

IEEE Electron Devices Society Newsletter

April 1999

Vol. 6, No. 2 ISSN:1074 1879

Editor-in-Chief: Krishna Shenai

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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

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

1999 Device Research Conference (DRC)



Photo Courtesy of David Folks UCSB Photo Services Dept. 805.893.2448

The 57th annual Device Research Conference (DRC) will return to the University of California at Santa Barbara this summer during June 28-30, 1999. The conference brings together scientists, engineers, and students to discuss new and exciting breakthroughs and advances in the field of device research. The DRC is sponsored by the IEEE Electron Devices Society and is coordinated with the Electronic Materials Conference (EMC) of the TMS.

The DRC is recognized for its casual approach while providing the conference attendees with the very best in the latest device research and covering a very wide range of topics. This year's Southern Californian setting is the perfect environment to get to know people, hear stimulating talks, and have late night discussions. The University of California campus location provides beautiful scenery, close proximity to the beaches and inexpensive lodging. The campus is surrounded by a wide range of summer attractions in downtown Santa Barbara, at the downtown waterfront and in the surrounding wine country.

DRC'99 will feature sessions in all major device research areas. These include: silicon CMOS, scaled and ultra small devices, SOI, thin insulators, quantum and single electron devices, compound semiconductor FETs and HBTs, power, microwave and ultra fast devices, MEMS and optoelectronic devices. The complete advance program will be available on the DRC Home Page starting May 1st, 1999. Last year's program, including the late news papers, can also be found on the web site.

(continued on page 3)

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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A Message from the Editor-in-Chief



Krishna Shenai

As we are approaching the new millennium, we are able to witness profound changes in the society. Everything is becoming "wireless" and "battery-operated." Our Society has much to do with this

transformation and I can unequivocally claim that every EDS member is proud to be part of this global change.

After three years of dedicated service to the EDS Newsletter, Dr. Robert G. Adde has decided to step down as the Editor for Region 8: Western Europe. I would like to take this opportunity to thank Bob for his contributions to the EDS community. Replacing him is Dr. Christian Zardini of the University of Bordeaux, Bordeaux, France. Christian has a long list of accomplishments to his credit and will be an asset to the EDS community. It is with great pleasure that I welcome Christian to the editorial staff and wish him all the best.



Christian Zardini

Christian Zardini was born in Issigeac (France) in 1942. He received the Diplôme d'Etudes Approfondies de Microondes from the University of Bordeaux in 1965, the PhD degree from the University of Montpellier in 1982 and the Habilitation à Diriger les Recherches from the University of Bordeaux in 1991.

From 1966 to 1991 he was an Assistant Professor at the University of Bordeaux, at the University of Tunis and Sfax (Tunisia), and at the Ecole Nationale Supérieure d'Electronique et de Radioelectricité de Bordeaux (E.N.S.E.R.B). Presently, he is a Professor of Electronic Engineering at E.N.S.E.R.B. His current research interests include several aspects of the integration of power circuits. He manages a research team working on these problems at the IXL Laboratory. He has been the author or co-author of more than 90 technical publications. During his tenure at ENSERB he has supervised to completion 7 PhD students and is presently supervising two others.

1999 EDS J.J. EBERS AWARD CALL FOR NOMINATIONS

EDS invites the submission of nominations for the 1999 J.J. Ebers Award. This award is presented annually by EDS to honor an individual(s) who has made either a single or a series of contributions of recognized scientific, economic, or social significance to the broad field of electron devices. The recipient(s) is awarded a certificate and a check for \$5,000, presented at the International Electron Devices Meeting (IEDM).

Nomination forms can be requested from the EDS Executive Office. The deadline for the submission of nominations for the 1999 award is 9 July 1999. Completed nomination forms should be sent to the Executive Office at the address given on this page.

EDS ADCOM ELECTED MEMBERS-AT-LARGE

Term Expires:

1999

R.G. Adde (1)
J.T. Clemens (1)
B.F. Griffing (2)
R.P. Jindal (2)
J.B. Kuo (2)
J.K. Lowell (2)
I. Mojzes (2)
K. Shenai (1)

2000

I. Adesida (1)
H. S. Bennett (2)
H. Iwai (2)
A. A. Santos (1)
S. C. Sun (1)
K. Tada (2)
P. K. L. Yu (1)

*2001

A. S. Brown (2)
T. P. Chow (2)
K. F. Galloway (1)
S. J. Hillenius (1)
C. Jagadish (1)
M. A. Shibib (2)
R. Singh (1)

Number in parenthesis represents term.

* Members elected 12/98

IEEE Electron Devices Society Newsletter is published quarterly by the Electron Devices Society of the Institute of Electrical and Electronics Engineers, Inc. Headquarters: 3 Park Avenue, 17th Floor, New York, NY 10016-5997. Printed in the U.S.A. One dollar (\$1.00) per member per year is included in the Society fee for each member of the Electron Devices Society. Periodicals postage paid at New York, NY and at additional mailing offices. **Postmaster:** Send address changes to IEEE Electron Devices Society Newsletter, IEEE, 445 Hoes Lane, P.O. Box 1331, Piscataway, NJ 08855-1331.

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Upcoming Technical Meetings

DRC (continued from page 1)

In addition to the Plenary talks, this year's conference features a Novel Devices and Technology Session in which invited speakers will present an overview in areas such as Molecular Electronics, MEMS/Bio-MEMS and Carbon Nanotubes. Invited speakers will also kick off a selected number of regular sessions including the Silicon technology sessions, the III-V HEMT session and the SiC/GaN power device session.

The DRC will feature two evening events, the newly featured poster session followed by the wine and cheese reception, and the rump sessions after the con-

ference dinner. A limited number of posters will be presented as a precursor to the wine-and-cheese reception. The rump sessions, centered on this year's interesting topics, will strive to inform, and provoke listeners. Beverages and snacks will be provided to encourage the technical discussion among conference attendees.

The submission date for regular papers has already passed, but a very limited number of late-news papers will be accepted for presentation. Late-news papers must be submitted by June 21st, 1999. If one wishes to present unpublished results at the conference, please submit one original paper and 25 copies to Mark Rodder, 1999 DRC Technical

Program Chairman, Texas Instruments, MS 461, 13536 N. Central Expressway, Dallas, TX, 75243. For abstract guidelines and/or electronic submissions, please consult the DRC Home Page listed below.

For further information, please consult the DRC Home Page on the World Wide Web at <http://ece-www.colorado.edu/~drc/> or contact the Conference General Chair, Bart Van Zeghbreeck, University of Colorado, Boulder, CO, USA; TEL: (303) 492-2809; FAX: (303) 492-2758.

*Bart Van Zeghbreeck
University of Colorado
Boulder, CO*

1999 Workshop on Charge-Coupled Devices and Advanced Image Sensors (CCD & AIS)

The 1999 Workshop on Charge-Coupled Devices and Advanced Image Sensors, sponsored by the IEEE Electron Devices Society, will be held at the Karuizawa Prince Hotel West in Nagano Prefecture, Japan, June 10-12, 1999.

The purpose of this Workshop is to provide an opportunity for exchanging new results in the area of Solid-State Image Sensors in an informal atmosphere. The Technical Program will consist of invited and contributed papers, poster sessions, and a discussion session. As in the previous workshops, emphasis will be on high quality technical content. Ample time will be left for paper discussion. The deadline for receipt of abstracts was January 18, 1999.

Papers on the following topics were solicited:

- CCD Device Physics: New devices and structures; Advanced materials; Improved models; Scaling
- Image Sensor Design and Performance: CCD image sensors; CMOS image sensors; Active pixel sensors; New architectures; Small pixel; Large format; Low voltage and low power; High picture quality; Low noise; High sensitivity; High color reproducibility; New modes of operation; CAD for design and simulation of image sensors



Karuizawa Prince Hotel cottages and active volcano, Mt. Asama.

- Advanced Image Sensors: Application specific image sensors; High frame rate sensors; Low light level imaging; Intelligent sensors; Machine vision; New functions; Single chip camera; Sensors with enhanced spectral response (UV, IR); High energy photon and particle sensors (X-ray, Radiation)
- Fabrication: New fabrication techniques; Backside thinning; Color filters; Microlens; Packaging; Testing; Reliability; Yield. Cost; Defects; Leakage current; Radiation damages; High quality papers addressing work in progress are also welcome.

Karuizawa is Japan's popular summer resort in Nagano Prefecture, 130 km north-

west of Tokyo. It is approximately a one hour ride by the Bullet Train from Tokyo. The Karuizawa Prince Hotel adjoins the JR Karuizawa Station, and is a short train ride from this station. More information on the Karuizawa Prince Hotel can be found at: <http://www.princehotels.co.jp/karuizawa/index.html>, which is written in both English and Japanese.

The Workshop will start on Thursday, June 10, 1999 at 9:00 a.m., and will end on Saturday, June 12 at 12:00 noon. The Workshop fee includes Thursday and Friday lunches, the Workshop Reception, and the Workshop Dinner.

(continued on page 4)

CCD & AIS *(continued from page 3)*

The pre-workshop tour is being planned on June 9, 1999 at NHK (Japan Broadcasting Corporation) Science & Technical Research Laboratories in the Tokyo area. When the details are determined, an announcement will be sent to all individuals who are registered for the Workshop.

Anyone who wishes to attend the Workshop should pre-register due to the fact that the capacity of the Workshop is limited. The fee for the Workshop is:

IEEE membs	Adv. reg. before 4/30/99	Yen 46,000
	Reg. after 4/30/99	Yen 50,000
Non-membs	Adv. reg. before 4/30/99	Yen 50,000
	Reg. after 4/30/99	Yen 55,000
Students	Adv. reg. before 4/30/99	Yen 40,000
	Reg. after 4/30/99	Yen 44,000

Up-to-date information on the Workshop is available via the Workshop Web site at <http://www.labs.nec.co.jp/wscdai/index.htm>. Workshop Chairman: Nobukazu

Teranishi, Silicon Systems Research Laboratories, NEC Corporation, M.S. 24-23120, 1120 Shimokuzawa, Sagami-hara, Kanagawa 229-1198 Japan; TEL: +81-42-771-0923 FAX: +81-42-771-0878; E-Mail: ccdws@mel.cl.nec.co.jp. Technical Program Chairman: Junichi Nakamura, Advanced Technology Research Center, Olympus Optical Co., Ltd., 2-3 Kuboyama Hachioji, Tokyo 192-8512 Japan; TEL: +81-426-91-8076; FAX: +81-426-91-5709; E-Mail: j_nakamura@ot.olympus.co.jp.

Other organizing committee members include: Eric R. Fossum, Photobit Corp., Pasadena, CA, USA; Savvas Chamberlain, DALSA Inc., Waterloo, ONT, Canada; Albert Theuwissen, Philips Imaging Technology, Eindhoven, The Netherlands.

*Nobukazu Teranishi
Systems Research Laboratories
NEC Corporation
Sagami-hara, Kanagawa Japan*

planned with about 60 presentations by industry, government and university representatives. Traditionally, the UGIM Symposia embrace a broad range of topics. Papers reporting the development and progress of educational and research programs in microelectronics at various educational institutions typically represent the largest session. TCAD modeling and simulation of devices and circuits are usually strongly represented, as are papers concerning devices and systems. Materials and processing papers detail results ranging from standard silicon processing issues to other topics such as III-V devices and process equipment development. Processing results typically involve equipment normally found at universities, which is beneficial for other university attendees with similar interests to make use of the results in their own research programs. Microelectromechanical systems (MEMS) focused papers have been increasing in number, and a session devoted to all aspects of MEMS, including modeling, simulation, processing, packaging and testing will be held. The UGIM Symposia are traditionally a good place to report on interactions between university microelectronics research programs and industry/government organizations. Typical interactions include collaborative research projects, focused educational classes and successful technology transfer of information from university research laboratories to industrial implementation.

As the amount of funding available for traditional microelectronics research declines, university research programs are stretching out to research areas outside the traditional microelectronics realm. UGIM'99 will include a special session devoted to such initiatives. The session focuses on the results of work applying typical microelectronics processing techniques to non-traditional microelectronics research, involving such areas as biology, medicine, biochemistry, flat panel display technology and information storage technology.

While the technical sessions begin on Monday, June 21, on Sunday afternoon, the University of Minnesota Microtechnology Laboratory will host an open house, including tours of the cleanroom processing facilities. Staff members will be on hand to discuss operational details, answer questions, and provide demonstrations. An informal discussion session is also planned for people responsible for managing microelectronics laboratory facilities. Topics of discussion will include common issues such as: funding, equipment acquisition and

1999 University/Government/Industry Microelectronics Symposium (UGIM)



The 1999 University/Government/Industry Microelectronics Symposium (UGIM) will be held in Minneapolis, MN June 20-23, 1999. UGIM'99 will be the thirteenth in this series of biennial symposia that bring together educators and researchers to discuss educational and research activities related to microelectronics programs and other microfabrication technologies. Past symposia have been attended by representatives of many universities that have significant programs in

microelectronics. Government agencies such as NSF, NIH, NIST, Sematech, SRC, DARPA and ONR participate regularly. University/industrial interactions, such as collaborative research activities and technology transfer, have also been strongly represented. The UGIM Symposia are sponsored by the Electron Devices Society of the IEEE.

