood, Consultant, 1410 Wright Ave., Sunnyvale, CA 94087, USA, Phone: 408-733-6921, Fax: 408-733-1813, E-mail: john@caywood.com.

You can also visit the NVSMW web site for up-to-date information at: <http://ewh.ieee.org/soc/eds/nvsmw>.

Krishna Parat
NVSMW Chairman
Intel Corporation
Santa Clara, CA, USA

AdCom Summary

(continued from page 2)

from, and what is the potential impact of taking these actions? In addition, it was proposed to reduce existing EDS member access to eleven non-EDS publications to six in the future, saving additional costs.

The EDS Executive Office under Bill Van Der Vort has been handling a multitude of projects since December. In honor of EDS' 50th Anniversary celebration this year they have coordinated the development and distribution of the EDS history booklet authored by Michael Riordan, worked with the IEEE History Center to develop a portable, historical display in honor of EDS and its technologies in this anniversary year, and developed plans for the official celebration of EDS' 50th

anniversary at IEDM in December. Their list of ongoing projects is equally extensive and includes much of the work mentioned above on the recommendations and changes (primarily cost reductions) to improve the society financial outcome for 2002 & 2003, worked with the Education Committee to develop a pilot program to offer short courses to companies on site for their employees, and distribution of materials for the second occurrence of the EDS Graduate Fellowship program. Other efforts from Bill and his staff are its continued program in obtaining abstracts from talks by all the DL program lecturers for posting on the web, getting a proposal and appropriate approvals for a "Best Paper" award for EDL with an appropriate rating system, continued improvements to the T-ED manuscript system, setting up a mechanism for

IEEE Xplore to sell company sponsorships/advertisements for T-DMR to be displayed on the T-DMR Xplore website, and implementing new procedures to centralize the administrative support of the EDS Newsletter with the EDS Office. Upcoming projects for the rest of the year include coordinating all of the events, displays, and celebratory functions for the 50th Anniversary celebration, continued cost reductions, finalization of the Graduate Fellowship Award competition, expansion of the EDS DL program by adding information of the program to the EDS website posting abstracts of all EDS lecturers, and putting in a new program whereby EDL & T-ED EICs can name reviewers whom they wish to recognize by listing their names and affiliations in the December issues of T-ED & EDL respectively.

Membership Chair, James Kuo, lists EDS current membership as 7890 regular members, 4218 permanent members, and 1364 students for a total of 13489. This is a 1.4% gain over last year's numbers at the same time. Recruiting activities have been fruitful bringing in 62 new members at IEDM, and 78 at ISSCC. The efforts started in 2001 to increase Senior Membership within EDS has also had success as 120 members have been confirmed since the program began, and 71 others have started the process this year. The application brochures for 2002 in Japanese, Mandarin, and English have been distributed, as well as the various chapter membership subsidies. James and his committee will be continuing the recruitment efforts, student membership drives, DL recruiting, and the SM program going throughout the year. They will also be looking at terminated members to examine the motivations and reasons for non-continuance. EDS terminations for 2002 stands at 13.3%, and in general IEEE membership terminations especially in Regions 6 & 10 are quite high. This is an important issue both now and in EDS future planning to look at increasing member retention.

Hiroshi Iwai, Regions/Chapters Committee Chair, puts our current chapter total at 104. We expect that a new chapter in South Brazil, and joint ED/SSC one in Bulgaria will be approved this year. Iwai-san also mentioned that there are efforts underway to change the French chapter from being a joint ED/MTT one to a full-fledged ED one. Reporting for the Educational Activities Committee, Ilesanmi Adessida, focused on three major projects namely the DL program, the EDS Student Fellowship, and the Short Courses. He reviewed the current status of the DL program showing that the effort has become more visible to members through the EDS Newsletter and website. Fifty lectures are scheduled for 2002 with sixteen lecturers participating and sixteen of the talks funded. So far EDS has spent \$8.4K on the program from a budget of \$12.8K. As for the Graduate Student program, all the nominations have been collected and voting on the seventeen nominees by the selection committee is in progress. Notifications to recipients should go out by July 15, 2002. Dr. Jack Lee gave one company-sponsored short course at Applied Materials in April. Ken Galloway, Meetings Chair, listed 140 meetings (32 sponsored/co-sponsored, 99 technically sponsored, and 9 coopera-

tively sponsored) are scheduled for this year. Since 9/11/01, most conferences lost money, and profits from these meetings are expected to drop sharply from earlier projections.

Key Reports

The 2002 Symposium on VLSI Technology has done well at rebounding from last year's slump. Projected income should match the actual (~\$382K), and attendance exceeded the predictions. While the short course attendees are not as high as in previous years, the meeting should be successful. There have been suggestions raised at AdCom that this meeting consider alternative sites such as Shanghai instead of the traditional two (Kyoto & Honolulu) in the future. While attendance at the 2001 IEDM dipped in comparison to past meetings, income increased over expectations, assisted by waiving a substantial hotel penalty.

As presented by Chair Renuka Jindal, EDS Publications continue to progress. With the increased interest in nanotechnology society-wide, EDS is formulating a policy statement establishing its areas of specialization. The numerous special issues on this subject planned by various technical societies dramatize the importance of this action. EDS' Nanotechnology Technical Committee plans to draft a "memorandum of understanding" to define our society specialization to avoid conflicts with other publications. A vote to support this action was approved. AdCom also discussed the prevalent problem of numerous authors on both *T-ED & EDL* papers. At issue is establishing which listed authors performed the majority of the work, and which ones were in mainly support roles. In the end, AdCom's decision was that any author's list must remain the responsibility of the submitting institution, and it is not EDS role to decide the amount of involvement of each named author. The Publications Committee may work on a "template for future authors" suggesting guidelines on how to select authors, and will adopt a policy whereby an author list cannot be changed after a paper has been accepted. On a financial note, revenue from *T-ED & EDL* is increasing as on-line access replaces traditional hardcopy distribution. A possible reduction in the number of on-line publications (currently available to members) from eleven to six should result in a substantial cost saving. EDS progress in providing both IEEE Xplore access, and an archival DVD for



past *T-ED & EDL* issues faces some significant cost hurdles. Papers published before 1988 are more expensive to digitize than those that are post-1988. For example, to digitize the pre-1988 papers for both journals is \$190K whereas the post-1988 material costs \$90K, a significant difference in the face of budget shortening (see above). It was voted to spend \$22K in 2003 to digitize *EDL* issues published prior to 1988, and \$102K in 2004 to complete the digitization of *T-ED* issues published from 1952-1987, and discuss digitizing the pre-1988 IEDM Proceedings (in 2003 & 2004) with the IEDM Committee. In a final Publication action, two winners for the annual Rappaport award were announced, and a motion to establish a "Best *EDL* paper" named for George Smith has been submitted to TAB for approval with the initial presentation to take place in December 2002.

Bill Van Der Vort, giving the Awards Chair report for Al Mac Rae, encouraged the AdCom to nominate more members for the Field awards saying many continue to not have sufficient numbers of EDS nominees. On the Fellows side, Lou Parrillo, Fellows Chair, announced that a record 57 nominations were received this year. Lou described the fellow selection in detail. A forum on "50 Years in 50 Minutes" is planned for the December 50th Anniversary celebration at IEDM with Lou Terman, James Early, Richard True, and Jerry Woodall being the featured speakers.

The next meeting of EDS AdCom will be on Sunday December 8, 2002 in San Francisco prior to the 2002 International Electron Devices Meeting.

John K. Lowell
EDS Secretary
Consultant
Dallas, TX, USA

Society News

EDS Publications Chair's Report

After taking over as publications chair in January 2001, I found several issues that needed attention. Some of these issues find their roots in our innate desire to make things better than we find them. Others surfaced due to advances in technology. And finally some just happened to crop up at this time. In this report, I will give a snapshot of some of these related activities. However, before forging ahead, a more basic need had to be addressed. The EDS publications committee, consisting of 5 members, was inadequate to handle the broad charter that it has. In view of this, the committee was expanded to include representation from all sponsored and co-sponsored EDS publications and all EDS technical committees. With these additions, the number of members in this committee jumped to 32.

The three primary factors that an author considers before submitting a manuscript for publication are speed, circulation and quality of the journal. Out of these three parameters, the first two are easily quantified while the third is more nebulous. In the following analysis, we will primarily examine data pertaining to Electron Device Letters (EDL) and Transactions on Electron Devices (T-ED). Let us first discuss the time it takes for us to publish an article. With the centralization of the editorial support in Piscataway, we continue to be close to the top in terms of publication speed, among all IEEE publications. Currently, with help from Professor Arokia Nathan, we are evaluating our next move to WEB based publishing. Under this paradigm, all manuscripts will be handled electronically from submission through review to final publishing. *As always, paper copies of the publications will continue to be printed in the foreseeable future.* Several IEEE societies have signed up with IEEE's WEB based platform called Manuscript Central, making a big jump from their manual handling procedures. However, we in EDS, have been using PC based software tools to manage our publications for over a decade. Hence we want to make sure that Manuscript Central provides the necessary level of functionality and flexibility that we require.

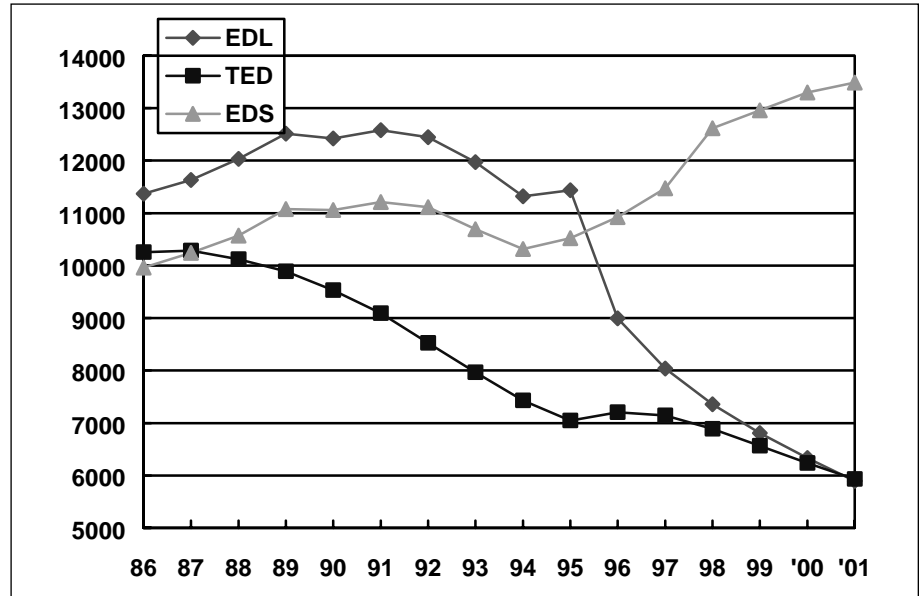


Figure 1: EDS membership and T-ED and EDL circulation plotted as a function of the calendar year

Next let us examine the circulation data given below in figure 1. From the graphs it is clear, thanks to aggressive efforts of Professor James Kuo and his predecessors Professors Paul Chao and Professor Marvin White, EDS membership continues to grow. On the other hand, both EDL and T-ED circulation continues to slide. The onset of decline in the EDL circulation, coincides with its unbundling in 1996 when EDL was no longer included in the basic EDS membership. This is understandable. However, T-ED was unbundled in 1982 and the reason for its drop in circulation, beginning 1988, is not clear. Another point to consider is electronic access. Beginning 1999 renewal cycle, both T-ED and EDL became available to all our members via the IEEE OPERA/Xplore™. However, the time line suggests that the impact of this free electronic access on total circulation, if anything, has yet to be felt. In view of this and the comments on quality that follow, we are not sure how to interpret the circulation data. Next we will discuss the issue of quality.

How does one assess the quality of a publication? In response to a survey conducted by the Electron Devices Society in

1999, the members articulated a very clear message. One of the most beneficial aspects of their EDS membership was the publications. While this is very gratifying indeed, it is at best a lagging indicator. In other words, while it pats us on the back for a job well done, it does not help us in monitoring our progress and guiding our actions on a real time basis. We would like to have a quantitative measure of the publication quality, that we can measure and infer from, on a yearly basis. Hence, we have launched an initiative to understand and develop a quality metric for our publications. A good starting point for this is the Impact Factor data published by the Institute for Scientific Information (ISI). Impact Factor is a measure of the frequency with which an "average article" in a journal has been cited in a particular year. To understand the citation data better, we did some preliminary analysis. The results are presented in Figure 2 given below. In the graph we plot number of citations that papers published in a given year in T-ED received in a later year, divided by the total number of papers published in that given year. This is plotted as a function of the number of years elapsed from

the original publication date. The data is presented for 17 years from 1981 through 1998. All the years tend to follow a similar trend, peaking after 3 years with a “bandwidth” of roughly 6 years. This goes to show that the general characteristics of the publication are intact over this long period. However several interesting questions follow.

Is the citation statistics spread uniformly across all papers? Is it heavily influenced by a selected few? If indeed the statistics is heavily influenced by a handful of contributions, what type of results did these papers report? How were these manuscripts rated in our internal editorial review process? Did these papers win any awards? Did special issues play any role in this. Do review papers help? And finally, are these highly cited papers indeed responsible for the results of the EDS survey or is there another metric involved? These and other questions are not easy to answer but we intend to dig deeper.

On the financial side, the picture looks very healthy. Over these years, we have evolved to generate a healthy annual surplus for the society to support a plethora of activities related to member services. We hope to continue to do so in the future but have to plan it carefully in view of almost ubiquitous electronic access of information. It should be noted that the surplus is being generated primarily due to increases in non-member and all periodicals package subscription rates while keeping operating costs under control. However, increased revenue over at best a flat subscription base is always a tricky proposition.

On the technical side, there are changes coming too. As time marches on, different technologies assume importance. This is especially true in the field of Electron Devices. A good example is the transition from vacuum tubes to transistors over the last 50 some years. In August of 1997, we published a special issue of Transactions on Electron Devices focusing on “Organic and Polymeric Active Devices”. Since then, over the last five years, this area has enjoyed substantial growth, both in terms of technology maturity as well as commercial applications. In fact, one of the winners of the EDS Paul Rappaport award for 2001 dealt with organic thin-film transistors. To highlight the synergy between this bur-

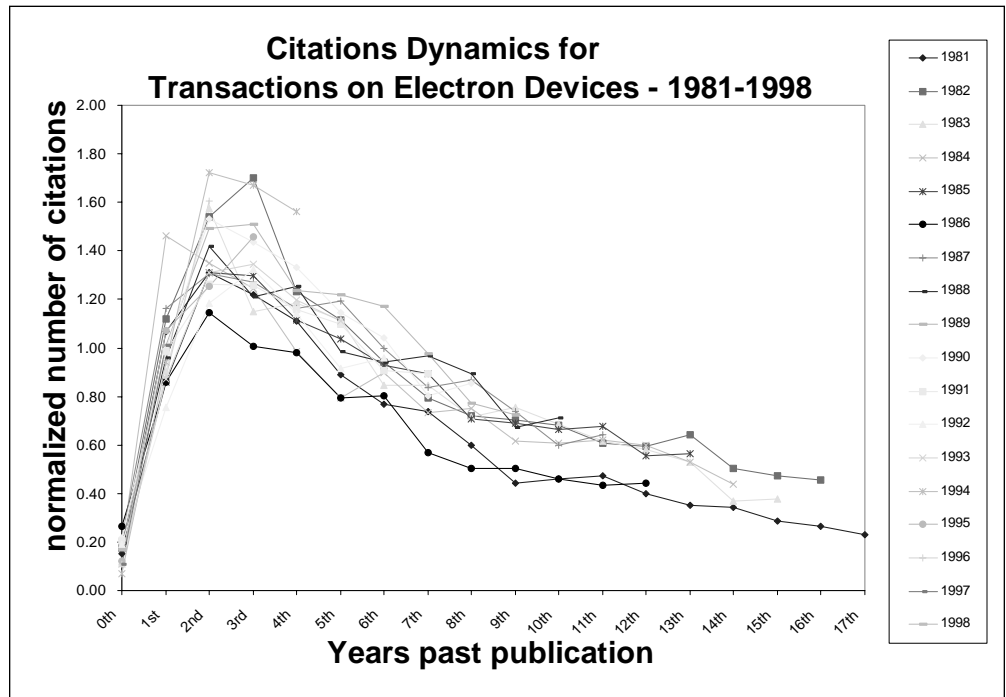


Figure 2: Normalized number of citations plotted against the number of years elapsed since the original publication with the year of publication as a parameter

geoning activity and the more traditional electron device community, we are planning to update the Field of Interest (FOI) statement of the society.

One of the most rewarding duties as an office bearer of the society is to recognize technical contributions. Over the years, I realized that EDL papers never made it to the finals for the Paul Rappaport Award. Apparently this had to do with the mandated brevity of the contributions consistent with the scope of EDL. I am pleased to report that we have now corrected this situation by instituting another award, exclusively for papers published in EDL. This award has been named after, in today’s parlance, the founding editor-in-chief of the publication, George E. Smith. The award will be given for the first time in 2003, for the best paper published in Electron Device Letters, in calendar year 2002. Among other selection criteria an equally important one is adequate and fair referencing of prior art. This brings me to my next topic.

One of the pet peeves that I hear about from colleagues at meetings and conferences, is inadequate referencing of prior art. In the not-so-old days, literature search was a major undertaking. One had to physically visit a library, pull the bound volume from the rack and make a photocopy. This is changing now. Increasingly, the literature is available on

line for us to browse and print. However, the conversion of information from paper to electronic form is far from complete. For the Electron Devices area, we only go back to 1988 for T-ED and EDL on IEEE Xplore™. For IEDM the IEL package goes back to 1998. We are moving decisively to correct this situation. The plan is to make available everything that was ever published in T-ED, EDL and IEDM to all our members. At the last ADCOM meeting, we allocated funds for a conversion of all pre-1988 EDL papers into digital format. Conversion of all pre-1988 T-ED will follow hopefully within a year along with IEDM. However, when an electronic search does not reveal any prior references, please realize its limitation. Professionalism demands that we make the extra effort to dig up prior work the old-fashioned way. Going forward, inadequate referencing of prior art, will be one reason for rejection of submissions to all EDS publications. Further, papers deficient in this aspect will be handicapped when being considered for EDS/IEEE awards. Please take the time to find out what has been done, not only in your immediate sphere of influence, but also outside it. This will create the healthy environment where prior knowledge is leveraged to its fullest extent, shortening R&D cycles accelerating the pace of knowledge creation. Also it will

result in proper credit being given to where it is due. This should be a win-win situation for everyone involved.

On the eve of the 50th anniversary of the Electron Devices Society, I want to thank everyone for supporting EDS publications in their capacity as authors, reviewers and editors. We aspire to continue to be the choice forum, for the dissemination of prized technical information, in the field of Electron Devices. Electronic distribution of information is here with us to stay. If you have any ideas on how we can make it easier and more efficient for you to generate and access this information, please let me know. I am looking forward to your suggestions.

Renuka Jindal
Publications Chair,
Electron Devices Society
Agere Systems
Bell Labs Room 2D-329
600 Mountain Avenue
Murray Hill, NJ 07974
rjindal@ieee.org

EDS Administrative Committee Election Process

The Members-at-Large (MAL) of the EDS AdCom are elected for staggered three-year terms, with a maximum of two consecutive terms. The 1993 Constitution and ByLaw changes mandated increasing the number of elected MALs from 18 to 22, and required that there be at least two members from both IEEE Region 8 (Europe, Mid. East & Africa) and Region 10 (Asia & Pacific). It also required that there be at least 1.5 candidates for each opening. From 1999 to 2001, eight, seven, and seven positions were filled, respectively. In 2002, eight positions will be filled.

The election procedure begins with the announcement and Call For Nominations in the EDS Newsletter. The slate of nominees is developed by the EDS Nominations Committee and includes the non-Committee and self-nominations received. Nominees are asked to submit a two-page biographical resume in a standard format. Nominations are closed around the end of October, and the biographical resumes are distributed to the 'full' voting members of AdCom prior to the AdCom meeting. Nominees are urged to attend the December AdCom meeting, and the election is held after the conclusion of the meeting.

A continuing flow of new AdCom members who are interested in working for the improvement of the Society and its related technical areas is key to the continued development of EDS and the field of electron devices. Those interested in the field, the Society, and its operations are encouraged to attend AdCom meetings, become involved in Society activities, and to consider running for election to AdCom.

Cary Y. Yang
EDS Nominations & Elections Chair
Santa Clara University
Santa Clara, CA, USA

2001 EDS PAUL RAPPAPORT AWARD

Each year, the IEEE Electron Devices Society confers the Paul Rappaport Award to the best paper published in an EDS publication. This year there were two winners of the award. The first paper deals with organic electronics. This is an upcoming area of technical focus which is expected to see growth in years to come. The second paper reviews the history of the genesis of the solid-state era ushered by the invention of the Bipolar Transistor at Bell Laboratories in 1947. As a related item, Doug Verret has introduced review papers as a standard feature of T-ED. The details of the two winners are given below.

The 2001 award will be presented at the IEDM on 9 December, 2002 in San Francisco, CA. It consists of a certificate and a check for \$2,500 to be shared among the winners. Brief biographies of the four winners are given below.



C.D. Dimitrakopoulos

C.D. Dimitrakopoulos is a Research Staff Member at IBM, T. J. Watson Research Center, Yorktown Heights, NY, where he works on organic semiconductor materials and devices. He has been with IBM since 1995. From 1993 to 1995, he was a post-doctoral fellow at Philips Research Laboratories in Eindhoven, NL, where he also worked on organic semiconductors. He holds Ph.D., M.Phil. and M.S. degrees in Materials Science from Columbia University and a B.S. degree in Metallurgical Engineering from the National Technical University of Athens, Greece. He is the author or co-author of 8 patents, several more pending patent applications and at least 25 papers.

Paper Title

High-Performance Bottom Electrode Organic Thin-Film Transistors

-Microelectronics: Its Unusual Origin and Personality

Issue/Publication

June, 2001/Transactions on Electron Devices

Nov., 2001/Transactions on Electron Devices

Author(s)

Ioannis Kymissis,
C.D. Dimitrakopoulos and
Sampath Purushothaman

Raymond M. Warner

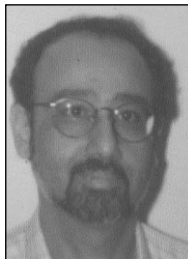
In 2000, he received an IBM Outstanding Innovation Award, for "High Performance Organic Transistors on Plastic".

Ioannis Kymissis received the S.B. and M.Eng. degrees from the Massachusetts Institute of Technology (MIT), Cambridge, in 1998 and 1999. He worked on his master's thesis at the IBM T. J. Watson Research Center, in Yorktown Heights, NY, investigating organic semiconductors. He is currently a doctoral student at the MIT Microsystems Technology Lab and is studying alternative processes for fabricating field emission devices. Mr. Kymissis is a member and former officer of the MIT IEEE student chapter.



Ioannis Kymissis

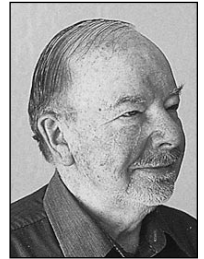
Sampath Purushothaman is a Research Staff Member and Manager of Advanced Interconnect Technology at the IBM Thomas J. Watson Research Center, Yorktown Heights, NY. Dr. Purushothaman received his B.Tech. in Metallurgy from Indian Institute of Technology, Bombay, India and his M.S. and Eng.Sc.D. in Metallurgy and Materials Science from Columbia University, New York. He has been with IBM since 1979 and has worked in various research areas including advanced packag-



Sampath Purushothaman

ing interconnects for high performance bipolar and CMOS server systems; materials and processes for flat panel displays; fabrication and optimization of thin film transistor devices based on organic semiconductors; and processing and integration of copper wiring with low k and ultra-low k dielectrics for silicon back end of the line interconnects. He has authored over 60 technical publications and holds 50 US patents. Dr. Purushothaman has received several technical awards at IBM for his outstanding technical achievements.

Raymond M. Warner, Jr. (B.S., Physics, Carnegie Tech, and Ph.D., Physics, Case Tech) was Professor of Electrical Engineering at the University of Minnesota, 1970 - 1989. He was Radio Officer in the European and Pacific Theatres sharing responsibility for a circuit between the headquarters of Generals Patton and Bradley (Europe). Subsequently, he had 20 years of electron-device experience: Corning Glass Works; Bell Labs; and managerially at Motorola Semiconductor; Texas Instruments; ITT; and Union Carbide. He is inventor on 30 issued patents, and author on four technical books and 70 journal publications, and in 1969 helped conduct an NSF-sponsored seminar at Pilani, India.



Raymond M. Warner, Jr.

*Renuka P. Jindal
Agere Systems
Murray Hill, NJ*

WILLIAM R. CHERRY AWARD

This award is named in honor of **William R. Cherry**, a founder of the photovoltaic community, and was instituted in 1980, shortly after his death. The purpose of the award, which is presented at each Photovoltaic Specialists Conference (PVSC), is to recognize engineers and scientists who have made significant contributions to the science and/or technology of PV energy conversion, with dissemination by substantial publications and presentations. The William R. Cherry award was presented to Dr. Richard M. Swanson at the 29th PVSC which was held in New Orleans during the week of May 20th.



William R. Cherry

After receiving a Ph.D. from Stanford University in 1974, Dr. Swanson studied techniques for solar-electric power generation including thermophotovoltaic energy conversion. His areas of research have generally involved investigation into the semiconductor properties of silicon relevant for better

understanding the operation of silicon solar cells. This has included studies of heavy doping effects, surface recombination, minority carrier transport, gettering, defect recombination kinetics, Auger recombination, and light-trapping. These studies have helped pave the way for steady improvement in silicon solar cell performance. Dr.

Swanson and his group conceived and developed the point-contact solar cell, laboratory versions of which achieved 28% conversion efficiency under concentrated sunlight and 23% under one-sun. In 1991, he founded SunPower Corporation. SunPower solar cells powered Honda to victory in the 1993 World Solar Challenge, and recently powered NASA's high altitude solar powered airplane, Helios, to 96,500 feet, a record altitude for any non-rock- et aircraft.

*John D. Meakin
University of Delaware
Newark, DE*

EDS Members Named Winners of 2002 IEEE Medals

Two EDS members won 2002 IEEE medals. Dr. Herbert Kroemer won the IEEE Medal of Honor and Dr. Yoshio Nishi was the IEEE Robert N. Noyce Medal.

IEEE Medal of Honor

"For contributions to high-frequency transistors and hot-electron devices, especially heterostructure devices from heterostructure bipolar transistors to lasers, and their molecular beam epitaxy technology."

Dr. Herbert Kroemer is a true pioneer in the field of physics and in the technology of semiconductor and semiconductor devices. His work in heterostructure-based transistors has furthered the development of the cell phone and other wireless communications technologies.

When Dr. Kroemer applied the heterostructure principle to semiconductor lasers, it allowed them to operate continuously at room temperature. This advance paved the way for the development of the semiconductor lasers used in CD players, fiber optics and other applications. It also is central to non-laser light-emitting diodes (LEDs), now found in most new U.S. traffic signals. His Nobel Prize-winning work was published in a 1963 paper, "A Proposed Class of Heterojunction Injection Lasers," in the *Proceedings of the IEEE*.