UGIM Symposia are normally hosted by universities with strong microelectronics research and education programs. Past symposia have been hosted by the Rochester Institute of Technology, University of Texas at Austin, North Carolina State University, and the Florida Institute of Technology. By moving the symposia to a different host school each time, attendees benefit from seeing how each host school's education and research programs are structured, as well as the make-up of the research laboratories and cleanroom facilities.

This year's symposium is being hosted by the University of Minnesota Microtechnology Laboratory, and will be held at the Radisson Metrodome hotel located on the UM campus. An outstanding program is

maintenance, staffing, facilities issues, processing issues, interactions with industry, materials compatibility problems, paperless fab facilities, intellectual property issues, maskmaking, and collaboration with other universities. Attendees will have an opportunity to give a short presentation describing their facilities, and to share their experiences and knowledge with others.

The Twin Cities of Minneapolis and Saint Paul abound in opportunities for recreational and social activities. There are many

beautiful parks and lakes where one can swim, jog, fish or rent a canoe. Theaters, art museums, and restaurants of all kinds can be found just a short drive or bus ride from the symposium hotel. The Twin Cities are home to two zoos and the Minnesota Science Museum. Situated in suburban Minneapolis is the largest fully enclosed retail and family entertainment complex, The United States Mall of America. Here, one can shop at one of more than 400 stores and restaurants or enjoy one of the theme park

rides, including an indoor roller coaster.

For more information on the symposium, please visit the symposium website at <http://www.mtl.umn.edu/ugim99/>, or contact Greg Cibuzar, University of Minnesota Microtechnology Laboratory, 200 Union St SE, Minneapolis, MN 55455, TEL: (612) 624-8005 or E-Mail: cibuzar@ece.umn.edu.

*Gregory T. Cibuzar
University of Minnesota
Minneapolis, MN*

1999 International Interconnect Technology Conference (IITC)

The second annual International Interconnect Technology Conference (IITC), an exciting new conference dedicated to advanced interconnect technology, will be held May 24-26, 1999 at the San Francisco Airport Hyatt Regency Hotel, conveniently located 20 minutes from Silicon Valley or downtown San Francisco. Repeating its highly successful debut last year, the IITC provides a forum for professionals in the semiconductor industry and academia to present and discuss new technology supporting the fabrication of integrated circuit interconnects and packaging. The conference provides several venues for interconnect-related topics, including short course lectures, oral and poster presentations, supplier exhibits (materials, fabrication and process characterization equipment, simulation tools, etc.) and exhibitor seminars describing the latest equipment and materials technology.

The IITC was established to provide an international forum for addressing interconnect issues from a system level viewpoint. The ever-increasing demand for higher integrated circuit density and performance has led to a crisis in connectivity, and has shifted the design, cost, performance and reliability focus to interconnects. New materials, architectures and process technologies have arisen to meet this challenge, and no other semiconductor technology sector has been growing and changing more rapidly. The IITC will serve a unique role as the only IEEE conference dedicated to the interconnect community.

The international stature of the IITC is reflected by the broadbase support of its organizing committee, which consists of three subcommittees from North America, the Far East, and Europe. Committee members are well-known researchers and R&D professionals from universities, national labs and industrial labs through-

out the world. The committee will rate all submitted papers based on rigorous standards; in addition to invited talks on emerging technologies, approximately 40 papers will be accepted for oral presentation and a similar number for poster presentation during the three-day conference program.

A short course addressing advanced interconnect process, design and reliability issues will once again be offered on the day preceding the conference (May 23).

The cost and performance of ULSI circuits strongly depend on the capability and productivity of interconnect fabrication equipment. In recognition of this critical role, equipment supplier exhibits and seminars are an integral part of the IITC technical program and will be held on the first and second days of the conference.

With a vision of being the premier conference for leading edge interconnect technology as well as future interconnect needs, the IITC includes papers from a broad range of interconnect technology topics. Examples include:

- (1) Silicide/Salicide: silicide materials, deposition and formation processes; novel gate and source/drain structures; contact silicidation, etc.
- (2) Dielectrics: dielectric materials (low-k, high-k, liners, ARCs, etc.) and deposition processes (vapor, CVD, spin-on, etc.); dry etch and dry cleaning techniques
- (3) Planarization: dielectric/metal CMP processes, equipment and metrology issues; alternative planarization techniques
- (4) Metallization: metal deposition processes/equipment (PVD, CVD, electroplating) and materials characterization; metal etch/cleaning processes

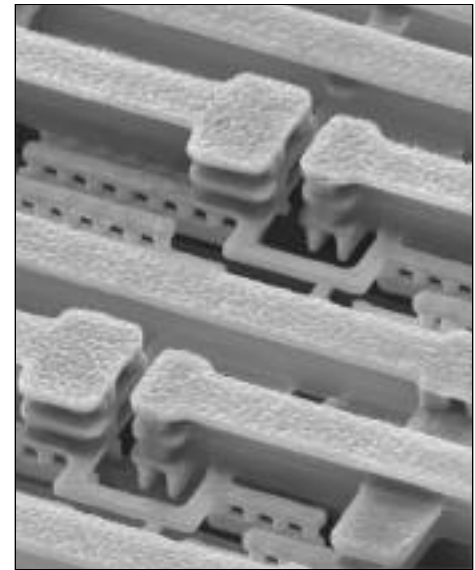


Photo Courtesy of IBM

(5) Process Integration: multilevel interconnect processes; clustered processes; novel interconnect structures; contact/via integration; metal barrier and materials interface issues

(6) Process Control/Modeling: CMP, metal/dielectric deposition and etch, PVD, CVD, electroplating

(7) Reliability: metal electromigration and stress voiding; dielectric integrity and mechanical stability; thermal effects; passivation issues; interconnect reliability prediction and modeling; plasma damage

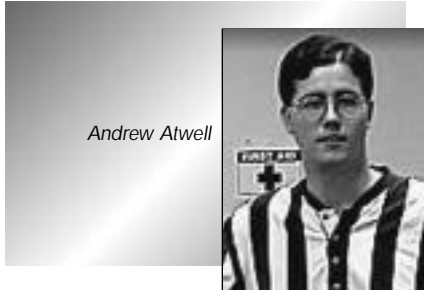
(8) Interconnect Systems: interconnect performance modeling and high frequency characterization; interconnect system integration and advanced packaging concepts (flip-chip, chip-on-chip, MCM); novel architectures; advanced interconnect concepts (RF, optical, superconductors)

Given the rapid acceleration of inter-

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Society News

Student/Young Engineer Article



Andrew Atwell

As a first year graduate student studying MicroElectro Mechanical Systems (MEMS) in silicon carbide at Cornell University, I have become increasingly aware of the importance of establishing a lifelong commitment to research as early as possible during one's education. Summer internships or semester-long senior projects may be formative experiences, but becoming involved in ongoing, long-term research endeavors provide the experience and skills that will be most helpful in fulfilling one's career and professional goals.

As a high school student, I had the wonderful opportunity to work on a long-term research project investigating the surface electronic structure of silicon under the direction of a professor, who would later become my undergraduate advisor. This

IITC (continued from page 5)

grated circuit technology, the last topic provides an important forum for discussion of the interconnect crisis and potential paradigm shifts.

Professionals involved in interconnect-related activities are strongly encouraged to participate in this exciting new conference. Detailed information can be obtained from the IITC website: <http://www.ieee.org/conference/iitc>, or by contacting Wendy Walker, IITC Administrator, Widerkehr & Associates, TEL: 301-527-0900; FAX: 301-527-0994; E-Mail: iitc@his.com. For information on supplier exhibits and seminars please contact Dr. Chris Case at Lucent Technologies, TEL: 908-582-2941; FAX: 908-582-2300; E-Mail: christopher.j.case@lucent.com.

Robert H. Havemann
Texas Instruments, Inc.
Dallas, TX

research extended throughout my undergraduate years. During those five years, I designed the experiments, purchased and built the experimental apparatus, and analyzed the data. Finally, I co-authored a paper that was eventually published and presented at a professional society meeting.

Reflecting on these experiences, I find that committing to a long-term research project was much more valuable than the typical undergraduate research experience. Because it was a long-term project, time was available to carefully design and perform preliminary experiments so that the final work would be rigorously scientifically sound. Throughout the process, I learned how to design and build equipment and experiments compatible with ultra-high-vacuum technology. Furthermore, I discovered how to operate and troubleshoot that equipment in the sometimes tricky and finicky ultra-high-vacuum environment. Much effort was given to statistical data analysis including the construction of data processing algorithms, so that the results could be correctly interpreted. The project culminated in writing a professional paper that has since been published in *Surface Science*. In addition to this, I also prepared a presentation that was viewed at an American Physical Society meeting. Overall, each individual partly contributed to an extremely valuable whole research experience that was just as important, if not more, than traditional undergraduate classroom work.

Due in part to my solid foundation and commitment to research as an undergraduate, I have been successful as a graduate

student in quickly establishing myself in a research group at Cornell University studying MEMS in the Electrical Engineering Department. This past summer, I began working in the Cornell Nanofabrication Facility becoming immersed in all aspects of semiconductor device fabrication in silicon. I am now beginning to transfer that knowledge into the processing of silicon carbide. Instead of spending my first couple of years as a graduate student taking classes without a clear direction, I am presently heavily involved in another long-term research program. This project has given me the opportunity to interact with many of the professors and research staff in various departments, and develop professional relationships with various industrial firms. Due to my early involvement with a research group, I already have a clear direction of how I wish to proceed with my thesis research and what I need to do to accomplish it.

In addition to research, another important aspect of attaining my professional goals is attending lectures sponsored by the department and IEEE. It is very important to see what other people are doing and how the technological advances in electrical engineering are making headway into the scientific community and the world. Not only does IEEE bring top professionals to speak, but it also promotes excellence in research, and provides a forum for the exchange of information and ideas.

Andrew Atwell
Cornell University,
Ithaca, NY

EDS "Chapter of the Year" Award

At its December 1997 meeting, the EDS AdCom approved a "Chapter of the Year" Award. It is given each year based on the quality and quantity of the activities and programs implemented by the nominated chapters during the prior July 1-June 30 period. Nominations for the award can only be made by EDS Chapter Partners.

At the IEDM held in San Francisco in December 1998, the first Chapter of the Year Award was given to two co-recep-

ients, the ED/MTT India Chapter and the ED/CPMT/RL Singapore Chapter. They each received a certificate and check for \$500. These two winners were among five chapters nominated to compete for the award. The India and Singapore chapters were nominated by their Partners, Renuka Jindal and Hiroshi Iwai, respectively.

Cary Y. Yang
Santa Clara University
Santa Clara, CA

December 1998 AdCom Meeting Summary

John K. Lowell



The December meeting of the Administrative Committee (AdCom) of the IEEE Electron Devices Society (EDS) was convened on December 6, 1998 at the San Francisco Hilton & Towers Hotel in conjunction with the International Electron Devices Meeting.

President Bruce Griffing opened the meeting with comments about current issues before the IEEE Technical Activities Board (TAB) that concern the EDS. The first item is a proposed, new model for financing IEEE activities. If accepted, this model proposes to take additional money from the technical societies like EDS. Needless to say, the EDS officers oppose such a move and will express this position to TAB. The next issue is a proposal to project a more prominent public image for the IEEE as a whole. While this is certainly welcomed, the plan suggests that the individuality of each technical society (including their special logos) may be suppressed or disappear altogether. For EDS, the so called "right-hand rule or spinning electron" logo presently in use may be at risk. The last proposal which EDS supports is one that tries to minimize the management of IEEE staff by volunteer workers for any society.

In other TAB news, former EDS President, Mike Adler, was recently elected as VP of TAB, for which the society offers its sincerest congratulations. Mike commented that he will seek to duplicate many successful EDS projects such as globalization and increased chapter support amongst other societies across the IEEE.

Bruce concluded his opening remarks by presenting recognition certificates to outgoing AdCom members Cary Yang, Jerry Woodall, and Shojiro Asai, and outgoing Newsletter editors Savvas Chamberlain, Chennupati Jagadish, and Imre Mojzes. Furthermore, all the EDS officers and AdCom members recognized Bill Van Der Vort, EDS Executive Director, who was awarded the IEEE Joyce E. Farrell award as the outstanding staff member of the year. Finally, it was also announced that Meet-

ings Chair, and former AdCom member, Jim Clemens, will complete the remaining year of elected AdCom member Julia Brown, who announced her resignation.

Treasurer, Lu Kasprzak, reported that income from member fees is higher than expected due to many members taking advantage of the \$25 permanent membership option. Financially, *Electron Device Letters* (EDL) is doing well after being unbundled, and *Transactions on Electron Devices* (T-ED) is also quite successful, even though the page count was higher than expected. *Transactions on Semiconductor Manufacturing* (T-SM) redistributed \$23,000 from surplus and EDS is doing well financially participating in the IEEE Book Broker. EDS reserves are expected to be \$5.2 million at the close of 1998. Other than the possible recommendation by IEEE to raise non-member prices, no increases in fees for any EDS publications are expected.