Dr. Kroemer originated the concept of the heterostructure bipolar transistor in the mid-1950s while with RCA Laboratories in Princeton, N.J. From 1959 to 1966, his work with Varian Associates, Palo Alto, Calif., yielded the invention of the double heterostructure laser and his seminal paper on the topic. He also worked on microwave device problems, and, in 1964, was the first to publish an explanation of the Gunn Effect. Since 1976, he has been with the University of California, investigating molecular beam epitaxy, materials research and solid-state physics.

He is a Fellow of the IEEE and the American Physical Society, and a Foreign Associate of the U.S. National Academy of Engineering. He has received numerous awards, including the IEEE J. J. Ebers and Jack Morton Awards. A native of Germany, he received a doctorate in physics from Germany's University of



Herbert Kroemer

Göttingen, and holds honorary doctorates from the Technical University of Aachen, Germany; the University of Lund, Sweden; and from the University of Colorado. He received the 2000 Nobel Prize in Physics, and, in 2001, Germany's Bundesverdienstkreuz (Order of Merit). Dr. Kroemer is the author or co-author of more than 280 publications.

IEEE Robert N. Noyce Medal

"For strategic leadership in global semiconductor research and development."

Dr. Yoshio Nishi has blazed an exceptional trail in the field of semiconductor research and development.

During his two decades of leadership with Toshiba, from 1962-1982, he pioneered such strategies as R&D and production collocation, and overlapping, staggered R&D teams, which resulted in highly efficient technology development and delivery, and led Toshiba to the top manufacturer of DRAM. His revolutionary concept of pre-competitive partnership continues to allow the semiconductor industry to share risk and cost. He also led the development teams responsible for the world's first mass-produced 1-Mbit CMOS DRAM, 256k CMOS SRAM. These advances led to the global shift in VLSI technology from nMOS to CMOS.

At Hewlett-Packard, from 1986-1995, his high-performance CMOS team developed 0.8 and 0.5 micron technologies, which enabled the company to commercialize the world's fastest CMOS RISC machines. As Senior Vice President and Director of the Research and Development Semiconductor Group at Texas Instruments, Dr. Nishi has continued to advance the industry through collaborative initiatives such as International Sematech, Semiconductor Research Corporation (SRC) including university research, and also brought TI up to the leading position in silicon technology.

An IEEE Fellow, Dr. Nishi has published more than 120 papers. He has written and co-authored several books and holds more than 50 patents. His honors include the IEEE Jack A. Morton Award.



Dr. Yoshio Nishi

JERRY WOODALL RECEIVES THE NATIONAL MEDAL OF TECHNOLOGY

On May 9, 2002 President George W. Bush announced that **Jerry M. Woodall** is one of the National Medal of Technology Laureates for 2001. This medal is the highest honor in technology in the United States. The National Medal of Technology was established by Congress in 1980 and recognizes men and women who embody the spirit of Ameri-



Jerry M. Woodall

can innovation and have advanced the nation's global competitiveness. Jerry is an active member of the Electron Devices Society and is the C. Baldwin Sawyer Professor of Electrical Engineering at Yale University in New Haven, Connecticut.

Jerry is a pioneer in the research and development of compound semiconductor materials and

devices. The citation for this award reads as; "For the invention and development of technologically and commercially important compound semiconductor heterojunction materials, processes, and related devices, such as light-emitting diodes, lasers, ultra-fast transistors, and solar cells."

Jerry became a Fellow of the IEEE in

continued on page 28

EDS DISTINGUISHED LECTURER PROGRAM — LECTURERS RESIDING IN ASIA & PACIFIC

The EDS Distinguished Lecturer Program exists for the purpose of providing EDS Chapters with a list of quality lecturers who can potentially give talks at local chapter meetings. To arrange for a lecture, the EDS chapters should contact the Distinguished Lecturer directly. A general guideline for the visit, but not the absolute rule, is that the lecturer should be able to include the meeting site with an already planned travel schedule at a small incremental cost to the travel plan. Alternatively, a prior coincident travel plan would not be required if the lecturer is already located within an approximate fifty mile radius of a meeting site. Although the concept of the program is to have the lecturers minimize travel costs by combining their visits with planned business trips, EDS will help subsidize lecturer travel in cases where few/no lecturers will be visiting an area and/or a chapter cannot pay for all the expenses for a lecturer trip. For a full listing of EDS Distinguished Lecturers and travel plans please contact Laura Riello of the EDS Executive Office (Tel: 1-732-562-3927, Fax: 1-732-235-1626, E-Mail: l.riello@ieee.org).

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E-Mail: s.asai@ieee.org Fax: +81 3 3214 3025
-Microelectronic Challenges - Microscopic Frontiers in Macroscopic Perspective

SIMA DIMITRIJEV Tel: +61 7 3875 5068
E-Mail: s.dimitrijev@me.gu.edu.au Fax: +61 7 3875 5198
-Development of Gate Oxides on SiC
-Issues and Trends in Microelectric Education

MASAO FUKUMA Tel: +81 42 771 0621
E-Mail: m.fukuma@ieee.org Fax: +81 42 771 0897
-Device Technology for sub-100nm VLSIs
-New Architecture and Circuits for Low Power and High Performance Processors

KEN-ICHI GOTO Tel: +81 462 50 8246
E-Mail: kgoto@flab.fujitsu.co.jp Fax: +81 462 50 8804
-High Performance Sub-100nm CMOS Technology
-Laser Thermal Process for Ultra-Low Contact Resistance
-Decaborane Ion Implantation Technology for Shallow Junction
-Co Salicide Process and CoSix Spike Leakage Mechanism

MARTIN A. GREEN Tel: +61 2 9385 4018
E-Mail: m.green@unsw.edu.au Fax: +61 2 9662 4240
-Photovoltaic Devices and Systems
-High Efficiency Silicon Solar Cells
-Low Cost Silicon Solar Cells
-Future Applications of Solar Cells

YOSHIAKI HAGIWARA Tel: +81 3 5435 3610
E-Mail: yoshiaki.hagiwara@jp.sony.com Fax: +81 3 5435 3803
-Electronics? For Home Entertainments
-VLSI Technology Behind Digital Consumer Appliances
-Introduction to Physics of Semiconductor Devices (Please see <http://www.ssdp.caltech.edu/aphee183/>)
-Measurement Technology for Home Entertainment LSI Chips

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-Surface and Interface Structures of Ultrathin Silicon Oxides

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-Ferroelectric Random Access Memories
-Si-Based Heteroepitaxial Devices

HIROSHI IWAI Tel: +81 45 924 5471
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-Silicon MOSFET Scaling Beyond 0.1 Micron

CHENNUPATI JAGADISH Tel: +61 2 6125 0363
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-Quantum Well Intermixing for Optoelectronic Device

Integration
-Quantum Well Infrared Photodetectors
-High Power Semiconductor Lasers

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-Power GaAs Heterojunction FET with a Field Plate
-GaN- Based Heterojunction FET for High-Power Applications

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-High Voltage Devices and Ics for Smart Power Applications
-Driving Methods and Circuits for Flat Panel Displays
-Signal Integrity of Very High-Speed VLSI Systems

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-RF CMOS Device Modeling
-Polyolithic Integration of Electro-Acoustic RF Circuits Using QoS (Quartz on Silicon)
-Technology for True Single Chip Radio

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-High Speed and Lower Power on CMOS Design: Processes to System Architecture
-High Performances for Deep Submicron CMOS/SOI Technology
-Modeling for CMOS Devices and Circuits
-Fundamentals to HCI Mechanism, Measurement and Modelings
-VLSI/ULSI Implementation for ATM and CDMA Systems
-Understanding of Submicron ESD and Failure Mechanism
-Design of iMEMS Chip with Wise Sensor for Automobile, Medical & Aerospace Applications
-Low Power Communication Circuits and Systems (MPEG or ADSL, etc.) for Multimedia Use
-Low Power Mixed-Mode Circuits for RISC and/or DSP Core

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-Semiconductor Parametric Instrumentation and Systems
-Semiconductor Device Characterization and Parametrics
-Semiconductor Device Reliability
-Advanced Semiconductor Device Characterization

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-Photovoltaic Concentration, Physics and Engineering
-A Renewable Energy Scenario for the XXI Century

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-Global Integration Technology
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-Applications of Ferroelectric RAM for Logic Devices
-Modeling of Tunnel Oxide Current in Island Structure
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E-Mail: omuray@ipcku.kansai-u.ac.jp Fax: +81 6 6388 8843
-Quantum Mechanical Short-Channel Effects in Scaled SOI MOS-FETs and Design Issues
-SOI Insulated-Gate pn-Junction Devices: Operations, Performance and Applications
-Ultimate SOI Device Structures: Is Double-Gate SOI Device Truly an Ultimate Structure
- RADIVOJE POPOVIC** Tel: + 41-21-693 38 53
E-Mail: radivoje.popovic@epfl.ch Fax: + 41-21-693 66 70
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-Integrated Hall Sensor/Flux Conventional CMOS Technology
-Avalanche Photodiode in Conventional CMOS Technology
- M.K. RADHAKRISHNAN** Tel: +65 3579363
E-Mail: radhakrishnan@ieee.org Fax: +65 3858821
-Physical Analysis of Ultra Thin Gate Oxide Breakdown
-Building in Reliability and Failure in Analysis Challenges in Sub-Micron Devices
-Failure Mechanism Study of Sub-Micron Devices
-ESD Induced Failures in Devices and the Analysis
- S.C. SUN** Tel: +86 360 1818
E-Mail: sunsc@charteredsemi.com Fax: +86 362 2937
-CVD and PVD Transition Metal Nitrides Diffusion Barriers for Copper Metallization
-RTCVD of Nitrogen Doped Polysilicon for Dual Gate CMOS Applications
- KUNIO TADA** Tel: +81 45 339 4274
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-New Semiconductor Photonic Devices for Optical Communication and Photonic Switching
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-Current Mode Analog Circuit for Low Power Signal Processing
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-Reliability of MOS Transistors with High-K Dielectrics
-SOI MOSFETS for Analog Applications
- HISATSUNE WATANABE** Tel: +86 44 856 2009
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-Ion Implantation Processing Issues for Compound Semiconductors
-Gettering of Metals to Cavities: Device Prospects
-Implantation Processing of Gallium Nitride
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-Nanotechnology
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-MOSFET Compact I-V Modeling for Deep-Submicron Technology Development
-Hetero-Material Gate Field-Effect Transistors (HMGFET's)
-Mixed-Signal Multi-Level Circuit Simulation: An Implicit Mixed-Mode Solution
-Subpicosecond Electrical Pulse Generation by Nonuniform Gap Illumination

EDS Permanent Membership Option

EDS members are currently being offered the option of making a one-time payment of \$30 to become a "permanent" member of EDS. The only requirement to become a permanent EDS member (besides the \$30 fee) is to maintain your IEEE membership.

Current IEEE and EDS members are able to request this option via their 2003 IEEE membership renewal bill. IEEE members who are not members of EDS can also use their 2003 renewal bill to obtain permanent EDS membership. In addition, non-members of the IEEE are also able to request this option by completing the 2003 IEEE/EDS membership application form. We encourage you to take advantage of this EDS offering and benefit. This option is not available to IEEE students or EDS affiliate members.

The 2003 renewal cycle will be the final year that the EDS Permanent Membership option will be available, as it is being discontinued beginning in 2004. Please note that the provision of Permanent Membership will be grandfathered for all current EDS Permanent Members (including those in 2003).

IEEE-EDS DL/Partner Program Visit Report

by Vijay K. Arora
for Chapters in Nizhny Novgorod, Moscow,
Saratov, and St. Petersburg
May 30-June 15, 2002

Professor **Vijay K. Arora**

visited Russian Chapters of the Electron Devices Society. His visit started with a British Airways flight for Moscow on Thursday, May 30, 2002, arriving in Moscow, Friday, May 31, 2002 4:05 PM. He was met by Basil Boyarinov, a student from the State University of Nizhny Novgorod, at Moscow airport and was assisted for an overnight train journey to Nizhny Novgorod where he was transferred to Hotel Oktyabrskaya for a weekend rest and local sightseeing. Professor Yuri Belov was his host who was gracious to coordinate the program with other visited chapters. Technical program started with a visit on Monday, June 3, 2002 to the Institute of the Physics of Microstructure (Russian Academy of Sciences) where Professor Vladimir F. Dryakhlushin had arranged a full-day program at the Institute. Professor Arora gave a seminar entitled "High-Field Transport in Quantum-Confined Systems." Rest of the day was spent interacting with scientists at the Institute with extensive range of research programs. The laboratory facilities at the Institute are really praiseworthy given the limited resources available to the scientists with meager salaries. Professor V. A. Kozlov had an extensive discussion on his research on hot electrons and high frequency devices.

The following day, Tuesday, June 4, 2002, was spent at the Institute of Physical Engineering of Nizhny Novograd State University where he addressed the audience on "Quantum Engineering of Nanoelectronic Devices." After the seminar Professor O. N. Gorshkov, Director of the Institute, apprised Professor Arora the scientific programs that are in place and those that are under consideration by the Institute. Professor Arora also met with the officers of the joint chapters to learn about their concerns and ways to enhance membership in the region. It was



Vijay K. Arora

brought to the notice that even with EDS subsidy and low-income rates, the membership fees are not affordable for most scientists in the area. Perhaps, EDS AdCom can address this problem so that the professional activities in all over Russia can be enhanced in all areas of interest to the EDS and its sister societies.

On June 5, Professor Arora, accompanied by Vice-Chair of the Chapter, Dr. Alexander Bykadorov, traveled to Moscow, arriving there early morning of June 6, Thursday. Professor Vladimir G. Mokerov kindly welcomed Professor Arora to Moscow by sending two of his associates to receive him. After a breakfast meeting with scientists there, he met Professor Vadim Kaloshin, the Chair of the Joint Chapter, and discussed with him the ways to enhance the society's activities and its membership. A seminar entitled "Quantum Engineering of Nanoelectronic Devices," was organized at the Institute of Radio Engineering and Electronics (Russian Academy of Sciences) at the old campus of Moscow State University. After a quick overview of Moscow environments, Professor Arora was seen off for travel to Saratov where he was welcomed by Professor Michael Davidovich, Chapter Chair and transferred to Hotel Volga in the Center of Saratov City in the early morning of June 7, Friday. The seminar on Quantum Engineering, with simultaneous translation in Russian was given at Saratov State University. After a weekend of social meetings and sightseeing visits, a seminar entitled "Strategic Leadership for Management of Technology and Innovations," with simultaneous translation in Russian was given on June 10, Monday, to the faculty and students of Saratov State Technical University.

Professor Michael Davidovich very kindly accompanied Professor Arora to Moscow by a night train on June 10, arriving early morning on June 11 in Moscow where he had second rendezvous with the scientists at Moscow State University. Professor Davidovich and Arora left same night by train to St. Petersburg, where they were welcomed by Professor Margarita Sitnikova, co-chair of the Chapter, on June 12 and transferred to the Hotel of Electrotechnical University. June 12 was for rest and sightseeing. Professor Svetlana Zubko accom-

panied Professor Arora for various points of interest in St. Petersburg. On June 13, Thursday, Professor Arora gave a series of lectures on the following topics at St. Petersburg Electrotechnical University: Quantum Engineering of Nanoelectronic Devices, Integrated Circuit Engineering, Hot Electrons: A Myth or Reality?, and The Role of Physical and Behavioral Sciences in the Development of Strategic Technologies in Nano/Micro-Electronics. On June 14, Professor Arora visited the museum of Professor Popov who was an earlier pioneer in radio communications. He concluded his trip of Russian Chapters by leaving on June 14 by train to Moscow where he was assisted by Professor Mokerov for transfer to the Moscow airport.

All seminars talks were preceded by an introduction of EDS and its various resources for encouraging audience to be partner with EDS. For this purpose, the set of transparencies entitled "Overall Structure And Activities," were used that were provided by the EDS.

Professor Arora left many friends behind in Moscow. The hospitality provided by all hosts was really commendable. The trip was professionally fulfilling and rewarding in understanding the professional life behind once what used to be the iron curtain. He is thankful to Professors Yuri I. Belov, Vladimir F. Dryakhlushin, Oleg N. Gorshkov, V. A. Kozlov, Vadim A. Kaloshin, Vladimir G. Mokerov, Michael Davidovich, Margarita Sitnikova, and Svetlana Zubko for excellent hospitality. Professor Vladimir F. Dryakhlushin took the pains for applying for my entry visa to Russia without which this visit was not possible. Professor Arora owes a special word of gratitude to him for this gesture. Nizhny Novgorod Chapter, chaired by Professor Belov, covered all hotel costs, local transportation, and most meals. Moscow Chapter, courtesy of Professor Mokerov, provided all transportation needs in Moscow as well as meals while at the Institute. Professor Kaloshin provided essential assistance for visiting Kremlin. Saratov Chapter, chaired by Professor Davidovich, provided local transportation. St. Petersburg Chapter, co-chaired by Professor Sitnikova, provided most of the local transportation and lunch on the day of the seminar. All these courtesies are greatly appreciated.

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

Richard Allen
Raj B. Apte*
John R. Beresford*
Navakanta Bhat
Richard C. Blish II
Jan Bosiers
Robert S. Chau
Chang-Lee Chen
Rebecca Cheung
Jon A. Christensen*
Nikhil Ranjan Das
David L. Dickensheets
Lech Dobrzanski
Peter N. Erstrand*
Mehdi Fardmanesh
Patrick J. French
Xinghua Fu*
Julian William Gardner*
Gerard Ghibaudo
Israel Greiss

Timothy P. Hogan*
Armando Iturralde*
Joerg Jasper
Kevin L. Jensen*
Jianfei Jiang
Shigeo Kawasaki
Aurangzeb Khan*
Muhammad Asif Khan
Jongdae Kim
Arno G. Kostka
Chanho Lee*
Duk-Dong Lee
Ruigang Li*
Curtis C. Ling
Tuvia Liran
Eric M. Mair*
Santiago Marco*
Sean P. McAlister*
Kyung-Youl Min
S.J. Neil Mitchell*

Saeed Mohammadi
Sani R. Nassif
Eric F. Nicol*
Reginald Perry*
Kenneth J. Petrosky*
Matthew Rowley
Chris Seams
Shahin Sharifzadeh
Zheng John Shen
Walter J. Snoeys
Paul C.F. Tong*
Richard Van Hoesen Booth
Rama Venkat
Sorin P. Voinigescu
Shanhong Xia
Yong Zhong Xiong
Terence K.S. Wong*
Xinzhang Wu
Viktor Zekeriya*

* = 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. In addition, a letter will be sent to employers, recognizing this new status.

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

EDS MEMBERSHIP FEE SUBSIDY PROGRAM (MFSP)

IEEE policy currently allows a 50% discount on IEEE dues and one society membership for any individual whose annual salary is less than US\$11,000. This offering is referred to as the Minimum Income Special Considerations Option. The Electron Devices Society now has a new program for its chapters called the Membership Fee Subsidy Program (MFSP), which will both complement the IEEE Minimum Income offering and provide a significant additional benefit for qualified individuals.

With the EDS Membership Fee Subsidy Program, EDS will pay the other 50% of the IEEE and EDS dues that are not covered by IEEE for individuals qualifying for the Minimum Income option for 10 individuals per chapter. These individuals can be either prospective new students/members or existing students/members. 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 coordinate the obtaining and submission of the IEEE/EDS membership application forms (for prospective new members) and/or IEEE membership renewal bills (for existing members) for the individuals he/she is proposing to be covered by EDS. The Chapter Chair should also contact the EDS Executive Office to advise of their participation in the program. All application forms and renewal bills should be mailed to the EDS Executive Office. Once received, the application forms and bills will be coded by the Executive Office with a special account number and submitted to the pertinent IEEE department for processing.

For a given year of participation in the EDS MFSP, a chapter must replace a min-

imum of the ten members who were paid for by EDS in the previous year. Also, a given member will only be allowed to have his/her memberships paid for by EDS a maximum of two times. These two policies will avoid having the same members receive the benefit each year and encourage new membership. These EDS members receiving the MFSP benefits are encouraged to participate in chapter activities and promote its growth.

Aside from being a program for existing EDS chapters, the EDS Membership Fee Subsidy Program is also an extremely good means to help facilitate the launching of new chapters in low income geographical areas. For any questions concerning the program, please contact Laura Riello (l.riello@ieee.org) of the EDS Executive Office.

*James B. Kuo
EDS Membership Chair
University of Waterloo
Waterloo, Canada*

In the memory of Georges Charitat

It is with a profound sadness that we acknowledge the passing of Georges Charitat, Research Director at LAAS-CNRS, happened on April 23rd, 2002, in a traffic accident during a business trip to Romania.

Georges Charitat was born in 1956 in Chambon-Feugerolles (France). He graduated from INSA (Lyon-



France) in 1979 in the field of material physics. He joined LAAS-CNRS in 1981 to complete a Ph.D. thesis previously started at LETI (Grenoble, France). He defended his Ph.D. thesis "Oxidation enhanced diffusion of segregated boron dopant at Si/SiO₂ interface" in 1982.

In 1984, he joined CNRS (Centre National de la Recherche Scientifique) as a full-time researcher and started working at LAAS-CNRS (Laboratoire d'Analyse et d'Architecture des Systèmes) on high voltage power MOS transistors modelling. In 1990, he received the State Doctorate degree on the modelling and realisation of high voltage planar components. In 1992, his research team was awarded the first "Michel Benech" prize from Midi-Pyrénées

Region Council for the "SIPOS high voltage planar components" project. In 1995, he was part of the research team nominated by CNRS and "Nouvel Economiste" newspaper for the national prize of the best industry-university cooperation.

Since 1995, Georges Charitat was the manager of the "Power Integration and

Devices" research Group. He was very active in the collaboration with the industry and particularly with Motorola. He contributed to the set-up of a new planar high voltage platform: he developed a simulation tool, BIDIM2 that permits to define high voltage design rules for the use of a distributed resistor based on SIPOS material. This approach allowed reducing by 9 months the introduction of new products and increased Motorola market share from 5% to 30% on the light ballast market. Georges was also pioneering on RESURF technology. Motorola implemented this concept on SMARTMOS platform.

Georges was passionate by education and pedagogy. He was giving lectures for the Master Science degree in

the field of IC's technology and power device physics. He also gave tutorials in the same field to the industry (ST Microelectronics and Motorola). Georges has given a remarkable contribution to the development of a number of scientific events dealing with power semiconductors in Central & Eastern Europe, such as MIEL conference in Nis (Yugoslavia), ISPS in Prague (Czech Republic) and CAS in Sinaia (Romania).

He was an active member of the IEEE Electronic Device Society and committee member of a number of international conferences organized under the sponsorship of IEEE EDS, such as ISPSD since 1992, EPE, MIXDES,... He was the general chairman of the ISPSD'2000 organized in Toulouse-France. He has been the advisor of 12 Ph.D. theses and published 20 journal papers and 75 conference papers.

Georges Charitat is survived by his wife Claude and three young daughters Ondine, Viviane and Flore. On behalf of his colleagues and friends from LAAS-CNRS, and all the power devices and circuit community, we offer our deepest condolences to them.

*Dr. Marise Baffeur
Research Director, CNRS
Toulouse, France*

ANNUAL CD ROM PACKAGES AVAILABLE TO EDS MEMBERS

The EDS CD ROM Package includes all issues for a given year of Electron Device Letters (EDL) and Transactions on Electron Devices (T-ED), as well as the proceedings of the given year of the International Electron Devices Meeting (IEDM). The latest package (2001) includes additional material, i.e., all the manuscripts from 1996 (first year) to 2001 (last year) of the fully electronic IEEE publication Transactions on Technology Computer Aided Design (TCAD). The CDs have an easy to use interface and are searchable by author, title and key word. All materials were published using Adobe Acrobat Technology. Included on the CD ROM are versions of Acrobat Reader for Microsoft Windows, Apple Macintosh and UNIX.

Currently, EDS has five CD ROM Packages available to its members, i.e., 1997, through 2001. Each is available for US \$25.00 (US \$19.00 for students). If you would like to receive an order form for any of these products, please contact the EDS Executive Office (contact information provided on page 2).

For the 2002 CD ROM Package, you can request it in advance as a subscription via your 2003 IEEE Membership Renewal Bill when you receive it this Fall. The 2002 EDS CD ROM Package will be available in June 2003. Once you sign-up to receive the 2002 package via your Member Renewal Bill, you will automatically be billed each year for subsequent versions of the package.

*Renuka P. Jindal
EDS Publications Chair
Agere Systems
Murray Hill, NJ, USA*

Regional and Chapter News

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

ED Washington/Northern Virginia

The Washington/Northern Virginia Chapter of the Electron Devices Society held two meetings in the spring of 2002. On April 4, Dr. Nathan Swami, the Director of the Initiative for Nanotechnology in Virginia and a Professor at the University of Virginia, presented a talk entitled "INanoVA – The Nanotechnology Hub of Virginia." On May 30, Dr. Leda Lunardi, an IEEE EDS Distinguished Lecturer from the Optical Networks Research group at JDS Uniphase Corp, gave a presentation on "Semiconductor Devices for Fiber-Optic Communication Systems." Both meetings took place at George Mason University in Fairfax, VA.



Dr. Nathan Swami addressing the EDS Chapter Meeting

Dr. Swami's talk focused on the scope of nanotechnology with special emphasis on what it can bring to the state of Virginia. Nanotechnology has been heralded as the discipline that will transform science, society, and businesses to deliver novel materials, machines, and products that are currently unavailable, and usher in a "Nanotechnology Age" to follow the current "Information Age." In order to ensure that Virginia is poised to capitalize on this benefit, the Initiative for Nanotechnology in Virginia (INanoVA) serves

to promote the growth of nanotechnology research and business development in the Commonwealth of Virginia. The recently founded INanoVA acts to enhance collaborative research, examine technology transfer and workforce development issues, and work as an information base for the nanotechnology community in Virginia. Features of the INanoVA information base (<http://www.INanoVA.org>), the INanoVA nanobusiness symposium (<http://www.inanova.org/symposium.htm>), and research programs were described.

Dr. Lunardi presented an overview of Semiconductor Devices for Fiber-Optic Communication Systems before a crowded room of engineers from a variety of IEEE Societies, including EDS, MTT, and Women in Engineering. Her talk focused on how the race for faster optical communication systems has relied on the fiber optics "infinite" bandwidth while putting aside the need for the essential devices that bring data to the electrical domain. Dr. Lunardi reviewed some important building blocks on optical communication systems such as state-of-the-art heterojunction-based integrated circuit technologies that have potential applications for time division multiplexing (TDM – "one fast color") and wavelength division multiplexing (WDM – "many slow colors"). Electronic systems play a vital role in the "infinite" optical bandwidth. Disruptive technologies (i.e., new devices) will likely drive future applications of fiber-optic systems.