Executive Director Bill Van Der Vort informed the AdCom of the significant adhoc activities accomplished by the Executive Office since the June AdCom meeting: support of EDS chapter growth worldwide; administration of the first "Chapter of the Year" award; renewal of the memberships and subscriptions of the subsidized chapters in Eastern Europe; participation in regional meetings in the US, Europe, & Asia; maintaining the EDS Home Page on the web; and implementation of process management in their daily activity. In 1999, John Brews will retire as Editor-in-Chief of EDL. By September 1999, it is expected that the Executive Office will fully function as the editorial support for the new editor-in-chief and all EDL editors. It is anticipated that T-ED will eventually follow this change as well. The Executive Office will add a new staff member that will be dedicated to supporting EDL.

Membership Chair, Paul Chow, announced that EDS membership is currently at an all-time high of 12,629 members (as of December 98), up 10.1% over last year. Previously, the numbers in Regions 8 & 10 (Europe & Asia) have been increasing, while membership in 1-6, 7&9 (US, Canada & Latin America) had been dropping. This year, Paul reports that membership in Regions 1-6, 7&9 is up by 8.9%, which is an encouraging sign. Recruitment at major meetings such as the IEDM and International Solid-State Circuits Conference (ISSCC), have been successful. A direct-mail cam-

paign in 1998 also resulted in 126 new members and although the AdCom voted to repeat the campaign in 1999, IEEE Marketing has decided not to allow societies to participate since it is felt that societies were not getting high enough results. Paul and his committee will be working on a mail survey to 2,000 randomly selected members to gather information on member satisfaction, benefits, participation, and other opinions on the Society. They will be aiming new recruitment at students and practicing engineers more so than in the past.

Cary Yang, Regions/Chapters Chair, informed the AdCom that the "region champions" initiative appears to be having a positive impact. In Region 6 alone, champion, Paul Yu, indicated that two new chapters, ED Boise and ED Seattle have been formed, and the potential remains to form several new chapters in and around the Los Angeles and San Francisco areas. In addition, international progress in this area is expanding with ED Cuba, ED CINESTAV Student Branch, and AP/ED/MTT Portugal joining the roster. There is also a new chapter in Region 1, C/ED Maine. Subsidies for new and existing chapters were higher than expected, and are likely to grow in the future. Since 1995, requests have risen from 9 to 47 per year. The biggest news in this arena is the new "Chapter of the Year" Award. Out of five nominees, it was announced that the initial kudo goes to the ED/MTT India and CPMT/ED/RL Singapore chapters who will share the first-time award. Our warmest congratulations to all the officers and members of these two chapters for a job well done. Cary discussed the recent Region 8 Chapters Meeting in Amsterdam (October 1998), the upcoming Region 10 Chapters Meeting in Kyoto (June 1999), and the Regions 1-7&9 meetings being held during the IEDM.

Ilesanmi Adesida reported for Educational Activities Chair, Jerry Woodall. The major function that the Educational Activities Committee oversees is the Distinguished Lecturer Program, which this year sponsored 45 lectures, of which 15 were funded. Subsidy for this program was underused and it is hoped that more chapters will take advantage of this program. It has been very successful in Regions 8 and 10, and it is hoped that Regions 1-7 & 9 will begin to use it. The committee will endeavor to find appropriate metrics to evaluate the program, the visits,

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and the lecturers to increase its attraction and quality. Increased recognition for outgoing lecturers is also being evaluated. In addition, the video lending library is being used more frequently by chapters. IEDM-related videos were requested twenty times this year, while non-IEDM videos were sought six times. Two new videos were proposed for funding. The new ones will be entitled "MEMS Performance and Reliability" and "Dielectrics: Breakdown and Wearout". Total EDS funding for these new productions was approved at \$24,000 (\$12,000 per video) and EDS will get a 22% royalty on future sales.

Publications Chair, Steve Hillenius had a positive report. Requests for EDS journals are as strong as ever, even though the impact factors for EDL and T-ED are down slightly from competition with other IEEE publications. Steve reported that "Circuits and Devices" Magazine will no longer be supported by all Division I societies; but rather ED, LEO and CAS will be the only magazine sponsors. Subsequent to the meeting, James Kuo and Harold Parks were appointed to be the EDS representatives to the Advisory Board. Yuan Taur of IBM will succeed John Brews as Editor-in-Chief of *Electron Device Letters*. The issue was raised about the effect of special issues of T-ED on the impact factors. It was decided that there was no evidence to support special issues having a major influence, and that they will continue to be a part of the T-ED focus.

Meetings Chair, Jim Clemens, indicated that EDS had 34 sponsored meetings, and 72 technically co-sponsored meetings in 1998. A total of 119 meetings were held in 1998, up two from 1997's total. All projected symposia for 1999 were approved. It was pointed out that numerous international meetings from Regions 8 and 10 have been added to the Book Broker program recently. Jim also reported that he will be revamping the membership of his committee.

The Short Courses Committee is a new adhoc committee headed by Jason Woo. Their aim is to acquire or sponsor tutorial classes aimed at practicing engineers in the areas of device technology, design and processing. It is the goal of Jason's group to hold at least two short courses in 1999. It is likely that these will be made available to special events held by chapters or other special educational meetings, and may take advantage of the educational videos being prepared as previously discussed as well.

Fellows Chair, Lou Parrillo, was not present, so committee member Dexter Johnston announced that out of 45 nominations evaluated by EDS, 19 members were elected to the Fellow grade. Included in this new group of Fellows are current elected AdCom members: Cary Yang, Michael Melloch, Ilesanmi Adesida and Andrew Steckl. Six other EDS members who were evaluated by other societies were also elected Fellow.

Other Business

Dexter discussed the aforementioned plan to make all IEEE publications electronic and web-based. The proposed procedure will allow anyone to access a journal or conference paper with back/forward citation capability, and adaptation to multimedia. A common format will be implemented using media standards such as Latex. Capability for peer review and editing will be included. The point of contention is how societies will be compensated for papers originating from their publications. Nevertheless, in 1999, a plan will be developed with general-purpose software tools targeted toward full implementation by 2001. This system known as EPIC will eventually become the vehicle for publication and access to all IEEE publications, as hard copy/printed media versions are phased out.

Another aspect of this evolution involves the EDS effort in making EDL, T-ED & IEDM digests available together on a CD ROM. This disc is currently available to members, but EDS had also been trying to see if more items, particularly more conference proceedings, could or should be added. Steve Hillenius reported that the current CD ROM has space equivalent to 4,700 printed pages remaining. However, the current page total from all 1997 100% EDS sponsored conferences is presently 6,652. So no additions to the current CD will be made. In addition, an archival project in which all EDL & T-ED journals from 1954-1998 would be put on CD ROM was also considered. Due to the high costs of scanning, this project would cost \$225,000 and 19 CDs. While valuable to many members, Steve's recommendation was to wait until a standard DVD format is available. DVD format would easily fit all the journals and conferences onto a single disc, and scanning technology should be reduced in cost.

EDS Goals

President Griffing's final remarks on the "state of EDS" began with his discussion of the upcoming 50th anniversary of EDS in 2002. While there will be a few projects associated with this celebration, amongst the

first will be the production of a booklet documenting and commemorating the ideas, personalities, and efforts that have formed EDS' history. The IEEE History Center will obtain oral histories and other important material, then produce the booklets. EDS will also form a committee (possibly enlisting past Ebers Award winners) to help guide our planning for this important event.

Committee Reports

The Standards Committee reported that Standard P1005 was approved in June, and P1181, which was approved previously in 1991, needs to be re-evaluated. The committee for this action is in need of a new chairman to drive this effort or it will be withdrawn as a standard in March 1999.

The IEEE USA Technology Policy Committee is still supporting important policies in the US House of Representatives on issues of interest to EDS, particularly in the areas of intellectual property and science/engineering funding.

The Power Devices Technical Committee, chaired by Ayman Shibib, identified the topics of super junction power FETs, SOI for Power FETs, SiC technology, HF power devices, display driver applications and high power modules (such as getting high voltage from high current IGBTs) as their important topics for the coming year. There is also a plan to work on a technology roadmap for power devices as well as a liaison with the Power Electronics Society to embrace technology and conferences, which lie outside the IEEE and in Europe. They are also establishing a web site and doing reviews of all related technical papers.

Herb Bennett's Compound Semiconductor TC has been busy with its own technology roadmap (for compound semiconductors) and providing inputs to the IEEE Millennium project, and the 1999 IEEE Spectrum technology forecast. There will be a continued emphasis on meeting coordination, publication for new or emerging technologies, and identifying overlaps between compound, microwave and optoelectronic technologies.

The Optoelectronic Devices Technical Committee chaired by Chennupati Jagadish is also active with the Millennium project, and identifying hot areas of interest. There will also be a report on the past fifty years in optoelectronics, to which they will contribute heavily.

Lu Kasprzak's Device Reliability Physics Technical Committee has been active in formulating focus on published papers in the area and finding more prominent ways of bringing them to attention. One of their goals is an all-electronic

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Summary of the 1998 IEEE Regions 1-6, 7 & 9 Chapters Meeting

The third annual Electron Devices Society Regions 1-6, 7 & 9 Chapters Meeting was held on December 6, 1998 at the Hilton & Towers Hotel in San Francisco. There were 21 chapters (including a student branch chapter) represented at the meeting, with a total attendance of 35. The meeting started at 5:30 PM and was co-chaired by Paul Yu and Hiroshi Iwai, both of whom are EDS Newsletter Editors and members of the EDS Regions/Chapters Committee. This year's meeting featured three honored guests: John B. Damonte, the IEEE Region 6 Director, Loretta Arellano, the Reliability Society President, and Ralph Russell, a member of the Board of Governor of the Components, Packaging and Manufacturing Society.

Paul Yu welcomed everyone and briefly summarized the previous meetings and the goals of the meeting. This was followed by an introduction by Hiroshi Iwai, who gave a concise overview of the various resources and services available to the EDS chapters and members, including the: Chapter Subsidy Program; Distinguished Lecturer Program; Videotape Lending Library; STAR Program; EDS Newsletter; and Chapter Partners Program.

To help initiate an exchange of information among the chapter members represented at the meeting, Hiroshi Iwai and Renuka Jindal each gave a Chapter Partner Report. Hiroshi Iwai reported about the activities of the EDS chapter in Beijing, emphasizing the urgent need to assist the EDS membership growth in China. Membership numbers are low in view of the potential large number of electrical engineers in that region. It is felt that this is because the membership fee is



From left to right: Paul Yu & Hiroshi Iwai host the Regions 1-6, 7 & 9 Chapters Meeting

too high considering their income. The availability of EDS conference proceedings to the chapter was briefly discussed. Renuka Jindal reported about the growth in chapter activities in India, and stressed that EDS support was vital to the formation of new chapters in India.

Cary Yang, Chair of the Regions/Chapters Committee, announced that the 1998 Chapter of the Year Award was shared by the CPMT/ED/RL Singapore Chapter and the ED/MTT India Chapter. He also briefly explained the nomination and selection process for the award. One participant suggested that the nominated Distinguished Lecturers visiting the chapters should be consulted in the selection process. Other discussion followed regarding the relationship between the chapters and the partners. One member suggested that having more than one partner per chapter could better ensure timely assistance when needed. A series of chapter best practices reports then followed. Many chapters mentioned their participation in the Distinguished Lecturer and Video

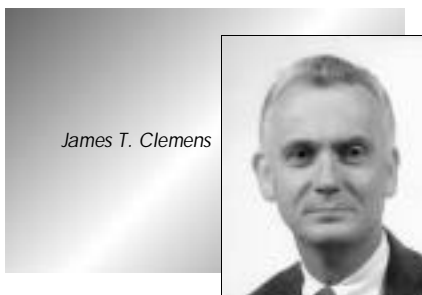
Lending programs. Stephen Parke, a professor at Boise State University, provided a very detailed account of how the Boise Chapter was recently formed with much enthusiastic support from both electronic industry and academia in the region. The Baltimore Chapter reported that its chapter activities were closely related to the long-term projects launched by the chapter. The Atlanta Chapter reported the growing use of the Internet to communicate with and disseminate information to chapter members. Our guest from the CPMT Society, Ralph Russell, shared with everyone the main activities of chapters

of CPMT Society, especially those in Region 8 and Region 10. Like EDS, the CPMTS chapters in Region 6 had been very active, resulting in a number of joint ED/CPMT chapters. It was generally agreed that the many issues facing chapters in both societies should be better coordinated in the future.

The meeting was highlighted with a presentation by the Region 6 Director, John B. Damonte, who emphasized to the chapters that they should look upon the local section as a resource for support and assistance. He also suggested that the local section should be an additional resource for membership information and coordination. There was some discussion about how chapter meeting reports could be collected and forwarded to the ED Society. After a short open discussion of the various reports, the meeting was adjourned at 9:30 p.m.

Hiroshi Iwai
Microelectronics Engineering Lab
Toshiba Corporation
Kawasaki, Japan

1998 EDS Meetings Best Practices Workshop



James T. Clemens

One of the major missions of the IEEE and the Electron Devices Society is to promote the continuing education and career development of its membership. One of the critical activities conducted to fulfill this mis-

sion is to sponsor technical meetings, where advanced technical information is made available to the attendees through workshops, short courses, submitted papers and, finally, the printed proceedings. Presently, the Electron Devices Society fully financially sponsors 34 meetings, technically co-sponsors 76 meetings and provides cooperation support to another 12 meetings, on a worldwide basis. The dissemination of many conference proceedings through the IEEE Book Broker Program makes these conference proceedings available to libraries and individuals.