Dr. Leda Lunardi, EDS Distinguished Lecturer

Submitted by Michael Hurt
The report of Mid-Hudson Valley EDS Chapter published in the July 2002 issue of the newsletter was submitted by Michael Hargrove.
Editor – Murty S. Polavarapu

International Vacuum Electronics Conference (IVEC)

-by William L. Menniger

The Third IEEE International Vacuum Electronics Conference (IVEC) was held in Monterey, California, April 23-25, 2002. With nearly 400 attendees and over 200 presented papers, IVEC 2002 established a new Conference record.

Vacuum Electron Devices (VEDs), which include microwave tubes, essentially involve the extraction of RF energy from free electrons in a vacuum. VEDs are powerful, efficient, reliable and affordable devices which are used in a wide range of modern and legacy system applications. Some of these applications include military/defense, space and ground communications, radar, particle accelerators, plasma heating, homeland security, meteorology, displays, and food processing. IVEC 2002 General Chairman, Dr. Richard True of Northrop Grumman Electron Devices, San Carlos, California (formerly Litton) had this to say after the meeting: "The future for vacuum electronics and vacuum electron devices appears indeed bright."

IVEC 2002 opened with a Plenary Session in which seven distinguished scientists presented talks on a wide area of vacuum electronics science. In addition to the plenary talks, there were ten keynote talks (including two invited papers) presented in the 24 IVEC Oral Sessions. There were also two large Poster Sessions in which authors had a chance to present their work and interact with interested participants on a more personalized basis.

You can read more about the material presented at the conference by visiting the IVEC 2002 website, <http://ivec2002.org>, where a more complete conference summary is posted along with numerous informative links. You can reference the digest of IVEC 2002 abstracts under IEEE Catalog Number 02EX524, ISBN 0-7803-7256-5, Library of Congress: 2001095310. In addition, Dr. Dan Goebel, VED Editor of the IEEE Transactions on Electron Devices (T-ED) has asked authors to submit IVEC papers to IEEE T-ED, so watch there for upcoming publications from IVEC 2002.

IVEC is scheduled to repeat every other year in the USA, rotating to

Europe and Asia every fourth year. IVEC 2003 will be held in Seoul, Korea, on May 28, 29, and 30 and will be held in tandem with the International Conference on Plasma Science (ICOPS). In 2004, IVEC will return to Monterey, and in 2005 it will be held in Noordwijk, The Netherlands.

Editor – Sunit Tyagi

Special EDS Region 9 Chapters Representatives Meeting in Aruba

The Fourth International Caracas Conference on Devices, Circuits and Systems (ICDCS 2002) was host to a special EDS Region 9 Chapters Representatives Meeting, which took place on 17 April at Aruba's Seaport Conference Center. This special meeting was convened by the Electron Devices Society Subcommittee for Regions & Chapters - Latin America (SRC-LA) to discuss strategies for promoting membership and professional activities in the region.

The meeting was moderated by SRC-LA Chair Magali Estrada del Cueto, and was attended by delegates from several Latin American countries, as well as other EDS members and officers.

Among the initiatives that were discussed as part of the drive by SRC-LA to increase the number of active chapters are: A new Student Joint chapter in Caracas, Venezuela, a new chapter in Guadalajara, Mexico, and a new Student IEEE Section / Joint chapter in Veracruz, Mexico.

Other ongoing activities that were discussed included: A presentation by Rodolfo Quintero, Mexico Chapter Chair, about the organization of a colloquium to be held in November at the city of Puebla, with the participation of three invited DLs. Jacobus Swart, Chair of the recently activated South Brazil Chapter, illustrated some organizational aspects of the "SBMICRO" conference periodically held in Brazil. Miguel Alemán and Luis Resendiz of Mexico's CINVESTAV-IPN Student Branch Chapter, together with their chapter's Advisor, Antonio Cerdeira, explained the actions they are undertaking to interest undergraduate students in the area of electron devices by encouraging their participation in chapter activities.

Some of the initiatives that were decided are: actions to increase the number of Senior Members and DLs in the region, and to promote collaboration with other regions, such as by advocating R-9 DL travel to other regions.



Ilesanmi Adesida, Chair of the Educational Activities Committee; Ninoslav Stojadinovic, SRC Region 8 Chair; and Siegfried Selberherr, of the Simulation Committee, were present in the deliberations and actively shared their views and experience. Hiroshi Iwai, EDS Vice President and Regions/Chapters Chair, delivered the final words, stressing the importance for Region 9 chapters of using the facilities the Educational Activities Committee has to offer, the benefits of the DL program, and the Chapter Partners program.

Report of Panel Discussion celebrated at Aruba

A panel discussion session entitled "21st Century Electronics Engineering Education in Latin America: Academic Objectives and Industry Needs" was successfully held on 18 April 2002 at Aruba's Seaport Conference Center in conjunction with ICDCS. The panel was headed by Dr. Jesús Finol (Motorola Semiconductor Products Sector's Chief Scientist and Director of Technology for Latin America and the Caribbean) and the invited panelists were: Dr. Roberto Callarotti (Head of the Technology Center, Venezuelan Institute for Scientific Research), Prof. Ramiro Jordan (New Mexico University, USA and Executive Director of Iberoamerican Science and

Technology Education Consortium), Dr. Roberto Murphy (Graduate Programs Director, "Instituto Nacional de Astrofísica, Óptica y Electrónica", Mexico), Dr. Ricardo Suárez Gartner (Consultant, formerly Manager of Platform Technologies, Platform Architecture Lab, INTEL Corporation, USA), Prof. Víctor Guzmán (Universidad Simón Bolívar) and Prof. Santiago Navarro (President of Universidad Politécnica del Ecuador). New high technology enterprises in wireless communications, wireless internet, embedded system solutions, among others, are depleting the world market of technical human resources. This trend has already created a demand for over 800,000 specialists in the USA alone. In the semiconductor industry, for example, there exists



From left to right: Roberto Callarotti, Ricardo Suárez Gartner, Jesús Finol, Víctor Guzmán, Roberto Murphy, Ramiro Jordan and Santiago Navarro.



From left to right: Toshiro Hiramoto, JuinLiou, Tor Fjeldly, Adelmo Ortiz-Conde, Michael Shur and Hiroshi Iwai.

a gap of over 58 millions transistors between the levels of integration that current technology permits and the levels of integration which available human resources are able to provide. This is a reflection of the lack of design know-how resources. As a result, local talent in developing countries has become a priority as demonstrated by the heavy investment made by major corporations in Asia and Latin American Regions. Because of cultural reasons and less competition, the native regional work force is generally more stable, resulting in lower turn-over rates. Thus, investing in developing countries is becoming attractive for major corporations. The question arises, however, as to whether the kind of education and training being presently provided at most Latin American institutions is adequate for

the needs of these high technology houses. Although present graduating engineers in Latin America have received first class traditional technical and scientific training, they are not prepared to tackle the complexity of future systems.

Report of ICCDCS-2002

The Fourth International Caracas Conference on Devices, Circuits and Systems (ICCDCS 2002) was successfully held from 17 to 19 April 2002, at Aruba's Seaport Conference Center. ICCDCS is being held biannually since its first edition (Caracas, 1995) at different locations within the Caribbean basin. It's objective is to serve as a significant technical forum to initiate and renew direct personal relations for sharing relevant technical information among professionals involved in the disciplines related to electron devices and their circuits and systems applications.

The IEEE provides the conference's professional framework, through the responsibility assumed by Venezuela's CAS/ED/PEL Chapter for its continuous organization, and through the technical co-sponsorship provided by the ED and CAS Societies. This solid foundation was complemented in this edition by the support of three prestigious academic institutions: Simón Bolívar University (Venezuela), the University of Central Florida (USA), and CINVSTAV-IPN (Mexico); and from two corporations: Intel and Motorola.

Among the more than 130 papers submitted, about 100 were selected and presented at 16 technical sessions comprising the program's three parallel

tracks. Two excellent Plenary Keynote Addresses opened the program. They dealt with wide band-gap devices and SiGe BiCMOS technology, and were delivered by two distinguished experts in these fields: Prof. Michael Shur (Rensselaer Polytechnic Institute's Center for Integrated Electronics and Electronics Manufacturing), and Dr. David Hareme (IBM Communications Research Development Center). The technical program included a panel discussion session about the future of Electronics Education in Latin America, conducted by a group of experienced panelists headed by Dr. Jesús Finol (Motorola Semiconductor Products Sector's Chief Scientist and Director of Technology for Latin America and the Caribbean).

A special meeting of EDS Region 9 Subcommittee for Regions and Chapters was hosted on the evening of 17 April. The conference's Banquet Address featured Dr. Jesús Palomino (Director of Intel's Design Center in Guadalajara, Mexico) who talked about ASIC design issues.

The fifth edition of this conference will take place during the first quarter of 2004.

For additional information, please visit the conference web site at:

<http://pancho.labc.usb.ve/ICCD-CS2002>. Or request it to: iccdcs@usb.ve, Telephone: +58-212-9064010 Fax: +58-212-9064025.

Adelmo Ortiz-Conde

Intel's Jesús Palomino talks about ASIC design

As part of the activities of the Fourth International Caracas Conference on Devices, Circuits and Systems (ICCDCS 2002), held last April at Aruba's Seaport Conference Center. Jesús Palomino, Director of Intel Design Center in Guadalajara, Mexico, delivered the Gala Banquet Address entitled: "Challenges in ASIC design." In this short informative talk he discussed the types of challenges encountered in the development cycle of integrated circuits, restrictions imposed by technology, complexity and market issues on what is doable, and understanding of those aspects by the development team to succeed in the task.

Editor – Adelmo Ortiz-Conde



Dr. Palomino presented during his informal discussion a description of the experiences on handling projects in Mexico and some important organizational aspects to consider for the development of ASICs

Europe, Middle East & Africa (Region 8)

2002 International Conference on Microelectronics (MIEL)

- by Ninoslav Stojadinovic

The 23rd International Conference on Microelectronics (MIEL 2002) was held on 12-15 May 2002 at Faculty of Electronic Engineering, University of Nis, Yugoslavia. The conference was organized by the IEEE Yugoslavia Section and ED/SSC Yugoslavia Chapter in co-operation with the Faculty of Electronic Engineering and E-Holding Co.-Nis and under the auspices of the Serbian Ministry of Science, Technologies and Development, Yugoslav Secretariat of Development and Science, Yugoslav Academy of Engineering, Yugoslav Society for ETRAN, and City Assembly of Nis.

Two workshops, "Power Devices and ICs" and "Microsystem Technologies", held on May 12, attracted a lot of interest and were an excellent introduction to the main technical program. As in previous years, the technical program consisted of nine sessions: Power Devices and ICs, Microsystem Technologies, Device Physics and Modeling, Opto and Microwave Devices, Device Physics and Technology, Circuit Design, Device Physics and Reliability, Passive Devices, and Semiconductor Physics and Characterization.

There were a total of 37 domestic and 103 foreign participants took part at conference, representing 35 countries from all over the world (Armenia, Australia, Austria, Bulgaria, Canada, China, Croatia, Czech Republic, Estonia, France, Germany, Greece, Hungary, Iran, Ireland, Israel, Italy, Japan, Korea, Macedonia, Mexico, The Netherlands, Poland, Romania, Russia, Slovak Republic, Sweden, Switzerland, Taiwan, Thailand, Turkey, Ukraine, United Kingdom, USA, and Yugoslavia). There were total of 22 keynote invited papers (11 of them by EDS and 3 by SSCS Distinguished Lecturers) and 118 regular papers (58 in oral sessions and 60 posters) presented. The conference proceedings (two volumes, 796 pages) were published through the IEEE Book Broker Program.

The keynote invited speakers were: C.Y. Chang, National Chiao Tung University, Taiwan ("Process-Related Reliability



Prof. Dragan Domazet, Serbian Minister of Science, Technologies and Development, is giving the opening address at MIEL 2002

Issues Toward Sub-100nm Device Regime"), J.-P. Colinge, University of California at Davis, USA ("SOI Devices for 0.1 mm Gate Lengths"), H. Detter, Technical University of Vienna, Austria (iMicrosystems: Research Task, Education Task, Application Fields, Examples"), S. Dimitrijevic, Griffith University, Australia ("Channel-Carrier Mobility Parameters for 4H SiC MOSFETs"), K. Itoh, Hitachi, Japan ("Trends in Low-Voltage Embedded RAM Technology"), C. Jagadish, Australian National University, Australia ("Quantum Well Intermixing for Optoelectronic Device Integration"), E. Kohn, University of Ulm, Germany ("Diamond Technology for Electronics and MEMS: Review of Status and Perspectives"), L. Lunardi, JDS Uniphase Corp., USA ("Semiconductor Device for Fiber Optic Communication Systems"), P. Mawby, University of Wales, United Kingdom ("Advances in Silicon Carbide MOS Technology"), G. Meijer, Delft University of Technology, The Netherlands ("Smart Sensor Interface Electronics"), A. Nathan, University of Waterloo, Canada ("TFT Circuit Integration in α -Si:H Technology"), V. Oklobdzija, University of California at Davis, USA ("Clocking in Multi-GHz Environment"), M. Ostling, Royal Institute of Technology, Sweden ("SiC Device Technology for High Voltage and RF Power Applications"), R. Plana, LAAS/CNRS, France ("MEMS and NEMS Technologies for Wireless Communications"), R. Popovic, Swiss Federal Institute of Technology, Switzerland ("Bridging the Gap Between AMR, GMR and Hall Magnetic Sensors"), E. M. Sankara Narayanan, De Montfort University, United Kingdom ("Innovation and Competition: Are they Crucial in Power Semiconductor Industry? A Market Perspective"), R. Singh, Clemson University,

USA ("Technology Options for Developing Manufacturable Non-Silicon Nanoelectronics"), P. Spirito, University of Naples, Italy ("Thermal Instabilities in High Current Power MOS Devices: Experimental Evidence, Electrothermal Simulations and Analytical Modeling"), J. Van der Spiegel, University of Pennsylvania, USA ("Biologically Inspired Vision Sensors"), H. Wong, City University of Hong Kong ("Recent Developments in Silicon Optoelectronic Devices"), and P. Wong, IBM T.J. Watson Research Center, USA ("Field Effect Transistors-From Silicon MOSFETs to Carbon Nanotube FETs").

Based on the evaluation of the quality of the papers and presentations, three Best Paper Awards were presented to: V. Liberali (University of Pavia, Italy) for an oral paper "Evaluation of Epi Layer Resistivity Effects in Mixed-Signal Submicron CMOS Integrated Circuits"; G. Reeves (Royal Melbourne Institute of Technology, Australia) for a poster paper "Influence of Via Liner Properties on the Current Density and Resistance of Vias"; and N. Nenadovic (Delft University of Technology, The Netherlands) for a student paper "A Novel Vertical DMOS Transistor in SOA Technology for RF-Power Applications". The international scientific journal *Microelectronics Reliability* also awarded the paper "Nature of Hot Carrier Damage in Spacer Oxide of LDD n-MOSFETs" by S. Manhas et al., De Montfort University, United Kingdom.

As is among best traditions of MIEL, the social program of this year's conference issue was particularly rich, with a conference banquet and gala-dinner as highlights. In general, besides the high quality of presentations, MIEL conferences are flavored by the friendly atmosphere and great hospitality of the organizers and people of Nis. This special charm adds to very positive impressions that the participants bring back from MIEL and Nis, and is one of the reasons why one rarely attends MIEL just once: one who comes once, will almost certainly come again. So, we are very much looking forward to welcoming old and new friends at MIEL 2004 in Nis.

ED/SSC Novosibirsk State Technical University (NSTU) Student Branch

-by Alexander V. Gridchin

The activity of our Student Branch through last year is marked with some important events.

The joining campaign 2002 resulted in increasing the amount of women in our Student Branch. As a result, the program 'Women in Engineering' was established. The participation of a delegation of women in the SibEDEM-2002 Workshop (Tomsk, March 2002) is the first event under this program. Also, the joining campaign is allowed to establish the new student group for the Microwave Theory and Technology Society.

In November 2001, the Counselor of the Student Branch, Associate Professor Alexander V. Gridchin, was elected as EDS Newsletter Editor for the Eastern Europe and the former Soviet Union for the term of 3 years. Also, the first meeting of the Establishing Committee for establishing an IEEE Siberian Section was held at NSTU. This meeting joined the representatives of all Siberian chapters and Student Branches. Really, this meeting has allowed the start of good scientific and professional co-operation with these chapters and student branches.

As well, our students attended the 3rd Russian Conference of Young Specialists in Semiconductor Physics, which was held in St. Petersburg in December, 2001. The visit was useful for discussing the advanced technologies in designing the microsystems (MEMS).

The lecture on modern advances in designing the piezoresistive pressure sensors was presented by Associate Professor Alexander V. Gridchin in KAIST (the Republic of South Korea) in December, 2001 with great success.

The annual conference of graduate and postgraduate students 'Days of the science-2002' was held in NSTU in April, 2002 with wide participation of IEEE student members.

Our Student Branch was represented in the Student Branch Congress 2002, which was held in Egypt in May, 2002.

Some students of our IEEE Student Branch participated in the 3rd IEEE-Russian Conference on High Power Microwave Electronics ME-MIA'2001 (NSTU, September, 2001) and in 6th Korean-Russian Symposium KORUS'2002 (NSTU, June, 2002).

The 3rd Siberian Russian Workshop and Tutorial was successfully held at Novosibirsk State Technical; University (NSTU), Novosibirsk, Russia in July 1-5.



The 1st IEEE Siberian Russian Chapter Chairs Meeting (NSTU, November, 2001)

The total number of participants was over 100 and many countries like Russia, Ukraine, the Republic of Belarus, Poland, Germany, the Czech Republic, the Republic of South Korea, Australia, Brazil were represented at this Workshop.

MTT/ED/AP/CPMT/SSC West Ukraine

by Alexander V. Gridchin

The International Conference "Modern Problems of Radio Engineering, Telecommunications and Computer Science (TCSET-2002)" was held in Lviv-Slavsko, Ukraine, February 18-23, 2002. The Conference was organized by the Ministry of Education and Science of Ukraine and Lviv Polytechnic National University (LPNU) and was devoted to the 50th anniversary of Radio Engineering Faculty of LPNU. Technical co-sponsorship was provided by EDS. The Conference Proceedings were published and included in the IEEE Book Broker Program.

174 oral and poster presentations from Bosnia and Herzegovina, Egypt, Columbia, Lithuania, Poland, France, Yugoslavia, Russia, and Ukraine were included in the conference schedule. 120 scientists, including 51 Ph.D. students, took part in the conference.



Mr. Volodymir Ostap receives the Best Young Speakers Award.

The conference sections were devoted to:

- Mathematical Modeling of Signals, Circuits and Fields;
- Methods and Means of Information Selection and Processing;
- Radioelectronic Equipment and Telecommunication Devices;
- Signal and Image Processing in Radioelectronic and Telecommunication Systems;
- Biomedical Devices and Technologies;
- Behavioral Modeling of Semiconductor Devices, Circuits and Systems;
- Information – Computer Technologies and Telecommunication Systems;
- Modern Problems of Training Specialists in the Field of Radioelectronics, Telecommunications and Computer Technology.

The Best Young Speaker Awards were established by the West Ukraine Chapter and presented at the conference. The winter Carpathian Mountains provided good active relaxation for all participants of the conference.

The Organizing Committee thanks everybody who brought their own experience and results of investigations into the creative atmosphere of the conference. For more information, please contact the Conference Chair, Prof. Ivan Prudyus iprudys@polynet.lviv.ua, and the Conference Web site <http://www.polynet.lviv.ua/TCSET2002>.

Editor – Alexander V. Gridchin

ED Poland

As announced in the previous EDS Newsletter, the 9th International Conference MIXDES 2002 was successfully held in Wroclaw, Poland, June 20-22, 2002. The meeting was organized by The Technical University of Łódź, Poland, together with The Wroclaw University of Technology and The Warsaw University of Technology. The conference was co-sponsored by The Institute of Electrical and Electronics Engineers, Inc., Poland Section IEEE – ED & CAS Chapter, REASON - Research and Training Action for System on Chip Design IST-2000-30193 and The Polish State Committee for Scientific Research.

The conference was attended by around 150 scientists from 27 countries. During the conference 5 invited papers, including the paper by the IEEE Distinguished Lecturer Prof. Xing Zhou, and

over 140 regular papers were presented at oral, poster and special sessions.

The conference covered the most important issues in modern electronics. The most interesting presentations, appointed by the session chairmen, were distinguished. Additionally, the special IEEE EDS Polish Chapter Award was presented to B. Calvo, S. Celma, P.A. Martinez and M.T. Sanz for the paper entitled "Novel High Performance CMOS Current Conveyor". All the distinguished papers will be recommended for publication in one of the following journals: "Microelectronics Reliability", "Electron Technology Internet Journal" and "Radioelectronics & Informatics". After the lecture of Prof. Xing Zhou, the IEEE Poland Section held a meeting. The matters concerning the activities of the IEEE Poland section were discussed. Additionally, during the tourist activities, the participants had the chance to learn more about Wroclaw, one of the most beautiful Polish cities.

In order to mark the first decade of the MIXDES conferences, next year's 10th Conference will be held in the home city of the organizers, Lodz, Poland. The Preliminary Call for Papers is already available at <http://www.mixdes.org/downloads/call2003.pdf>. More information about the MIXDES Conferences can be found at <http://www.mixdes.org>.

By - Irina Naidionova

As we informed you earlier in our reports about IEEE MTT/ED/AP Lithuanian Chapter activities it became a good tradition to carry out joint workshops together with IEEE sections from other countries and regions. This year we got into close professional contact with Da Yeh University of Taiwan and IEEE AP/MTT Taipei Chapter. Chair of the Chapter is Prof. Dau-Chyrh Chang.

In April, 2002 the representatives of IEEE MTT/ED/AP Lithuanian Chapter held joint technical workshop at Da Yeh University together with IEEE AP/MTT Taipei Chapter. Speakers Dr. B. Levitas and S. Charchenko "Antenna/RCS/ISAR Time domain measurements".

We would like to inform you that these days a reciprocal joint technical workshop has been carried out in Vilnius, Lithuania on July 3-5. "Time Domain Antenna Measurement". Speaker Prof. Dau-Chyrh Chang from Da Yeh University of Taiwan. Dr. Boris Levitas, Dr. Henryk Alenkovich, Aleksandr Minin, Sergej Charchenko and other specialists of Geozondas company. The workshop was held successfully. Antenna measurement specialists and technicians

attended the workshop. New opportunities of Time and Frequency Domains application in antenna measurement by using equipment of Geozondas company have been discussed.

The next technical workshop should be carried out in Taiwan on August 31. Attendance of 50 engineers and technicians from Taiwan and 5-7 specialists from Geozondas company, Vilnius, is expected. The workshop program envisages demonstration of Geozondas equipment for Antenna Measurement in Time and Frequency Domains.

Editor – Andrzej Napieralski

ED Israel

*Chair Chapter - Prof. Nathan Croitoru,
Secretary - Dr. Gady Golan;*

1. On Sunday, March 17th 2002, at the Holon Inst. of Technology (HAIT) - Holon.

Subject of meeting: "Plane plasma discharge for microelectronics applications", Guest lecturer was Mr. Alex Axelevich from HAIT. Chairmen of the meeting: Prof. Nathan Croitoru and Dr. Gady Golan – 35 people (most of them were students and academic staff) attended the meeting in Holon.

2. On Sunday, June 2nd 2002, at the Holon Inst. of Technology (HAIT) - Holon.

Subject of meeting: "Satellite Communications - Review", Guest lecturer was Prof. Yaakov Gavan from HAIT. Chairmen of the meeting: Prof. Nathan Croitoru and Dr. Gady Golan – 20 people (most of them were students and academic staff) attended the meeting in Holon.

MTT/ED/AP/LEO UK&RI

-by Terry Oxley

Major activities may be summarised as:-

15th to 17th May 2002 — The first Wireless Design Conference (WDC 2002), supported by Agilent Technologies and the local IEEE UK&RI MTT/ED/AP/LEO Chapter, was held at the Business Design Centre, London, UK. This conference organised by CMP Europe the publishers of Microwave Engineering Europe represented a newly launched event. It focused on the subjects that are important to the professional engineer working in the wireless industry; including RF techniques for optical communications. The three-day event incorporated an exhibition.

The first day presented two full-day training courses on the topics of RF Circuit Design and Digital Modulation Formats. The techni-

cal programme included 12 wireless sessions and 4 opto sessions, poster sessions and workshops; the workshops focused for example on such topics as software defined radio, MEMS, wireless networking and RF/optoelectronic packaging. The opening plenary session on the second day included three keynote presentations: "Building blocks for wireless internet" by Esko Jurvanen from Intel Wireless Competence Centre, Stockholm, Sweden; "Wireless access using microwave photonics" by Alwyn Seeds (IEEE MTT-S Distinguished Microwave Lecturer) from University College, London; and "The past, present and future of wireless RF power" by Ray Pengelly from UltraRF, Sunnyvale, CA, USA. Invited papers of the 3rd-day plenary session included: "The future of the wireless information society in Europe" by Dr Jorge Pereira from Information Society (European Commission); "Low-IF transceiver architecture for GSM/GPRS applications" by James Kimery from Silicon Laboratories; "Galileo – new opportunities for location-based services in Europe" by Tony Pratt from Parthus Technologies; and "Why many hands will make light work of 3G" by Paul Bruce from Radioscape.

The conference attracted wide international representation and was considered to be highly successful. Over 100 paper submissions were received in response to the call-for-papers, and the programme incorporated some 85 technical papers (including invited papers and workshops) attracting some three hundred delegates. Next year, the Wireless Design Conference 2003 is planned for M.O.C. Munich, Germany. For further information, please contact Ms Nicola Jedrej E-mail: njedrej@cmp-europe.com, or, Mr David Roberts E-mail: droberts@cmp-europe.com. Also see www.wirelessdesignconf.com.

27th May 2002 - A half-day Photonic Seminar on High-speed Optical Modulators was held at the City University. Four leading experts reviewed the technology and major research and developments in this field; they covered both electro-optic and electro-absorption type modulators, encompassing lithium niobate and semiconductors. Presentations included: "Lithium niobate modulators" by Dr Mike Murphy from JDS Uniphase Corporation; "GaAs/AlGaAs modulations technology for microwave-photonics and high bit-rate telecom applications" by Dr Rob G Walker from Bookham Technology (Caswell); "High output power, low operating voltage 40 Gbit/s electroabsorption modulators" by M J Robertson from Corning Research Centre; "Application of normal-incidence electro-

absorption quantum well modulators" by Prof. Gareth Parry from Imperial College of Science Technology and Medicine, London. Considerable interest was shown by UK industry research groups, and a well attended meeting included representatives from many leading Photonics establishments; e.g. Agilent, Alcatel, Qinetiq, Bookham & Bookhan (Caswell), Nortel, Corning, JDS Uniphase, and ESL Defence, also leading UK Universities and EPSRC. Contact: B.M.A.Rahman@city.ac.uk

1st and 2nd July 2002 - The 3rd IEEE European MIDAS (Mm-wave, microwave and RF, Integrated circuit Design And Simulation) Workshop, organised by the host establishment and the Chapter, was held at TNO-FEL, The Hague, The Netherlands; with the focus on "Active Array Technology - Towards Wideband Integrated Antenna Panels". Following an introduction by the Workshop Chairman Dr Frank E van Vliet, the technical programme of the first day included three 40-minute length papers within a session on "Simulation Needs", and a four 45-minute paper session on "Packaged MMICs"; followed by an evening Reception, a TNO-FEL museum visit, Dinner and a casino visit. The 2nd day technical sessions incorporated four 45-minute papers on "The Future of Module Technology", and a special session on informal presentation and discussion. This was followed by lunch and formal closure of the workshop. For further details please contact Dr Frank E van Vliet at vavvliet@fel.tno.nl, or Dr Steve Marsh at steve.marsh@ieee.org.