Because the effort that goes into running a technical conference consists of an

extremely complex mixture of technical, administrative and financial activities, the Electron Devices Society initiated several years ago the Best Practices Workshop. This workshop is held annually on the Sunday evening before the start of the International Electron Devices Meeting. In addition, this workshop is open to and attended by the committee members of EDS sponsored and co-sponsored conferences.

During the past several years we have striven to increase the quality of this workshop, through the content of material presented, reference material for the attendees and the inclusion of speakers,

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Workshop

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who are well experienced in running a variety of small, medium and large technical workshops and conferences.

This year, working with some of the EDS Executive Office staff, Bill Van Der Vort and Amanda Ferraioli, we put together a revised format, and a workshop "How To" binder. The topics covered areas of: Technical Program Planning; Site Selection, Hotel Strategy, Administrative Planning; Proceedings

Preparation; Budgeting Guidelines; and Publicity Arrangements.

The Workshop was attended by approximately 45 people and ended with a lively discussion of the experiences of conference chairs, including Steve Hillenius for the International Electron Devices Meeting, Jim Hayden for the Bipolar/BiCMOS Circuits and Technology Meeting, and Dan Fleetwood for the Semiconductor Interface Specialists Conference.

My many thanks go to all the planners, participants and attendees who made this year's revised workshop the resounding

success that it was. Finally, if you are working on or considering organizing a meeting, you should contact the EDS office (see page 2 for contact information), or myself at j.clemens@ieee.org. Working on conferences is a highly rewarding activity, which allows one to meet and interact with very interesting people, both within your field of professional work, as well as the administrative personnel. I love it and I know you will too!

James T. Clemens
Lucent Technologies, Inc.
Murray Hill, NJ

EDS Chapter Partners Program Activity - Meeting with ED Beijing Chapter

A meeting with the ED Beijing Chapter and EDS AdCom was arranged with the cooperation of chapter partner, Dr. S. Asai on October 20, 1998 at The Twelfth Research Institute, Ministry of Electronics Industry, Beijing, China from 2:00 p.m. to 6:30 p.m. Those in attendance included: Prof. Fu Jiang Liao, Treasurer, Beijing EDS Chapter; J. Jin-Jun Feng, Secretary, Beijing EDS Chapter; Zhiwei Zhou; Qi-Lue Chen; Ren Zhi-Xiang; Hiroshi Iwai., Elected Member, EDS AdCom.

The meeting agenda included a distinguished lecture and a description of chapter activities by Hiroshi Iwai. An introduction about the Twelfth Research Institute, and a report of the ED Beijing Chapter was also provided by Prof. Liao.

The Twelfth Research Institute is a governmental institute under the Ministry of Electronics Industry, formerly called the BVERI (Beijing Vacuum Research Electronics Institute). The chair of the Beijing Chapter is staying in the United States and as a result, Prof. Liao is serving as the substitute for this chair. In 1998, the ED Beijing Chapter organized the ICMMT'98 (International Conference on Microwave and Millimeter Wave Technology) in August, held a technical meeting for discussing advances in microelectronics in January, and invited several foreign scientists to give seminars. Presently, the Beijing Chapter wants to establish new international vacuum electronics conferences in cooperation with partners from other countries due to shrinking activity in IEDM over the past several years.

There are various problems in the chapter as described in the following. As of

now, the total number of members is 59. This is relatively small considering the number of total Chinese engineers engaged in electron devices. One reason for this can be attributed to the fact that there are other strong societies in China in terms of service. Another reason for low membership is that the society and publication fees of the IEEE are still too high for Chinese citizens considering their annual income. It is also desirable for them to pay the fees in Chinese currency because of the difficulty of paying in US dollars. A final problem is that China is too large to hold meetings which include all its EDS member. Thus, the Beijing Chapter presently has 2 liaisons, one in Xian, the other in Nanjing. It is planning to have more liaisons in northeast and south China.

The above results were reported and discussed at the EDS AdCom meeting in San Francisco on 6 December 1998. The

EDS AdCom decided on the following: the issues regarding the society and publication fees would be raised by Mike Adler at the IEEE TAB meeting; the Beijing Chapter could request EDS to subsidize a number of individuals for IEEE and EDS memberships; if the Beijing Chapter wanted to obtain a copy of the proceedings from a specific EDS sponsored conference, it would be provided by the Executive Office free upon request; and the Beijing Chapter would be advised of a contact person in the USA who would be interested in establishing a vacuum electronics conference. Dr. Asai was asked to contact the Beijing Chapter to advise them of the AdCom decisions.

Hiroshi Iwai
Toshiba Corporation
Saiwai-ku, Kawasaki, Japan



Beijing Chapter Treasurer, Prof. F. J. Liao - 2nd from right, Beijing Chapter Secretary, Mr. J. J. Feng - 4th from right, H. Iwai - 1st from the right

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reliability publication embracing device, materials and process issues.

The VLSI Technology Technical Committee chaired by Charlie Sodini has also been active. They plan a joint workshop with the Semiconductor Manufacturing TC on 300-mm issues at the International Symposium on Semiconductor Manufacturing (ISSM) in October of 1999. There will also be a

workshop of RF Passive Components to be held at the ISSCC early next year as well. Beginning in January, Philip Wong of IBM will take over as chairman of this group.

Bruce Griffing reported that there is discussion in TAB regarding the possible formation of a Sensors Council. TAB has approved this area as being appropriate for a council, but it is not yet established or commissioned.

Finally the 1998 IEDM General Chair, Pierre Worlee, indicated that while atten-

dance at the short courses and the conference may be down from expectations due to the downturn in the industry, the meeting should be as successful as always.

The next meeting of AdCom will be in Kyoto, Japan on Sunday, 13 June 1999, concurrent with the VLSI Technology Symposium at the Righa Royal.

John K. Lowell

Systems Resources Consulting, Inc.
Addison, TX

Baltimore Chapter Establishes Partnership with Local Museum



Arlene A. Santos

In February 1998, the steering committee of the newly formed Electron Devices Society (EDS) Baltimore Chapter (SSCS added as a co-sponsor in May 1998) met to organize its first open meeting. It was decided to hold the meeting in March at the Historical Electronics Museum (HEM) in Linthicum, Maryland, because of its proximity to the major employers and universities of the EDS members in the area.

At the first meeting, the Chapter members had the opportunity to tour the museum. There were very impressive exhibits in radio and radar, a small display that chronicled the evolution of solid state devices, and electronics exhibits that desperately needed to be updated. The final exhibit was a 100-mm wafer.

EDS had periodically given monetary donations to the HEM, but did not previously have an organization in the local area that worked with the Museum to ensure the development of exhibits that fall within the EDS field of interest. The Baltimore Chapter took this opportunity to partner with the Historical Electronics Museum in Linthicum, Maryland and provide an updated electron devices exhibit that would serve as an outreach vehicle to students and the general public in the Baltimore-Washington area.

HEM Background and Educational Initiatives

The Historical Electronics Museum col-

lects, preserves, and exhibits artifacts that are significant to the history of electronics. It consists of six galleries of exhibits as well as archives and a lending library. The museum sponsors a lecture series on relevant topics, such as the "Discovery of the Electron" in May-October, 1998. Admission and parking are free. Attendance doubled over the past two years, primarily due to the rise in student and non-technical visitors. The museum's web page is <http://www.erols.com/radarmus/>.

Volunteers at the HEM provide tours and demonstrations to over 1,000 students in the Baltimore-Washington area. Many take slide shows and a box of demonstrations to the classrooms of students who cannot afford to travel to the museum.

On May 1, 1998, an educational gallery was opened in order to provide hands-on exhibits to teach the fundamental principles of electricity and electronics. In addition, Saturday workshops for Boy Scout and Girl Scout troops are provided.

Relationship with Technical Societies

The HEM displays historical collections for the Aerospace and Electronics Systems Society (AESS), Microwave Theory and Techniques Society (MTTS), and the Association of Old Crows. It houses archives of publications for AESS and MTTS made available for reference on-site. It also serves as the meeting site for the IEEE Baltimore Section, the Baltimore Chapters of AES, MTT, and ED/SSC, Volunteers for Medical Engineering, and the Association of Old Crows.

Relationship with EDS

HEM relies primarily on the technical expertise of volunteers to help design the

content of exhibits. Electron device expertise has been historically lacking. The Baltimore Chapter decided to take on the responsibility of filling this need. The chapter assists the HEM by providing technical input on updates to existing exhibits, recommending new exhibits on current and future technology, and requesting and organizing donations (monetary, material, time) to the HEM from chapter members, companies, and societies. The chapter leader on this project is Vice-Chair, Anna Roesch.

Status of HEM Projects

The HEM is currently redesigning the museum exhibit flow to take the visitor through galleries beginning with "Components: The Building Blocks of Electronics" to system applications such as "Space Electronics: Where Next?" The upgraded electron devices display will be part of the first gallery. HEM and the Baltimore Chapter are also planning to include a Sand to Silicon exhibit detailing the IC Manufacturing Process. At its December 1998 meeting, the Electron Devices Society approved to donate \$5,000 to the HEM for this project. It is expected to be completed by December 1999.

In the future, HEM and the Baltimore Chapter plan to design a "Teacher/Volunteer's Guide" for the electron device-related exhibits to enhance the learning experience before, during, and after the visit to the museum. This guide can be made available to EDS for worldwide use. The Baltimore Chapter hopes to share the ideas inspired by the HEM projects to other EDS chapters which may be interested in setting up similar outreach programs for students and the general public in their local areas.

Arlene A. Santos

National Semiconductor Corp.
Ellicott City, MD

1998 J. J. Ebers Award

B. Jayant Baliga



The 1998 J. J. Ebers Award was presented to Professor B. Jayant Baliga of the Electrical and Computer Engineering Department at North Carolina State University at the opening ceremonies of the 1998 IEDM in San Francisco, CA on December 7, 1998. This award is the highest form of recognition by the Electron Devices Society for technical accomplishments. It commemorates the life of Jewell James Ebers, the distinguished pioneering contributor to transistor modeling who helped shape the understanding and development of electron devices. This award was established in 1971 to recognize outstanding technical contributions to electron devices. B. Jayant Baliga was presented a certificate and a check for \$2,000.

The citation for the 1998 J. J. Ebers Award reads as, For fundamental and sustained contributions to power semiconductor devices. Professor Baliga was born in Madras, India in 1948 and obtained his B. Tech degree from the Indian Institute of Technology in 1969 with distinction recognized by receiving the Philips India and Special Merits Medals. He obtained his

M.S. and Ph.D. degrees in 1971 and 1974 from Rensselaer Polytechnic Institute, Troy, NY, where he received the Dumont Prize for pioneering work on organometallic epitaxial growth of III-V compounds, a technique now widely used for manufacturing devices.

From 1974 to 1988, Professor Baliga performed research and directed a group of scientists at the GE Research Laboratory in Schenectady, NY, where he created a new class of MOS-Bipolar discrete power devices. He is the inventor of the Insulated Gate Bipolar Transistor (IGBT) produced by numerous international semiconductor companies for widespread use in appliance controls, robotics, motor control, automotive ignition, electric cars, and most recently, a compact, portable defibrillator for cardiac arrest victims (estimated by the AMA to save 100,000 lives each year). Using a fundamental equation derived by Baliga in 1979, now commonly referred to as the Baliga's Figure of Merit, enhancement in performance of power FETs by a factor of 2,000 times has been projected by replacing silicon with silicon carbide motivating a world-wide effort to develop a new generation of power devices for the twenty-first century.

In August 1988, Jay Baliga joined the Electrical and Computer Engineering Department at N.C. State University, Raleigh, as a Full Professor. In 1991, he established an international consortium, called the Power Semiconductor Research Center and presently, is serving as its

founding director. Under his tutelage, 16 students have completed their Masters degree and 21 students their Doctoral degree, followed by their employment in the semiconductor industry. For these contributions, he was elevated in 1997 to the rank of Distinguished University Professor.

Professor Jay Baliga has authored 8 books, contributed chapters to 20 other books, and written over 500 publications in international journals and conferences. He holds 99 U.S. patents in the solid-state area, including one selected for the 1995 B.F. Goodrich Collegiate Inventors Award given at the Inventors Hall of Fame. His honors include: Fellow of the IEEE (1983) and member of the National Academy of Engineering (1993); and the IEEE Newell (1991) and Liebmann (1993) Awards. He was selected among the 100 Brightest Young Scientists in America by Science Digest Magazine (1984), and named by Scientific American Magazine in 1997 among the eight heroes of the semiconductor revolution. He recently received the 1998 O. Max Gardner Award, which recognizes the faculty member within the 16 universities of the North Carolina system who has made the greatest contribution to the welfare of the human race.

The Electron Devices Society is pleased to be able to recognize and honor Professor B. Jayant Baliga for his outstanding contributions to electron devices.