9th September 2002 - The 7th High Frequency Postgraduate Student Colloquium (HFPS2002) planned for The Imperial London Hotel, London, UK will be reported in the next issue of EDS Newsletter; contact Dr Stepan Lucyszyn at s.lucyszyn@ic.ac.uk,

18th and 19th November 2002 - The 10th IEEE International Symposium on Electron Devices for Microwave and Optoelectronic Applications (EDMO'2002), is planned for 18-19 November 2002 at the University of Manchester Institute of Science and Technology (UMIST), Manchester, UK; see www.edmo-symposium.org, or contact enquiries@edmo-symposium.org.

The Chapter Chairman, Ali Rezazadeh, must be congratulated on his appointment to take a Chair in Microwave Engineering at University of Manchester Institute of Science and Technology (UMIST) Manchester. During his move, please contact the Chapter Secretary: Dr Steve Marsh at Bookham Technology (Caswell), Towcester,

Northamptonshire NN12 8EQ, UK. Tel:01327 356 426. Fax: 01327 356 456. E-Mail: steve.marsh@ieee.org, for further information on Chapter news.

Editor - Gady Golan

On the traces of Lawrence of Arabia Report on Bianisotropics'2002, 9th International Conference on Electromagnetics of Complex Media
by Saïd Zouhdi¹ and Ari Sihvola²

After Espoo, Finland (February 1993), Gomel, Belarus (October 1993), Perigueux, France (1994), State College, Pennsylvania (1995), on a river cruise between St. Petersburg and Moscow (1996), in Glasgow (1997), Braunschweig (1998), and Lisbon (2000), the fabulous city of Marrakesh was the venue for the 9th International Conference on Electromagnetics of Complex Media : Bianisotropics'2002.

The Bianisotropics meeting this time was a NATO Advanced Research Workshop, with co-Directors Saïd Zouhdi (Pierre & Marie Curie University, Paris - France) and Mohamed Arsalane (Cadi Ayyad University, Marrakech - Morocco). The four days of the conference comprised 89 presentations, and 75 scientists from 24 countries participated. Bianisotropics'2002 received technical co-sponsorship from IEEE's Electron Devices Society.

The Keynote presentation of the meeting was given by Professor Victor G. Veselago (Moscow), the "inventor" of the materials with simultaneously negative permittivity and permeability. In Bianisotropics 2002, we also heard review lectures and invited lectures, in addition to ordinary contributed presentations.

The closing ceremony of Bianisotropics 2002 was held in the city of Ouarzazate, on the border of Sahara, on the other side of the High Atlas mountains.

Of the contributions presented in the Bianisotropics 2002, two collected works will be edited: a NATO ASI Series book published by Kluwer, and a special issue in the journal Electromagnetics. But even before that, for those very eager to learn about what was presented in the meeting, there are the summaries of the presentations to be found from the conference website : <http://www.ccr.jussieu.fr/bian02/>

Editor - Christian Zardini

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Asia & Pacific Region 10

ED/LEO Australia
by C. Jagdish

Professor Dennis Deppe (LEOS Distinguished Lecturer) from University of Texas, Austin visited the Chapter and gave a seminar on "Quantum Dots for Lasers and Microcavity Light Emitters".

COMMAD 2002 will be held in Sydney during December 11-13, 2002 and Conference Chair is Professor Michael Gal. Conference Web Site is: www.commad.unsw.edu.au and Conference Email is: commad@phys.unsw.edu.au



Professor Dennis Deppe of University of Texas at Austin presenting his seminar "Quantum Dots for Lasers and Microcavity Light Emitters"

ED/MTT India

by KS Chari

The Chapter has taken the main lead in organizing two national events. The first was a workshop on "Analog and Digital ASIC Design". The event was attended by more than 70 teachers and students from Science and Engineering Colleges of Haryana. The other was a short course on "FPGA based system Design" held from 30/5/02 to 18/6/02 at the Regional Engineering College, Tiruchirapalli. Topics covered included VLSI systems, HDL/HLL, FPGA architectures, overview of Verilog/VHDL, Algorithms and ASIC Design tools, Co-processors and Embedded systems, CAD tools from Xilinx, Altera and Vdesign. Over 80 faculty and student participants attended the course.

During a recent visits (April-June) by the Chapter Chair to SASTRA (Tamil Nadu), CDAC (Hyderabad), REC (Tiruchii) and DCE (Delhi), the extension of STAR efforts were explored. The visits resulted in the fresh enrollments of 13 student members and 3 full members to EDS.

AP/ED Bombay

by V. Ramgopal Rao

On April 19 2002, the Chapter organized a one day workshop on Microelectronics at the Fr. Conceicao Rodrigues College of Engineering, Bandra, Mumbai. The workshop consisted of lectures by distinguished professors from the Microelectronics group, Department of Electrical Engineering, Indian Institute of Technology, Bombay. The lectures touched upon the Physics, IC design, and technology aspects of sub-micron CMOS and were intended mainly to generate interest in undergraduate students in these areas. This workshop was attended by over 100 students and faculty of various engineering colleges in and around Mumbai.

The Chapter also sponsored the video recording of the short-course conducted by Prof. V. Ramgopal Rao at IIT Bombay on the Mixed Signal CMOS Design. This course was conducted for the working professionals in the country and attracted over 70 people from about 15 semiconductor industries. There were also lectures by Profs. Vasi and A.N.Chandorkar, Indian Institute of Technology, Bombay and Prof. Navakanta Bhat, Indian Institute of Science, Bangalore. The video tapes will be maintained by the chapter and made available to anyone who may be interested in this specialized area.

For more information, please contact Prof. V. Ramgopal Rao, Tel: 91-22-5767456 OR 91-22-5722545 Ext.7456, Fax: 91-22-5723707, Email: rao@ee.iitb.ac.in.

REL/CPMT/ED Singapore

- by M.K. Radhakrishnan

Prof. C. Jagadish of Australian National University gave an EDS Distinguished Lecture on Quantum Well Intermixing for Optoelectronics Device Integration on 24 May 2002 at the Institute of Materials Research & Engineering, with about 25 people from industry and academia in attendance the lecture. On 11 April 2002, Dr. Han Jiangbo of Agilent Technologies gave a Technical Talk on Thermally Enhanced BGAs – Cost Effective Solution for ICs. The talk was jointly organized by NUS MPE Department and was held at National University of Singapore. More than 30 people, mostly from industry, attended the talk. Dr. Tan Cher Ming of Nanyang Technological University gave a Technical Talk on Reliability Data

Analysis on 13 May 2002. The talk was attended by more than 20 people and was held at NUS Faculty Club.

The Chapter joined the Nano Wafer Level Packaging forum of Singapore in organizing a half day mini-symposium on Recent Advances in IC and Wafer Level Packaging on 1 April 2002 at National University of Singapore. The symposium had 6 invited talks championed by Prof. Rao Tummala of Georgia Tech, and was attended by more than 200 people from industry and academia.

The Chapter Chairman, Dr. M.K. Radhakrishnan, attended the first ASEAN IEEE Section Meeting held at Kuala Lumpur on 1 June 2002. A close co-operation in technical activities between the Sections and Chapters in the region has been planned. The Chapter's flagship conference IPFA will be held in Singapore from 8 to 12 July 2002.

For more information, please contact : Dr. M.K. Radhakrishnan, e-mail: radhakrishnan@ieee.org.

Editor – Wee Kiong Choi

ED Kansai

- by Hiroshi Nozawa

The ED Kansai Chapter would like to report about the technical activities in the second quarter of 2002. A highlight during this term was a University Distinguished Lecturer meeting. The EDS Kansai Chapter arranged a University distinguished lecturer meeting with Kenji Taniguchi, Professor of Osaka University on 23 April 2002, at Kyoto University., Kyoto, Japan. The host of the DL was H. Nozawa, the EDS Kansai Chapter Chair and Professor of Kyoto University. The title of the lecture was "for Graduate Students toward Circuits Designer to Realize Future Information Society -CMOS Analog Integrated Circuits-." Prof. K. Taniguchi first talked about the back-



K. Taniguchi, Professor of Osaka Univ., Osaka, Japan on 23 April 2002 at Univ. DL Meeting by EDS Kansai Chapter.

ground and future prospect of integrated circuits technology then he, lectured on analog integrated circuits design, and finally showed his personal opinion on standing point of students and methods for the education system including facts of his experience in a semiconductor company. This lecture was well received by most graduate students from a viewpoint of his outstanding insights on globalization. The number of participant was more than forty including some people from companies.

— Hisayo S. Momose, Editor

ED Taipei

- by Tahui Wang

The ED Taipei Chapter has held a series of Educational Lectures and DL programs from March to June, 2002.

On April 29, the CTO of TSMC and also a Professor of UCB, Chenming Hu, gave a talk entitled "Challenges and Promises of Future IC Technology" at National Chiao Tung University (NCTU), Hsinchu, Taiwan. TSMC will probably be the first company to start 90nm CMOS production this year. This talk is focused on the technology scaling which requires an examination of CMOS device scaling strat-



4/29/2002 Prof. Chenming Hu's Talk (from left) M.-C. Chen, Albert Chin, C. Hu (Speaker), Steve Chung (Taipei Chapter Chair), T.-Y. Tseng, B.-Y. Tsui

egy, scaling limits, technology advances, and its impact on the growth of Semiconductor Industry. He emphasized the need for the development of lithography improvement using EUV or X-ray when a device approaches its scaling limit. The talk attracted more than 200 participants.

The DL program was given twice by Prof. J. J. Liou, from the University of Central Florida. His talk was entitled "Evolution and Recent Advances in

RF/Microwave Transistors" and was given on March 11 and June 13, respectively at National Chiao Tung University, Hsinchu, and Cheng-Kung University, Tainan, Taiwan. Each talk was attended by at least 150 participants in each talk.

On May 6, Prof. C. P. Wong of Georgia Institute of Technology, gave a talk on "Recent Advances in Polymer for High Performance Low Cost Microelectronic Applications," at NCTU. It was attended

by more than 150 participants.

Also, on May 20, the Chapter arranged a video lecture of the 2002 IEDM short course given by Dr. T. -H. Tseng. Over 150 graduate students and industry engineers attended the video show.

For more information, please check the web site <http://www.edstaipei.edu.tw>.

Editor – Tahui Wang

On-Line Access to IEEE Journals Available to EDS Members

The Electron Devices Society is committed to providing on-line access to its periodicals. The on-line delivery system, IEEE Xplore, provides IEEE members with the following benefits/capabilities:

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

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- *Electron Device Letters (EDL)*
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- *Electrochemical and Solid State Letters (ESL)*
- *Transactions on Information Theory*
- *Journal of Lightwave Technology*
- *Transactions on Microwave Theory and Techniques*

- *Microwave Magazine*
- *Microwave and Wireless Components Letters*
- *Transactions on Reliability*
- *Transactions on Ultrasonics, Ferroelectrics and Frequency Control.*

Free on-line access was a new benefit given to EDS members on 1 September 1998 (start of the 1999 IEEE membership cycle).

In addition to the on-line access to periodicals included with EDS membership, *Transactions on Semiconductor Manufacturing* and the *Journal of Microelectromechanical Systems* are available on-line to their respective member subscribers of the print version.

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

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

Renuka P. Jindal
EDS Publications Chair
Agere Systems
Murray Hill, NJ, USA

Jerry Woodall

(continued from page 14)

1990 "For contributions to the preparation of compound semiconductor structures and devices for high-speed and optoelectronic applications." In addition, he received the IEEE Jack A. Morton Technical Field Award in 1984, the IEEE Third Millennium Medal in 2000, was the Chairman of the EDS sponsored Device Research Conference in 1987 and was a member of the Electron Devices Society Administrative Committee from 1993-1999.

He also was made a member of the National Academy of Engineering in

1989, a Fellow of the American Physical Society in 1982, an Electro Chemical Society Fellow in 1992, and an American Vacuum Society Fellow in 1994.

After receiving a B.S. in metallurgy from MIT he earned a Ph.D. in electrical engineering from Cornell University in 1980.

Prof. Woodall spent most of the early and mid parts of his career at the IBM Thomas J. Watson Research Center where he rose to the rank of IBM Fellow. He and Hans Ruprecht pioneered the liquid-phase epitaxial growth of both Si doped gallium arsenide (GaAs) high efficiency infrared light emitting diodes (LEDs), and gallium aluminum arsenide (GaAlAs), which led to

his most important research contribution: the first commercially viable heterojunctions. They built it from gallium aluminum arsenide mated to gallium arsenide (GaAlAs/GaAs), and it remains to this day as the world's most important compound semiconductor heterojunction.

This demonstration that high quality AlGaAs could be grown on GaAs launched a new era in semiconductor material and device research, which resulted in devices such as semiconductor lasers used as the signal source and pump lasers used in optical amplifiers used in optical communications systems.

Continued on page 30

EDS Meetings Calendar

(As of 22 July 2002)

The complete EDS Calendar can be found at our web site:
<http://www.ieee.org/organizations/society/eds/EDSCal.html>. Please visit!