Dr. Alfred U. Mac Rae
Mac Rae Technologies
Berkeley Heights, NJ

1998 EDS Distinguished Service Award

W. Dexter Johnston, Jr.



Dr. W. Dexter Johnston, Jr. was presented the 1998 EDS Distinguished Service Award at the opening ceremony of the 1998 International Electron Devices Meeting (IEDM) on December 7, 1998 in San Francisco, CA. The EDS Distinguished Service Award was established in 1993 to recognize and honor outstanding service to the Electron Devices

Society and its sponsored activities. Dr. Johnston was awarded a certificate and a check for \$2,500. He is presently a Technical Manager in the Optoelectronics unit of Lucent Technologies. Dexter is a Fellow of the IEEE, has published over 100 technical papers and has 20 patents.

Dr. Johnston has contributed to numerous activities in both EDS and the IEEE. He served for six years, 1983-1989, as an Associate Editor of the *Electron Device Letters*. From 1990 through 1995, Dexter was an elected EDS AdCom member, and served as EDS Vice-President during 1992-1993, and as EDS President in 1994 and 1995. During his term as Vice-President and President, he was instrumental in launching the EDS Newsletter. In 1996 and 1997, he headed the AdCom team to

establish the annual EDS Membership Directory. Many of his other contributions were related to the establishment of EDS involvement in the IEEE on-line periodicals program (OPeRA), to increasing the number of women active in EDS, and he aided in coordination of an agreement with the Electrochemical Society to jointly publish the *Electrochemical and Solid-State Letters*.

Dr. Johnston has been a member of the IEEE Publications Activities Board, the TAB Book Broker Committee, and Chair of the IEEE TAB Products Committee. Many of these IEEE activities have been to help the transition of IEEE publishing from paper to electronic media.

H. Craig Casey, Jr.
Duke University
Durham, NC

Regional and Chapter News

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

AP/ED/MTT San Diego Chapter

— by *Jon Roussos, Chair*

The AP/ED/MTT San Diego Chapter held 6 technical meetings in 1998. The topics presented were as follows: January 1998: Recent Advances in Components for Analog Fiber Links by Dr. Paul Yu from the University of California, San Diego, who is the chapter's EDS partner; February: Low Power Systems-on-a-Chip (SOC) Technologies by Prof. Krishna Shenai from the University of Illinois at Chicago, who is the Editor-in-Chief of the EDS Newsletter; March: Millimeter Wave Packaging and Interconnect by Dr. Wolfgang Menzel from the University of Ulm, Germany; May: Microwave Active Filters: The Search for New Solutions to a Long-Standing Problem by Christen Rauscher from the Naval Research Laboratory, Washington, D.C.; September: Low Voltage Microwave Electronics Mike Golio of Rockwell, Collins, Avionics and Communications Division, who is also the MTT Distinguished Lecturer. The chapter also presented its first-ever one-day workshop in November of 1997. The topic was RF/Microwave Computer Aided Engineering. The Coordinator was Paul Draxler from Qualcomm.

One lesson learned during the last two years is that subjects directly applicable to the wireless phone industry attract the most interest. If the title of the workshop states something such as "... For PCS Applications," there is a greater likelihood of having a better turn-out.

Mark H. Weichold, Editor

Europe, Middle East & Africa (Region 8)

ED/SSC Yugoslavia Chapter

— by *Aleksandar Jaksic*

In mid-December 1998, Prof. Krishna Shenai, Director of Systems on Silicon Research Center (SYSREC), and Director of Power Electronics Research Laboratory (PERL), University of Illinois at Chicago, visited the ED/SSC Yugoslavia Chapter. The visit was organized and sponsored by the Chap-

ter, and funding was also provided from the EDS Distinguished Lecturer Program.

Prof. Shenai held the series of tutorials and lectures in Nis and Belgrade. The first tutorial was given on December 15, 1998, in Nis at the Faculty of Electronic Engineering. It was a great opportunity to find out more about state of the art research in the USA and IEEE activities. Among more than 70 attendees were students, professors and electrical engineers from the Nis area, and from two other main university and industry centers: Belgrade and Novi Sad. Prof. Krishna Shenai's morning tutorial was entitled "Ultra Low Power RF Microsystems." After this 5-hour tutorial, the Yugoslavia ED/SSC Chapter meeting was held. At the meeting, Prof. Shenai presented news regarding IEEE EDS activities, organizational structure and publications. The second lecture, entitled "RF Microsystems and Power Electronics for the Next Millennium," was given on December 16, 1998, in Belgrade, at the Institute for Chemistry, Technology, and Microelectronics. This event attracted more than 80 people from universities of Belgrade and Novi Sad and several institutes located in Belgrade area. The lecture covered a broad range of topics and attracted the attention of not only electrical engineers. Due to the great number of questions and comments, the scheduled time for presentation was almost doubled.

During his stay in Yugoslavia, Prof. Shenai also visited the Electronic Industry Co., the main Yugoslav manufacturer of electronic products. He discussed with company directors the possibilities of participating the segments of the company connected to power electronics more actively in the world market.

MTT/ED/AP/CPMT Nizhny Novgorod Chapter

— by *Yuri Belov*

On 30 October 1998, the MTT/ED/AP/CPMT Nizhny Novgorod Chapter held its annual meeting at the Institute for Measurement Systems (NIIS) in Nizhny Novgorod. The meeting was held in



From left: Aleksandar Jaksic, Krishna Shenai, Ninoslav Stojadinovic and Predrag Markovic.

conjunction with a technical event devoted to new technologies for UHF elements production and CAD used for this purpose.

Seventeen Chapter members attended the event with a number of prestigious engineering and scientific personnel of the NIIS also attending. The large conference hall of the institute was almost full. The first Vice-President of NIIS, Prof. N. Tremasov, provided an introduction and revealed new perspectives of scientific investigations oriented to civil interests, according to the state industry conversion program. Dr. A. Kostrov, an invited speaker from the Applied Physics Institute, reported about recent results of making UHF elements by arch-evaporating techniques. The Head of the CAD Department at NIIS, Dr. S. Vlasov, described the use of new licensed software for the UHF systems design and production. Very lively discussion opened after these contributions. The finale of the technical event was a visit to various exhibits and laboratories of the institute.

The second part of the event was related to current chapter issues. Yuri Belov, Chapter Chair, reported about current problems and future activities. Great interest was shown in the problem of money transfer for IEEE memberships and subscriptions, due to the crisis of the Russian banking system. All Chapter meeting participants expressed their satisfaction with the solution of this problem, worked out after common efforts of the EDS Executive Office staff and the Chapter Chair. The Chapter elections were also held and Dr. Yuri Belov and Mr. Alexander Bykadorov were re-elected as Chapter Chair and

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Vice-Chair, respectively. The meeting was adjourned with a small party.

MTT/ED/CPMT/COM Novosibirsk Chapter

— by *Boris Kapilevich*

The 4th International Conference on Actual Problems of Electronic Instrument Engineering (APEIE'98) was held at Novosibirsk State Technical University September 23-26th, 1998. A great increase in interest in APEIE conferences could be clearly observed. While APEIE'92 hosted about 300 participants, APEIE'98 attendance was about 1,000.

The 503 invited and regular papers were presented in 15 oral sessions, each session addressing key problems of modern electronic devices, component and manufacturing technologies, and some related topics about instrumentation and metrology in electronics. These papers were published in Proceedings of APEIE'98, officially registered as an IEEE edition (IEEE Catalog Number: 98EX179). The exhibition, which was dedicated to electronic devices and software products developed by local industry and universities, was also organized in parallel to the conference. The exhibition attendance was about 400. The MTT/ED/CPMT/COM Novosibirsk Chapter awarded several active conference participants, both engineers and students, special diplomas for the best papers and expositions.

The next APEIE Conference will be held at the same location in September 2000. For further information, please contact: APEIE Secretariat, TEL: +7-3832 465061; E-Mail: Nrec@first.nstu.ru.

MTT/ED/AP/CPMT West Ukraine Chapter

— by *Mykhailo Andriychuk*

The 3rd International Seminar on Direct and Inverse Problems of Electromagnetic and Acoustic Wave Theory (DIPED'98) was held in Tbilisi State University, Georgia, from November 2-5, 1998. This Seminar was organized jointly by the IEEE MTT/ED/EMC Republic of Georgia Chapter and MTT/ED/AP/CPMT West Ukraine Chapter, and technically co-sponsored by IEEE EDS, in cooperation with IEEE MTT, AP and CPMT societies.

The topics of the seminar were the propagation, diffraction and scattering of waves in homogeneous and non-homogeneous media, the synthesis of radiating systems and field transformers, and restoring the shape of radiating and scattering bodies. Thirty papers from Georgia, Ukraine, Rus-

sia, USA, Germany, Mexico, Greece and Turkey were presented in 5 oral sessions and published in DIPED'98 Proceedings. The Best Young Speaker Awards were announced at the seminar closing. The recipients of these awards were: Ms. A. Gheonjian of Tbilisi State University, Georgia for "Computer simulation of ESD from cone," Ms. O. Reshnyak of the Institute for Appl. Probl. of Mech. & Math., Lviv, Ukraine for "Closed solution of a nonlinear integral equations arisen in the antenna arrays synthesis theory," and A. Bidzhanov of Tbilisi State University, Georgia for "New materials design: scattering problems and the method of auxiliary sources."

DIPED is organized annually and is held on a rotating basis in the Republic of Georgia and Ukraine. DIPED'99 is scheduled to be held in Lviv, Ukraine, from September 20-23, 1999. For further information, please contact: Dr. Mykhailo I. Andriychuk, Program Committee Secretary, Institute for Applied Problems of Mechanics and Mathematics, 3"B" Naukova str., Lviv 290601, Ukraine, TEL: +38-0322-651944; Fax: +38-0322-637088; E-Mail: andr@iapmm.lviv.ua.

ED Romania Chapter

— by *Marian Badila*

In 1998, Chapter programs were focused on three main aspects: an effort to increase membership by participation of students in EDS activities; the utilization of EDS IEDM videotape library; cooperation in the organization of the International Conference on Semiconductors (CAS'98).

About 50 students participated in the final step of the contest "Tudor Tanasescu-1998" - "Design of the analog integrated circuits" and 6 student papers were presented during the "Student Papers" Section at CAS'98. Nine prospective students, winners in these contests, were awarded with IEEE and EDS membership.

Five IEDM videotape short courses: "Bipolar Technology for BiCMOS VLSI," "BiCMOS Technology and Design Techniques," "Advanced Device Characterization and Test Methodologies," "Advanced Silicon Processing Techniques For Device Engineers," and "Trend in RF Devices and ICs for Wireless Applications" were presented at the

National Institute for Research and Development in Microtechnologies. Presentations attracted a great interest in the research community. The Workshop "Advanced Power MOS Technology and High Temperature SiC PN Diodes" was organized in cooperation with the University Politehnica Bucharest, Baneasa SA, IMT-Bucuresti, CNM -Spain, Cecely-Insa de Lyon-France. Three invited papers were presented to a large audience.

CAS'98 was organized by the National Institute for Research and Development in Microtechnologies under the auspices of Romanian Ministry of Research and Technology, Romanian Academy, EDS and ED Romania Chapter, and Electrochemical Society Inc. More than 190 people from 26 countries attended this event. Fifteen invited and 115 contributed papers, structured in 19 oral and poster sessions were presented. For the first time, CAS'98 contained a special session "Silicon Carbide Devices", as well as 2 related scientific events: the First Meeting of the European Program INCO-COPERNICUS 9771131 and a NEXUSPAN sponsored course "News Materials and Transducers for Chemical Sensors" (speakers: Prof. W. Gopel and Dr. N. Barsan).

— *Ninoslav Stojadinovic, Editor*

ED Sweden Chapter

— by *Mikael Östling*

During the fall of 1998, the ED Sweden Chapter invited two distinguished lecturers to give interesting presentations. Dr. S. C. Sun, Taiwan Semiconductor Manufacturing Company (TSMC) and an IEEE EDS DL, presented a lecture on interconnect technology and the use of copper metallization. He spent two intensive days with the Electronics Department and also acted as the faculty opponent to Dr. Wlodek Kaplan's PhD thesis "The Use of Self-Aligned Ti Silicide in Integrated Si Technology." In order to reach EDS members outside of Stockholm, we arranged a seminar at Uppsala



From left: Prof. Mikael Östling, KTH and ED Chapter Chair; Dr. S. C. Sun; Dr. Ulf Erlesand, Mitel Semiconductors; Wlodek Kaplan, KTH; Prof. Ulf Smith, Ericsson Components; and Prof. G*ran Stemme, KTH.

University hosted by Professor A. Rydberg. Professor Hermann Schumacher, University of Ulm, Germany, and an IEEE DL, was invited to present his talk "Si/SiGe Heterojunction Bipolar Transistors for Wireless Communications."

A new activity for the chapter is planned for the Spring. We intend to arrange at least two company visits per year for our ED members.

A short course will be arranged together with Prof. Krishna Shenai on RF power and wireless applications during the Summer.

— Mikael Östling, Editor

Report of the 1998 International Workshop on High Performance Electron Devices for Microwave and Optoelectronic Applications

— by Ali Reza-zadeh

The 6th Workshop on High Performance Electron Devices For Microwave and Optoelectronic Applications (EDMO '98) was held in the Manchester Conference Center at the University of Manchester Institute of Science and Technology, Manchester, UK November 23-24, 1998. This Workshop is an annual event sponsored by King's College London and the IEEE MTT/ED/AP/LEO UK & RI Chapter, with support from The Institute of Electrical Engineering (UK) and The Institute of Physics (UK). Its purpose is to act as a forum for microwave and optoelectronic semiconductor device designers, fabricators, modelers and general users to discuss the synergy between system needs and advanced electronic and optoelectronic devices & circuits. It meets the needs of semiconductor materials, devices, circuits and systems engineers to interact with each other, in view of the relentless commercialization of advanced electronic systems featuring the latest in materials and devices research imposing ever shorter "time to market."