October 6 - 10, 2002, T **Electrical Over-stress/Electrostatic Discharge Symposium** Location: Charlotte Convention Center, Charlotte, NC, USA Contact: Steven Voldman, IBM Micro-electronics, 1000 River Street, MS 972 F, Essex Junction, VT, USA 05452 Tel: +1 802 769 8368 Fax: +1 802 769 9659 E-Mail: a108501@us.ibm.com Deadline: 1/14/02 www: <http://www.esda.org>

October 7 - 11, 2002, T **European Symposium on Reliability of Electron Devices, Failure Physics and Analysis** Location: Centro Congressi, Rimini, Italy Contact: Ing Fantini, Università degli Studi di Modena e Reggio Emilia, Via Vignolese 905, 41100 Modena, Italy Tel: +39 059 2056 165 Fax: +39 059 2056 129 E-Mail: fantini@dsi.unimo.it Deadline: 4/22/02 www:

October 7 - 10, 2002, T **International Symposium on Compound Semiconductors** Location: Hotel Alpha, Lausanne, Switzerland Contact: Marc Illegems, Swiss Federal Institute of Technology Lausanne, Post Office Box 123, CH-1015 Lausanne EPFL, Switzerland Tel: +41 21 693 54 15 Fax: +41 21 693 54 10 E-Mail: iscs2002@iaf.fhg.de Deadline: 6/15/02 www: Not Available

October 7 - 10, 2002, * **IEEE International SOI Conference** Location: Colonial Williamsburg Lodge, Williamsburg, VA, USA Contact: Bobbi Armbruster, BACM, 520 Washington Blvd. Suite 350, Marina Del Rey, CA, USA 90292 Tel: +1 310 305 7885 Fax: +1 310 305 1038 E-Mail: bacm@attbi.com Deadline: 5/10/02 www: <http://www.soiconference.org>

October 8 - 12, 2002, * **International Semiconductor Conference** Location: Sinaia Hotel, Sinaia, Romania Contact: Doina Vancu, IMT-Bucharest, CAS Office, PO Box 38-160, Bucharest, Romania 72225 Tel: +40 1 490 82 36 Fax: +40 1 490 82 38 E-Mail: CAS@imt.ro Deadline: 4/15/02 www: Not Available

October 10 - 13, 2002, T **International Seminar/Workshop on Direct and Inverse Problems of Electromagnetic and Acoustic**

Wave Theory Location: Tbilisi State University, Tbilisi, Georgia, Ukraine Contact: Mykhalyo Andriychuk, Inst. of Applied Problems of Mech. & Math. Of NASU, 3"b" Naukova str, 79601 Lviv, Ukraine Tel: +380 322 651944 Fax: +380 322 637088 E-Mail: andr@iapmm.lviv.ua Deadline: Not Available www: Not Available

October 14 - 16, 2002, T **International Conference on Advanced Semiconductor Devices and Microsystems** Location: The Castle of Smolenice, Bratislava, Slovak Republic Contact: Juraj Breza, Slovak University of Technology, Ikovicova Street 3, 812 19 Bratislava, Slovak Republic Tel: +421 2 60291328 Fax: +421 2 65423480 E-Mail: breza@elf.stuba.sk Deadline: 4/15/02 www: <http://www.elf.stuba.sk/~asdam>

October 15 - 17, 2002, @ **International Symposium on Semiconductor Manufacturing** Location: Nihon Toshi Center, Tokyo, Japan Contact: Naaji Yamamoto, Cosmos Hongo Building, 8F, 4-1-4, Hongo, Bunkyo-ku, Tokyo 113-0033, Japan Tel: +81 33815 8775 Fax: +81 3 3815 8529 E-Mail: issm@rlz.co.jp Deadline: 8/30/02 www: <http://www.issm.com>

October 20 - 23, 2002, * **IEEE Gallium Arsenide Integrated Circuits Symposium** Location: Doubletree Hotel, Monterey, CA, USA Contact: Tim Henderson, 13510 N. Central Expressway M/S 404, Dallas, Texas, USA 75243 Tel: +1 972 994 8538 Fax: +1 972 994 8505 E-Mail: thenderson@qttx.com Deadline: 4/18/02 www: <http://www.gaasic.org/>

October 20, 2002, T **Gallium Arsenide Reliability Workshop** Location: Doubletree Hotel, Monterey, CA, USA Contact: Anthony Immorlica, BAE Systems, 65 Spit Brook Road, Nashua, NH, USA 03061-0868 Tel: +1 603 885 1100 Fax: +1 603 885 6061 E-Mail: anthony.a.immorlica@baesystems.com Deadline: Not Available www: <http://www.jedec.org/home/gaas>

October 21 - 24, 2002, * **IEEE International Integrated Reliability Workshop** Location:

Stanford Sierra Camp, Lake Tahoe, CA, USA Contact: Rolf Vollertsen, Infineon Technologies NA Corp., 1000 River Street (967A), Essex Junction, VT, USA 05452 Tel: +1 802 769 2823 Fax: +1 802 769 4304 E-Mail: Rolf.Vollertsen@infineon.com Deadline: 7/5/02 www: <http://www.irps.org/irw>

November 4 - 6, 2002, T **Non-Volatile Memory Technology Symposium** Location: Hilton Hawaiian Village, Honolulu, HI, USA Contact: Nazeeh Aranki, Jet Propulsion Laboratory, M/S 303-300, 4800 Oak Grove Drive, Pasadena, CA, USA 91101 Tel: +1 818 354 4285 Fax: Not Available E-Mail: aranki@brain.jpl.nasa.gov Deadline: 6/28/02 www: <http://nvm.jpl.nasa.gov>

November 6, 2002, T **IEEE Electron Devices Activities in Western New York Conference** Location: Xerox Auditorium, Rochester, NY, USA Contact: Karl Hirschman, RIT Micro-electronic Engineering, 82 Lomb Memorial Drive, Rochester, NY, USA 14623-5604 Tel: +1 716 475 5130 Fax: +1 716 475 5041 E-Mail: kdhemc@rit.edu Deadline: Not Available www: <http://www.microe.rit.edu/eds/>

November 18 - 19, 2002, T **International Symposium on High Performance Electron Devices for Microwave and Optoelectronic Applications** Location: University of Manchester, Manchester, United Kingdom Contact: M Missous, UMIST, PO Box 88, Manchester, United Kingdom M60 1QD Tel: +44 (0) 161 200 4797 Fax: +44 (0) 161 200 4770 E-Mail: missous@umist.ac.uk Deadline: 9/10/02 www: <http://www.edmo-symposium.org>

December 2 - 3, 2002, T **International Workshop on Junction Technology** Location: Diamond Hotel, Tokyo, Japan Contact: Bunji Mizuno, UJT Lab, Matsushita 1E11, 3-1-1 Yagumonakamachi Moriguchi, Osaka, Japan Tel: +81 6 69066208 Fax: +81 6 6906 6208 E-Mail: mizuno.ujt@ctmo.mei.co.jp Deadline: Not Available www: <http://home.hiroshima-u.ac.jp/iw>

December 5 - 7, 2002, * **IEEE Semiconductor Interface Specialists Conference** Location:

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The Catamaran Hotel, San Diego, CA, USA Contact: Carl Zetterling, Royal Institute of Technology, Department of Microelectronics & Information Technology, Kista, Sweden SE 16440 Tel: +46 8 752 1409 Fax: Not Available E-Mail: bellman@imit.kth.se Deadline: 8/5/02 www: <http://www.ieeesisc.com>

December 9 - 13, 2002, T **Conference on Optoelectronic and Microelectronic Materials & Devices** Location: University of New South Wales, Sydney, Australia Contact: Chennupati Jagadish, Australian National University, Department of Electronic Materials Engineering, Canberra, ACT 0200, Australia Tel: +61 2 6125 0363 Fax: +61 2 6125 0511 E-Mail: c.jagadish@ieee.org Deadline: Not Available www: Not Available

December 9 - 11, 2002, * **IEEE International Electron Devices Meeting** Location: San Francisco Hilton & Towers Hotel, San Francisco, CA, USA Contact: Phyllis Mahoney, Widerkehr & Associates, 16220 South Frederick Avenue, Suite 312, Gaithersburg, MD, USA 20877-4020 Tel: +1 301 527 0900 ext. 103 Fax: +1 301 5270994 E-Mail: phyllism@widerkehr.com Deadline: 6/24/02 www: <http://www.ieee.org/conference/iedm>

December 11 - 13, 2002, T **International Conference on Microelectronics** Location: Gefinor Rotana Hotel, Beirut, Lebanon Contact: Mohamed Elmasry, University of Waterloo, VLSI Research Group, ECE Department, Waterloo, Ontario, Canada N2L 3G1 Tel: +1 519 888 4567 ext. 3753 Fax: +1 519 746 5195 E-Mail: elmasry@vlsi.uwaterloo.ca Deadline: 5/1/02 www: <http://www.aub.edu.lb/~webicm/>

December 16 - 18, 2002, T **International Conference on Field-Programmable Technology** Location: The Chinese University of Hong Kong, Hong Kong, China Contact: Philip Leong, The Chinese University of Hong Kong, Dept. of Computer

Science and Engineering, Hong Kong, China Tel: +852 2603 8414 Fax: +852 2603 5024 E-Mail: phwe@cse.cuhk.edu.hk Deadline: 7/15/02 www: <http://www.icfpt.org>

December 16 - 18, 2002, T **International Conference on Fibre Optics and Photonics** Location: Mumbai, India Contact: B Arora, Tata Institute of Fundamental Research, Homi Bhabha Road, Mumbai 400005, India Tel: +91 22 2152971 ext 2231 Fax: +91 22 215 2110 E-Mail: ph2002@tifr.res.in Deadline: Not Available www: Not Available

February 9 - 13, 2003, T **IEEE International Solid-State Circuits Conference** Location: San Francisco Marriott Hotel, San Francisco, CA, USA Contact: Anantha Chandrakasan, MIT, 50 Vassar Street, Bldg 38-107, Cambridge, MA, USA 02139 Tel: +1 617 258 7619 Fax: +1 617 253 5053 E-Mail: anantha@mit.edu Deadline: 9/4/02 www: <http://www.isscc.org/isscc>

February 15, 2003, T **Workshop on Photonics & Its Applications** Location: The National Institute of Laser Enhanced Sciences, Cairo, Egypt Contact: Ibrahim Salem, Academy of Scientific Res & Tech, Dept. of Scientific Societies & Int'l Unions, 101 Kasr EL-Eini St, Cairo, Egypt Tel: +20 2 258 0256 Fax: +20 2 792 1270 E-Mail: ia.salem@ieee.org Deadline: Not Available www: <http://workshop2001.s5>

February 16 - 20, 2003, @ **IEEE Non-Volatile Semiconductor Memory Workshop** Location: Hyatt Regency Hotel, Monterey, CA, USA Contact: Krishna Parat, Intel, M/S RN3-01, 2200 Mission College Blvd., Santa Clara, CA, USA 95054 Tel: +1 408 765 9381 Fax: +1 408 765 9206 E-Mail: Krishna.Parat@intel.com Deadline: 10/25/02 www: <http://ewh.ieee.org/soc/eds/nvsmw>

February 18 - 22, 2003, T **International Conference on the Experience of Designing and Application of CAD Systems in Microelectronics** Location: National University "Lviv Polytechnic", Slavske, Ukraine Contact: Vasyl Tesliuk, National University "Lviv Polytechnic", CAD/CAM Department, St Bandera 12, Lviv, Ukraine 79013 Tel: +38 (0322) 72 29 72 Fax: +38 (0322) 72 29 72 E-Mail: cadsm2003@polynet.lviv.ua Deadline: 10/15/02 www: <http://www.polynet.lviv.ua/cadsm2003>

February 23 - 27, 2003, T **International Conference on Modeling and Simulation of Microsystems** Location: Grand Hyatt, San Francisco, CA, USA Contact: Sarah Wenning, Applied Computational Research Society, 4847 Hopyard Road, Suite 4-381, Pleasanton, CA, USA 94588 Tel: +1 925 743 9466 Fax: +1 925 696 6416 E-Mail: wenning@dnai.com Deadline: 9/6/02 www: <http://www.cr.org/MSM2003/CFP2003.pdf>

March 17 - 20, 2003, @ **IEEE International Conference on Microelectronic Test Structures** Location: Double Tree Hotel, Monterey, CA, USA Contact: Wendy Walker, Widerkehr & Associates, 16220 South Frederick Avenue, Suite 312, Gaithersburg, MD, USA 20877-4020 Tel: +1 301 527 0900 ext. 104 Fax: +1 301 527 0994 E-Mail: wendyw@widerkehr.com Deadline: 8/23/02 www: <http://www.ee.ed.ac.uk/ICMST>

March 18 - 20, 2003, T **National Radio Science Conference** Location: The Atomic Energy Authority, Nasr City, Cairo, Egypt Contact: Ibrahim Salem, Academy of Scientific Res & Tech, Dept. of Scientific Societies & Int'l Unions, 101 Kasr EL-Eini St, Cairo, Egypt Tel: +20 2 258 0256 Fax: +20 2 792 1270 E-Mail: ia.salem@ieee.org Deadline: 10/15/02 www: Not Available

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Jerry Woodall

(continued from page 28)

The semiconductor lasers are also used in the read-out of the encoded patterns in CDs and DVDs as well as many other applications. The heterojunction LEDs have led to very bright LEDs which are

used in automobile brake lights, traffic lights and a vast array of applications for illumination and indicator lights. Many new areas of solid-state physics have evolved from his work, including the semiconductor superlattice, low-dimensional systems (quantum wells and dots), and resonant tunneling. Fully half of the entire world's annual sales of compound

semiconductor components are made possible by his research legacy.

The Electron Devices Society congratulates Jerry for this highest of recognition for his contributions to electron devices.

Alfred U. Mac Rae
Chair, EDS Awards Committee



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