EDMO'98 attracted a favorable response and enjoyed a large international attendance with papers from Singapore, Austria, Denmark, Taiwan, Germany, Switzerland, Italy, Ukraine, The Netherlands, Finland, France, Canada, USA, South Africa, Portugal and the UK. Thirty-one papers were orally presented and thirteen papers were arranged for poster sessions. The papers were organized in nine technical sessions. Furthermore, eight invited speakers highlighted the current state of the art in the topics relevant to EDMO, such as manufacturing issues in high volume commercial HBTs, MESFETs and HEMTs. A vendors exhibition was also held for the purpose of

reflecting the interest of EDMO. An award for the best oral paper and poster were presented to the best student papers. The 7th Workshop, EDMO'99, will be held at King's College, London, UK, 22-23 November 1999. For further information, please contact Dr. A. A. Reza-zadeh at the address listed below.

After completing a three year term of office, Neil Williams is stepping down as Chapter Chairman. The new Chairman, as of March 1999, is Dr. Ali A. Reza-zadeh, Reader in Microwave Photonics, Department of Electronic Engineering, Centre for Optics & Electronics, King's College London, Strand, London, UK, WC2R 2LS. TEL/FAX: +44(0)171-873 2879; E-Mail: ali.reza-zadeh@kcl.ac.uk.

ED/MTT Egypt Chapter

— by Ibrahim Salem

The EDS chapter held its workshop on Teaching Electron Devices at Egyptian Engineering Faculties and Institutes. Six papers were presented: "Tailoring the suitable dose of basic electronics as a prerequisite for ED courses," by Prof. A. K. Aboul Seoud; "Development and teaching of a first course on lasers and photoelectronic devices," by Dr. A. H. Morshed; "The use of interactive learning methodology in electronic courses," by Dr. H. El Ghitani; "A tour of the I.C. laboratory Electronic Design Automation facility for Application Specific I.C. prototype," by Prof. H. F. Ragaie; "Electronic Design Automation Laboratory Experience at Arab Academy For Science, Technology and Maritime Transport," by Prof. M. Aboul Dahab & Dr. Y. Hanafy; and "New Trends in Teaching I.C.," by Dr. Hazem H. Ali. Two copies of the proceedings were supplied to EDS.

The 16th National Radio Science Conference was held at Ain Shams University-Faculty of Engineering on 23-25 February 1999. The conference was sponsored by both the National URSI Committee and the MTT/ED Egypt Chapter. For further information, please contact the Chapter Chairman, Professor Ibrahim A. Salem, 17 Elkobbba Street - Heliopolis, Cairo - 11341, Egypt. TEL: 202-258-0256; FAX: 202-594-1270; E-Mail: isalem@brainy1.ie-eg.com.



Photograph of session chairmen/organizers. From left to right: Prof Garth Swanson (King's College London, UK), Dr. Dwight Streit (TRW, USA), Dr. Mo Missous (UMIST, UK), Dr. Bob Wallis (GEC-Marconi, UK), Dr. Peter Kordos (Institute of Thin Films and Ion Technology, Julich, Germany) and D.r Ali Reza-zadeh (King's College London, UK).

ED Israel Chapter

— by Gady Golan

The 2nd International Conference of the "Israel Materials Union" (AGIL-98)-Chairman Prof. Nathan Croitoru, Secretary: Dr. Gady Golan-was held in Ramat Gan, Kfar Ha-Maccabia Conference Center, from November 25th through November 26th, 1998. This conference united most of the Israeli societies in the field of materials research, science and technology. The 14 participating societies included: Israel Society for Surface Finishing; Israel Vacuum Society (IVS); Israel Society for Crystal Growth; The Israeli Division for Hydrides; The Israeli Chapter of the IEEE Electron Devices Society (IEEE-EDS); The Israel Society for Tribology; The Israel Chemical Society; The Israel Society for Microscopy; The Israel Society for Polymers and Plastics; The Metallurgical Society of Israel; The Israel Society for Medical Engineering and Biology; The Israel Physical Society; The Israel Society of Chemical Engineers and Chemists; and The Israeli Society for Enhancing Materials Engineering and Processes. The conference program included topics from each of the participating societies.

For further information, please contact the Chapter Chairman or Chapter Secretary. The Chapter Chair is Professor Nathan Croitoru, Tel-Aviv University, Dept. of Electrical Engineering - Physical Electronics, Faculty of Engineering, Tel-Aviv 69978, Israel. TEL: 972-3-640-8138; FAX: 972-3-642-3508; E-Mail: croitoru@eng.tau.ac.il. The Chapter Secretary is Dr. Gady Golan, Center for Technological Education and The Open University of Israel, 16 Klauzner St., P.O. Box 39328, Tel Aviv 61392, Israel. TEL: 00-

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972-3-646-0329; FAX: 00-972-3-646-5465; E-Mail: gady@oumail.openu.ac.il.

MTT/ED/AP Turkey Chapter

— by *Ayhan Altintas*

News and activities from the AP/MTT/ED Chapter in the Turkey Section in 1998 included: A meeting in April between the Israel and Turkey Chapter officers within the frame of the partnership program; A technical presentation on "Novel III-V Semiconductors and Trends in High Performance Electronics" given by Dr. Cengiz Besikci of the Middle East Technical University, Ankara, Turkey; and a Seminar on çRF Microsystems for the Next Millennium within the EDS Distinguished Lecturer Program presented by Dr. Krishna Shenai, Univ. of Illinois, at Isik University, Istanbul, Turkey. Finally, Dr. Ekmel Ozbay of Bilkent University, Ankara, Turkey, was awarded the 1998 Sedat Simavi Foundation Science Award for his work on the development of new technologies leading to the creation of photonic crystals with electromagnetic bandgaps at the infrared frequency bands. The Sedat Simavi Science Award was named after the founder of the Turkish Journalists Society which was established in 1977. It is annually given to individuals who have made significant contributions to the area of natural sciences. Dr. Ozbay is a member of the Turkey Chapter and received his Ph.D. from Stanford University, USA. He is also the 1997 recipient of the Adolph Lamb Medal of the Optical Society of America.

For further information, please contact the Chapter Chairman Professor Ayhan Altintas, Bilkent University, Dept. of Electrical Engineering, Ankara 06533, Turkey. TEL: 90-321-266-4000 ext. 1489; FAX: 90-312-266-4126; E-Mail: a.altintas@iee.org.

— *Terry Oxley, Editor*

Asia & Pacific (Region 10)

ED Beijing Chapter

— by *Fu J. Liao*

The International Conference on Microwave and Millimeter Wave Technology (ICMMT'98) was held August 18-20, 1998 in Beijing, China. This conference was sponsored by the Chinese Institute of Electronics (CIE) and technically co-sponsored by IEEE EDS and IEEE MTTs. The ED Beijing Chapter was one of the ICMMT'98 organizers. Prof. Fu J. Liao of the Beijing Vacuum Electronics Research Institute, the ED Beijing Chapter Co-Chair, was the Technical Program Committee Chairman. The conference had 270 attendees, and 264 papers from 22 countries were accepted in the proceedings. Fourteen invited papers

were presented at the plenary session, including: Dr. McMillan of the US Air Force Research Lab. on "Concealed Weapon Detection Using Microwave and Millimeter Wave Sensors"; Prof. T. Itoh of UCLA, USA on "Active Integrated Antenna for Microwave Front-End Technology"; Prof. H. Groll of Technische Universität München, Germany on "Propagation Properties of An Indoor-Channel at 94 GHz"; Dr. Lancaster of Birmingham University, UK on "Superconducting air interface for mobile communication base station"; Prof. Y. Kobayashi of Saitama University, Japan on "Development Trends of Microwave High Tc Superconducting Filters"; Prof. N.C. Luhmann of UC Davis, USA on "UC Davis Vacuum and Solid State Millimeter Wave Electronics Program"; Prof. Z.H. Feng of Tsinghua University, China on "Smart and Spacial Division Multiple Sccess" and so on. ICMMT'98 was the first conference of its series to be held in China. The next Conference is in the year 2000.

The ED Beijing Chapter had several seminars this year. They invited Prof. Carter of Lancaster University, UK, Dr. Ghfour-Shiraz of University Birmingham, UK, Dr. Hiroshi Iwai of Toshiba and Dr. S.C. Sun from TSMC to talk about the linear amplifier for space communication, optical millimeter front-end and optical lens for mobile communications, CMOS technology for the next century towards its limit and the semiconductor industry in Taiwan, respectively.

For further information, please contact the Chapter Co-Chair Prof. Fu J. Liao, E-Mail: bverizw@public3.bta.net.cn.

ED Taipei Chapter

— by *S.C. Sun*

The 1998 International Electron Devices and Materials Symposia, IEDMS'98 was held at the National Cheng Kung University in Tainan, Taiwan from Dec. 20 to 23, 1998. The conference was organized into four symposia and over 200 papers were presented. Among them, 30 invited and 177 of these papers were accepted for publication. The conference was the twenty-sixth in a now annual series which was initiated in 1972, and marked the seventh international conference in the series. The purpose of the conference is to bring together researchers in electron devices and materials, so that those in R&D have the opportunity to learn about the recent advances in these fields. The keynote speakers for this year's conference are: Hiroshi Iwai from Toshiba on "RF CMOS Technology", I. Akasaki from Meijo University of Japan on "Widegap Group III Nitride Semiconductors-Past, Present and Future,

and Shinji Morozumi of Hosiden and Philips Display Corp. Japan on "Emerging Huge Market, Era of Flat PC Screen".

— *S.C. Sun, Editor*

ED/MTT India Chapter

— by *K. S. Chari*

The Chapter efforts for the period July 1998 to December 1998 were as stated below:

At the invitation of the Chapter, on 18th September, 98, Prof. P. J. George, Chairman of the Department of Electronic Science, Kurukshetra University delivered the lecture cited "Plasma Source Ion Implantation - A New Processing Technique". The event was held in the Seminar Room, Centre of Applied Research in Electronics, Indian Institute of Technology, Delhi. Sixty post-graduate students and members from industry, R&D groups attended the lecture.

Under the IEEE STAR Program, interactions with students were continued and a brochure for science competition and quiz outlines were worked out for the final event. New schools for the programme in 1999 were identified and interactions with faculty pursued.

A detailed report on the chapter activities for the year was circulated to all chapter members. The Chapter executives met in the 3rd quarter and finalized various actions for workshops and incentives for further promotion of technical activities and new enrollment to EDS memberships. An active interface with the IEEE Delhi Section and the IEEE India Council was established. The current office bearers were re-elected for the further period.

Best Chapter of the Year Award (1998): The ED/MTT India Chapter was selected by the Electron Devices Society for its recently constituted Chapter of the Year Award. The chapter is the joint winner of this award along with the CPMT/ED/RL Singapore Chapter. This award was given to the Chapter for the quality and range of activities conducted during July 97 - June 98.

Chapter technical activities: The following series of talks were held: "High Electron Mobility Transistors: Dr. R Muralidharan, Solidstate Physics Laboratory, Delhi at IIT Delhi on 3rd November, 98.; "Short Channel CMOS Device Technologies", Dr. Ramgopal Rao, IIT Bombay at Semiconductor Complex, Chandigarh on 5th November, 98.; "Micro-Electro Mechanical Systems (MEMS) - Status and Trends" Dr. V. K. Jain, Solid-state Physics Laboratory, Delhi at Delton Hall, Institution of Electrical and Telecom Engineering, Delhi on 17th November, 98. This lecture was co-sponsored by the IEEE Delhi Section and IETE, Delhi; "Applications of Electron-beam Diag-

nostics", Dr. K S Chari and Mr. A K Balani at Jadavpur University, Calcutta on 10th November, 98; "Advances in Quantum Well Intermixing Materials & Devices", Dr. E Herbert Li, University of Hong Kong, Hong Kong at Solid-state Physics Laboratory, Delhi on 21st December, 98.

Short Course: "Design and Modelling of SAW Devices for IF/ RF applications" at IIT, Delhi on 11th - 13th October, 98.

Conference: "International Conference on "Photonics 98": The Chapter has co-sponsored and supported this conference and the short courses held during 14th-18th December, 98. The chapter also constituted 4 awards for the best papers for the general participants and student categories. The tutorials were attended by 180 participants and the conference attracted about 300 participants, including 100 overseas delegates. The Chapter instituted awards were received by [i] Dr. J Peerlings, Technische Universitaet, Germany, [ii] Dr. Perry Shum, City University of Hong Kong, Hong Kong (from the general participants) and [iii] Ms. Sharmila Banerjee, SGSITS Indore [iv] Ms. Chitralekha Choudhuri, North Maharashtra University, Maharashtra (from the students category).

Membership promotion: Membership promotion campaigns were held in the campus of Semiconductor Complex, Chandigarh, Central Scientific Instruments Organisation, Chandigar, IIT Kharagpur and Jadavpur University and Srivenkateswara College of Engineering, Perumbudur. Few technical movies were also screened at these campuses.

— *Wee Kiong Choi, Editor*

Report of the 7th International Symposium on Semiconductor Manufacturing (ISSM'98)

— *by Takeshi Hattori*

ISSM'98 was held in Tokyo October 7-9, 1998. More than 700 participants attended the joint symposium sponsored by the Ultra Clean Society, IEEE Electron Devices Society, and SEMI. This annual symposium has provided a highly interactive forum for people in the semiconductor and related industries, as well as the academic community to share experiences and knowledge and to exchange opinions on semiconductor manufacturing from a scientific point of view. This year, 57 and 56 papers were selected for oral and poster presentations, respectively from 180 papers submitted.

This year, much emphasis was placed on the two-day poster sessions for better communication between participants as an interactive forum. In addition, 7 invited speakers discussed current issues such as

global manufacturing strategies, 300 mm fab and equipment, Cu metallization for low-cost, high-performance manufacturing. The symposium covered a wide variety of topics, such as fab design and management, information systems, yield enhancement, ultra clean technology, equipment/process/material optimization and innovation, manufacturable device structures, and environmental issues. This year's notable topics include cost and cycle-time management, environmental-friendly wafer cleaning, emission control enhancement metrologies, and environmental protection, defect reduction and yield enhancement, and CMP process optimization.

This year, ISSM'99 will be held in Santa Clara, California, October 11-13, 1999. For details, please contact the Ultra Clean Society in Japan: TEL: 03-3815-8775; E-Mail: issm@blue.ocn.ne.jp or Meetings Plus in the U.S. TEL: 925-284-4040; E-Mail: issm@meetingsplus.com. The latest information is available on the Web home page: <http://www.issm.com>.

Report of the 25th International Symposium on Compound Semiconductors (ISCS'98)

— *by Kimiyoshi Yamasaki*

The 25th International Symposium on Compound Semiconductors (ISCS'98) was held at the Nara-ken New Public Hall, Nara, Japan, from October 12 to 16, 1998, co-chaired by Dr. T. Ikegami (NTT) and Dr. J. E. Bowers (Univ. of California). More than 280 people from 14 countries participated, and 144 regular papers and 10 late news papers selected from 221 submitted papers were presented together with 21 invited papers. The topics covered the entire spectrum of compound semiconductors ranging from growth to device applications for GaAs, InP, GaN, SiGe, etc. The ISCS and Heinrich Welker Award was presented to Dr. T. Mimura (Fujitsu Laboratories Ltd.) for his pioneering contribution to Heterostructure High Electron Mobility Transistors. In addition, the Young Scientist Award was presented to Dr. S. P. DenBaars (Univ. of California) for his contribution to MOCVD technology of GaN and other compound semiconductors. Dr. K. Von Klitzing (Max Plank Inst.) gave a plenary talk on Quantum Effects in Semiconductor Nanostructures. At the special session, Heterostructure FET Technologies of 21st Century was freely discussed with snacks and drinks after an invited talk on III-N Electronic Devices by Dr. M. A. Khan (Univ. of South Carolina).

The next symposium (ISCS'99) will be held in Berlin, Germany, from August 22-

26, 1999, co-chaired by K. H. Ploog (Paul Drude Inst.) and Dr. G. Weimann (Fraunhofer IAF). For more information, please contact ISCS'99 Secretary, E-Mail: ISCS99@pdi-berlin.de.

Report of the Sixth International Workshop on Computational Electronics (IWCE-6)

— *by Masato Morifuji*

The Sixth International Workshop on Computational Electronics was held in Icho-Kaikan, Osaka University October 19-21, 1998. More than 100 people from 10 countries attended the workshop. In addition to 16 invited papers, 60 contributed papers were presented in oral and poster sessions. Various topics, which include quantum transport, optoelectronics, device modeling, and even biology, were presented and discussed in terms of a computational study on electronic behavior. The next workshop will be held in Glasgow, UK chaired by Professor John R. Barker. For details, please contact Prof. J. R. Barker, University of Glasgow: E-Mail: jbarker@elec.gla.ac.uk

SSC/ED Seoul Chapter

— *by Chong-Gun Yu*

The Awards Committee of the SSC/ED Seoul Chapter selected two student papers and awarded prizes to two students who published their papers in IEEE Trans. on ED, EDL, and JSSC. The winners were Mr. Gab Joong Jeong from Yonsei University and Mr. Dong-Young Chang from Sogang University. The title of Mr. Jeong's paper, published in JSSC, Vol. 33, No. 6, pp. 910-914, June 1998 was "Design of a Scalable Pipelined RAM System." The title of Mr. Chang's paper, published on JSSC, Vol. 33, No. 8, pp. 1244-1248, August 1998 was "Design Techniques for a Low-Power Low-Cost CMOS A/D Converter."

On February 9th, 1998, a distinguished lecturer, Dr. Hiroshi Iwai from Toshiba, Japan, gave a technical talk on "Downsizing of CMOS toward Deep Sub-0.1 Micron and Its Limitation". In the near future, the activity plans of the Chapter include organizing an international conference called the Asia-Pacific Conference on ASIC, in cooperation with several countries around Region 10 area.

For further information, please contact: Prof. Moon-Key Lee, Chapter Chair; TEL: +82-2-361-2867; FAX: +82-2-312-4584; E-Mail: mkleee@bubble.yonsei.ac.kr; <http://ieee-korea.inha.ac.kr/sscs-eds-chapter>.

— *Hiroshi Iwai, Editor*

EDS Meetings Calendar

(As of 12 March 1999)

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

April 12 - 16, 1999, T **ULTRAFAST ELECTRONICS & OPTOELECTRONICS TOPICAL MEETING**, Location: Snomass, CO, Contact: John Bowers, Tel: (805) 893-8447, Fax: (805) 893-7990, E-Mail: bowers@ece.ucsb.edu, Deadline: Past Due, www: Not Available

April 19 - 21, 1999, T **INTERNATIONAL CONFERENCE ON MODELING & SIMULATION OF MICROSYSTEMS, SEMICONDUCTORS, SENSORS & ACTUATORS**, Location: San Juan Marriott Resort, San Juan, Puerto Rico, Contact: Sarah Wenning, Tel: (510) 847-9152, Fax: (510) 847-9153, E-Mail: msm@dmsun.epfl.ch, Deadline: Past Due, www: <http://www.iacm.org/MSM99>

May 9 - 11, 1999, T **INTERNATIONAL SYMPOSIUM ON PLASMA PROCESS-INDUCED DAMAGE**, Location: DoubleTree Hotel/Monterey Conference Center, Monterey, CA, Contact: Della Miller, Tel: (408) 737-0767, Fax: (408) 737-2403, E-Mail: della@technicalmarketing.com, Deadline: Past Due, www: <http://www.vacuum.org/nccavs/p2id.html>

May 16 - 19, 1999, T **IEEE CUSTOM INTEGRATED CIRCUITS CONFERENCE**, Location: Town & Country Hotel, San Diego, CA, Contact: Melissa Widerkehr, Tel: (301) 527-0900, Fax: (301) 527-0994, E-Mail: widerkehr@aol.com, Deadline: Past Due, www: <http://www.ieee.org/conference/cicc>

May 16 - 20, 1999, @ **IEEE INTERNATIONAL CONFERENCE ON INDIUM PHOSPHIDE AND RELATED MATERIALS**, Location: Davos Congress Center, Davos, Switzerland, Contact: Samantha Padilla, Fax: (732) 562-8434, E-Mail: s.padilla@ieee.org, Deadline: Past Due, www: <http://www.iqe.ethz.ch/iprm99/>

May 18, 1999, T **WORKSHOP FOR TEACHING PHOTONICS AT EGYPTIAN ENGINEERING FACULTIES & INSTITUTES**, Location: Academy of Scientific Research and Technology, Cairo, Egypt, Contact: Ibrahim A. Salem, Tel: 202-258-0256, Fax: 202-594-1270, E-Mail: isalem@rainy1.ie-eg.com, Deadline: 4/21/99, www: None

May 18 - 20, 1999, T **INTERNATIONAL SYMPOSIUM ON APPLICATION OF THE CONVERSION RESEARCH RESULTS FOR**

INTERNATIONAL COOPERATION, Location: Tomsk State University of Control Systems and Radioelectronics, Tomsk, Russia, Contact: O.V. Stoukatch, Tel: 7-3822-233183, Fax: 7-3822-526969, E-Mail: office@tusur.ru, Deadline: Past Due, www: <http://www.rts.tusur.ru/sibconvers99>

May 23 - 26, 1999, * **IEEE INTERNATIONAL INTERCONNECT TECHNOLOGY CONFERENCE**, Location: Hyatt Regency Hotel, San Francisco Airport, Burlingame, CA, Contact: Widerkehr & Associates, Tel: (301) 527-0900, Fax: (301) 527-0994, E-Mail: iitc@his.com, Deadline: Past Due, www: <http://www.ieee.org/conference/iitc>

May 25 - 28, 1999, @ **IEEE INTERNATIONAL SYMPOSIUM ON POWER SEMICONDUCTOR DEVICES & INTEGRATED CIRCUITS**, Location: Crown Plaza Hotel, Toronto, Canada, Contact: M. Ayman Shibib, Tel: (610) 939-6576, Fax: (610) 939-3796, E-Mail: a.shibib@ieee.org, Deadline: Past Due, www: <http://www.utoronto.ca/ispsd99/>

May 31 - June 4, 1999, T **ADVANCED WORKSHOP ON FRONTIERS IN ELECTRONICS**, Location: Hotel President, Lecce, Italy, Contact: Serge Luryi, Tel: (516) 632-8420, Fax: (516) 632-8494, E-Mail: sluryi@sbee.sunysb.edu, Deadline: Past Due, www: <http://www.ee.sunysb.edu/~serge/WOFE/>

June 1 - 4, 1999, # **INTERNATIONAL CONFERENCE ON ELECTRON, ION & PHOTON BEAMS**, Location: Marriott Resort, Marco Island, FL, Contact: Mark Gesley, Tel: (510) 887-3312, Fax: (510) 786-9438, E-Mail: gesley@etec.com, Deadline: Past Due, www: <http://www.eipbn.org>

June 7 - 10, 1999, @ **IEEE TRANSDUCERS - INTERNATIONAL CONFERENCE ON SOLID-STATE SENSORS & ACTUATORS**, Location: Sendai International Center, Sendai, Japan, Contact: TRANSDUCERS '99, Attn: June Echizen, Tel: 81-3-3299-1371, Fax: 81-3-3299-1361, E-Mail: tr99@twics.com, Deadline: Past Due, www: <http://www.com.cas.uec.ac.jp/trans99.html>

June 8 - 10, 1999, T **INTERNATIONAL SYMPOSIUM ON VLSI TECHNOLOGY, SYSTEMS & APPLICATIONS**, Location: Taipei International Convention Center, Taipei, Taiwan, Contact: Rachel Huang, Tel: 886-3-591-7232, Fax: 886-3-582-0056, E-Mail: rachel@erso.itri.org.tw, Deadline: Past Due, www: <http://surf.eng.yale.edu/~vlsi/>

June 10 - 11, 1999, T **ELECTRON DEVICES CONFERENCE**, Location: Consejo Superior de Investigaciones Cientificas Central Campus, Madrid, Spain, Contact: Jose Ignacio Robla Villalba, Tel: 34-1-5618806, Fax: 34-1-4117651, E-Mail: jrobla@fresno.csic.es, Deadline: Past Due, www: <http://www.ifa.csic.es/cde99/cde99.htm>

June 10 - 12, 1999, * **IEEE INTERNATIONAL WORKSHOP ON CHARGE-COUPLED DEVICES & ADVANCED IMAGE SENSORS**, Location: Karuizawa Prince Hotel, Karuizawa, Nagano, Japan, Contact: Nobukazu Teranishi, Tel: 81-427-71-0923, Fax: 81-427-71-0878, E-Mail: ccdws@mel.cl.nec.co.jp, Deadline: Past Due, www: Not Available

June 12, 1999, @ **IEEE INTERNATIONAL WORKSHOP ON STATISTICAL METROLOGY**, Location: Righa Royal Hotel, Kyoto, Japan, Contact: Naoyuki Shigyo, Tel: 81-45-890-2801, Fax: 81-45-890-2890, E-Mail: shigyo@fdae.eec.toshiba.co.jp, Deadline: Past Due, www: <http://www.rcis.hiroshima-u.ac.jp/iwsm>

June 12 - 13, 1999, @ **IEEE SILICON NANOELECTRONICS WORKSHOP**, Location: Righa Royal Hotel, Kyoto, Japan, Contact: Toshiro Hiramoto, Tel: 81-3-3402-0873, Fax: 81-3-3402-0873, E-Mail: hiramoto@nano.iis.u-tokyo.ac.jp, Deadline: Past Due, www: <http://vlsi.iis.u-tokyo.ac.jp/si-nano>

June 13 - 15, 1999, * **IEEE RADIO FREQUENCY INTEGRATED CIRCUITS SYMPOSIUM**, Location: Marriott Hotel, Anaheim, CA, Contact: Christian Ker-marrec, Tel: (617) 937-1217, Fax: (617) 937-1051, E-Mail: christian.kerमारrec@analog.com, Deadline: Past Due, www: Not Available

June 14 - 16, 1999, @ **IEEE SYMPOSIUM ON VLSI TECHNOLOGY**, Location: Righa Royal Hotel, Kyoto, Japan, Contact: Phyllis Mahoney, Tel: (301) 527-0900, Fax: (301) 527-0994, E-Mail: pwmahoney@aol.com, Deadline: Past Due, www: <http://ieee.org/conference/vlsi>

June 16 - 19, 1999, # **CONFERENCE ON INSULATING FILMS ON SEMICONDUCTORS**, Location: Kloster Banz, Erlangen, Germany, Contact: Max Schultz, Tel: 49-0-9131-85-8421, Fax: 49-0-9131-85-8423, E-Mail: infos99.physik@rzmail.uni-erlangen.de, Deadline: Past Due, www: <http://>

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@ = Alternates support between 'Sponsorship/Co-Sponsorship' and 'Technical Co-Sponsorship'
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www.physik.uni-erlangen.de/lap/Infos99/index.htm

June 17 - 19, 1999, # **IEEE SYMPOSIUM ON VLSI CIRCUITS**, Location: Righa Royal Hotel, Kyoto, Japan, Contact: Phyllis Mahoney, Tel: (301) 527-0900, Fax: (301) 527-0994, E-Mail: pwmahoney@aol.com, Deadline: Past Due, www: <http://iee.org/conference/vlsi>

June 20 - 23, 1999, * **IEEE UNIVERSITY/GOVERNMENT/INDUSTRY MICROELECTRONICS SYMPOSIUM**, Location: Radisson Metrodome, Minneapolis, MN, Contact: Greg T. Cibuzar, Tel: (612) 625-8079, Fax: (612) 625-5012, E-Mail: cibuzar@ee.umn.edu, Deadline: Past Due, www: <http://www.mtl.umn.edu/ugim99>

June 26, 1999, T **HONG KONG ELECTRON DEVICES MEETING**, Location: The Chinese University of Hong Kong, Shatin, N.T., Hong Kong, Contact: J.B. Xu, Tel: 852-2609-8297, Fax: 852-2603-5558, E-Mail: jbxk@ee.cuhk.edu.hk, Deadline: 4/15/99, www: <http://www.ee.cuhk.edu.hk/ee/edm99.html>

June 28 - 30, 1999, * **IEEE DEVICE RESEARCH CONFERENCE**, Location: University of California at Santa Barbara, Santa Barbara, CA, Contact: Mark Rodder, Tel: (972) 995-2873, Fax: (972) 995-2770, E-Mail: rodder@spdc.ti.com, Deadline: Past Due, www: <http://ece-www.colorado.edu/~drc/>

July 4 - 7, 1999, T **EUROPEAN CONFERENCE ON HIGH TEMPERATURE ELECTRONICS**, Location: Westin Grand Hotel, Berlin, Germany, Contact: Richard Sharp, Tel: 44-1-1235-463407, Fax: 44-0-1235-464253, E-Mail: richard.sharp@aeat.co.uk, Deadline: Not Available, www: not available

July 4 - 8, 1999, T **INTERNATIONAL CONFERENCE ON CIRCUITS, SYSTEMS, COMMUNICATIONS AND COMPUTERS**, Location: Conference Center of the Hellenic Telecommunications Company, Athens, Greece, Contact: Nikos E. Mastorakis, Tel: 301-777-5660, Fax: 301-777-5660, E-Mail: mastor@iee.org, Deadline: Past Due, www: <http://www.softlab.ece.ntua.gr/~mastor/CSCC99.htm>

July 5 - 9, 1999, T **INTERNATIONAL CONFERENCE ON NITRIDE SEMICONDUCTORS**, Location: Palace of Congress, Montpellier, France, Contact: Dr. Bernard Gil, Tel: 33-4-67-14-39-24, Fax: 33-4-67-14-37-60, E-Mail: gil@ges.univ-montp2.fr, Deadline: Past Due, www: <http://bilbot.ges.univ-montp2.fr/icns3.htm>

July 5 - 9, 1999, T **IEEE INTERNATIONAL SYMPOSIUM ON THE PHYSICAL & FAILURE ANALYSIS OF INTEGRATED CIRCUITS**, Loca-

tion: Orchard Hotel, Singapore, Contact: M.K. Radhakrishnan, Tel: (65) 770-5439, Fax: (65) 774-5747, E-Mail: radha@ime.org.sg, Deadline: Past Due, www: <http://cicfar.ee.nus.sg/ipfa/ipfa99.html>

July 6 - 8, 1999, T **INTERNATIONAL MICRO-PROCESS AND NANOTECHNOLOGY CONFERENCE**, Location: Yokohama-shi Ginou Bunka Kaikan, Yokohama-shi, Kanagawa, Japan, Contact: Hiroaki Masuko, Tel: 81-3-5814-5800, Fax: 81-3-5814-5823, E-Mail: confg5@bcasj.or.jp, Deadline: Past Due, www: <http://www.nano.ee.es.osaka-u.ac.jp/mnc/>

July 6 - 9, 1999, @ **IEEE INTERNATIONAL VACUUM MICROELECTRONICS CONFERENCE**, Location: Congress Hall Darmstadt, Darmstadt, Germany, Contact: Hans W.P. Koops, Tel: 49-6151-83-2368, Fax: 49-6151-83-8188, E-Mail: ivmc99@hrzpub.tu-darmstadt.de, Deadline: Past Due, www: <http://www.hf.e-technik.tu-darmstadt.de/ivmc99/index.html>

July 11 - 15, 1999, T **INTERNATIONAL CONFERENCE ON UNSOLVED PROBLEMS OF NOISE**, Location: University of Adelaide, North Terrace, Adelaide, Australia, Contact: Derek Abbott, Tel: 618-8303-5748, Fax: 618-8303-4360, E-Mail: dabbott@eleceng.adelaide.edu.au, Deadline: Past Due, www: <http://www.eleceng.adelaide.edu.au/Personal/dabbott/UpoN/uponhome.html>

August 2 - 5, 1999, @ **INTERSOCIETY ENERGY CONVERSION ENGINEERING CONFERENCE**, Location: Hotel Vancouver, Vancouver, British Columbia, Canada, Contact: Karen E. Thomson, Tel: (724) 772-7120, Fax: (724) 776-1830, E-Mail: kthomson@sae.org, Deadline: Past Due, www: <http://www.sae.org/CALENDAR/iec99cfp.htm>

August 16 - 17, 1999, T **INTERNATIONAL SYMPOSIUM ON LOW POWER ELECTRONICS AND DESIGN**, Location: Hyatt Islandia on San Diego's Mission Bay, San Diego, CA, Contact: Farid N. Najm, Tel: (217) 333-7678, Fax: (217) 244-1946, E-Mail: najm@uiuc.edu, Deadline: Past Due, www: <http://www.ee.ucla.edu/islped99>

August 22 - 26, 1999, @ **IEEE INTERNATIONAL SYMPOSIUM ON COMPOUND SEMICONDUCTORS**, Location: Zeiss Planetarium, Berlin, Germany, Contact: ISCS '99 Secretary, Tel: 49-30-20377-352, Fax: 49-30-20377-201, E-Mail: ISCS99@pdi-berlin.de, Deadline: 4/12/99, www: <http://www.pdi-berlin.de/iscs/>

August 23 - 26, 1999, T **INTERNATIONAL CONFERENCE ON NOISE IN PHYSICAL SYSTEMS & 1/F FLUCTUATIONS**, Location: Hong Kong Polytechnic University, Hong Kong, Contact:

Charles Surya, Tel: 81-2766-6220, Fax: 81-2362-8439, E-Mail: ensurya@en.polyu.edu.hk, Deadline: Past Due, www: <http://www.ee.ust.hk/ieeeds/icfn>

September, 1999, T **TRANS BLACK SEA REGION SYMPOSIUM ON APPLIED ELECTROMAGNETICS**, Location: Tirnovo, Bulgaria, Contact: Nikolaos K. Uzunoglu, Tel: 30-1-7723556, Fax: 30-1-7723557, E-Mail: nuzu@cc.ece.ntua.gr, Deadline: Not Available, www: Not Available

September, 1999, T **INTERNATIONAL CRIMINEAN MICROWAVE CONFERENCE**, Location: Crimea, Ukraine, Contact: Dr. Pavel P. Yermolov, Tel: 38-0692-42-42-87, Fax: 38-0692-444-768, E-Mail: micoc@bios.nsk.su, Deadline: Not Available, www: Not Available

September 6 - 8, 1999, @ **IEEE INTERNATIONAL CONFERENCE ON SIMULATION OF SEMICONDUCTOR PROCESSES AND DEVICES**, Location: Kyoto Research Park, Kyoto, Japan, Contact: Secretariat, c/o Business Center for Academic Societies Japan, Tel: 81-3-5814-5800, Fax: 81-3-5814-5823, E-Mail: confg5@bcasj.or.jp, Deadline: Past Due, www: <http://www-e7.ele.eng.osaka-u.ac.jp/SISPAD/>

September 8 - 10, 1999, * **IEEE/SEMI ADVANCED SEMICONDUCTOR MANUFACTURING CONFERENCE AND WORKSHOP**, Location: The Fairmont Copley Plaza, Boston, MA, Contact: Margaret M. Kindling, Tel: (202) 289-0440, Fax: (202) 289-0441, E-Mail: mkindling@semi.org, Deadline: Past Due, www: Not Available

September 13 - 15, 1999, T **EUROPEAN SOLID-STATE DEVICE RESEARCH CONFERENCE**, Location: City Campus of the Katholieke Universiteit, Leuven, Belgium, Contact: Herbert Gruenbacher, Tel: 43-4242-2004-120, Fax: 43-4242-2004-179, E-Mail: hg@cti.ac.at, Deadline: 4/9/99, www: <http://www.essderc.org>

September 13 - 17, 1999, T **INTERNATIONAL CONFERENCE ON ELECTROMAGNETICS IN ADVANCED APPLICATIONS**, Location: Torino Incontra Congress Center, Torino, Italy, Contact: P.L.E. Uslenghi, Tel: (312) 996-6059, Fax: (312) 413-0024, E-Mail: uslenghi@eeecs.uic.edu, Deadline: Past Due, www: <http://www.polito.it/iceaa99>

September 19 - 22, 1999, * **INTERNATIONAL CONFERENCE ON MICROELECTRONICS (MIEL)**, Location: University of Nis, Nis, Yugoslavia, Contact: Aneta Trajkovic, Tel: 381-18-529-326, Fax: 381-18-46-180, E-Mail: miel@unitop.elfak.ni.ac.yu, Deadline: Past Due, www: <http://unitop.elfak.ni.ac.yu/miel/welcome.html>

EDS Members Elected to the IEEE Grade of Fellow

Effective 1 January 1999

Masayuki Abe: For contributions to III-V compound semiconductor optoelectronic and high-speed devices.

Ilesanmi Adesida: For contributions to compound semiconductor devices and circuits.

Isamu Akasaki: For contributions to and leadership in research and development of group III nitride semiconductor materials and devices.

Fazal Ali: For contributions to the design and development of monolithic microwave integrated circuits (MMICs) and providing leadership in commercial applications of the same.

Constantine N. Anagnostopoulos: For contributions to Solid State Imagers and Integrated Circuits for Digital Cameras.

Giorgio Baccarani: For contributions to the scaled silicon device theory.

Tze-Chiang Chen: For contributions to silicon bipolar and DRAM technology development.

James Anthony Dayton, Jr.: For contributions to the design of microwave devices.

Mitra Dutta: For contributions to heterostructure-based optoelectronic and electronic devices.

John Aiden Higgins: For contributions to development of GaAs transistor technologies for microwave and high speed integrated circuits.

Harold LaRoy Hughes: For discovery of radiation-induced oxide-trapping effects in metal-oxide-semiconductor (MOS) structures, and the hardening against such radiation effects.

Yue Kuo: For contributions to thin-film transistor technology and processes.

David Noel Lambeth: For scientific, educational and professional contributions in the fields of magnetism, data storage systems, and electronic devices

Michael R. Melloch: For contributions to silicon carbide device technology.

Tohru Nakamura: For contributions to the development of high-speed bipolar integrated circuits.

Yael Nemirovsky: For contributions to compound semiconductor devices and technology.

Heiner Ryssel: For introduction of ion implantation technology into the German Semiconductor Industry.

Charles Alvin Spindt: For the development of the microfabricated field-emission-cathode array and for contributions to the field of vacuum microelectronics.

Andrew Jules Steckl: For contributions to focused ion beam implantation and semiconductor device fabrication.

Dwight Christopher Streit: For contributions to the development and manufacturing of heterojunction materials and devices.

Ting-wei Tang: For contributions to the hydrodynamic transport modeling of semiconductor devices.

George David Vendelin: For contributions to microwave and millimeter-wave monolithic integrated circuits design.

Siu-Weng Simon Wong: For contributions to multi-level interconnect technology for ultra-large scale integrated circuits.

Cary Y. Yang: For contributions to microelectronic education and the understanding of interfacial properties of silicon-based devices.

Ian Alexander Young: For contributions to microprocessor circuit implementation and technology development.