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IEEE Electron Devices Society Newsletter

1994 GaAs IC Symposium



The 1994 GaAs IC Symposium will feature integrated circuit technologies in GaAs, InP, and other compound semiconductors and will be held at the Wyndham Franklin Plaza Hotel, Philadelphia, PA, October 16-19, 1994.

In its 16th year, the GaAs IC Symposium continues its tradition of service to the compound semiconductor IC technical community. As the premier forum in the field, the Symposium has matured with the industry, emphasizing the manufacturing and applications areas in recent years. The main objective of the Symposium has been to maintain thorough representation of all aspects of the compound semiconductor IC community: materials, devices, techniques, circuit design, testing, packaging and applications. In addition, the Symposium features several very popular and highly interactive sessions. The 1993 Symposium's measure of success was apparent as paper submissions were at a record high and attendance was up 35%. Another first for 1993 was that 40% of the attendees classified themselves as GaAs IC customers.

What's driving this broad based surge in GaAs IC interest? There are several factors. Digital systems that require speed and precision are finding GaAs

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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 or appropriate Associate Editor. All contact information is listed on page 2. Whenever possible, e-mail is the preferred form of submittal.

Newsletter Deadlines

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

Your Comments Solicited

This is the first issue of the new EDS Newsletter. Your comments and suggestions are most welcome. Please write directly to the Editor of the Newsletter at the address given on page 2.

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Message from the Outgoing President

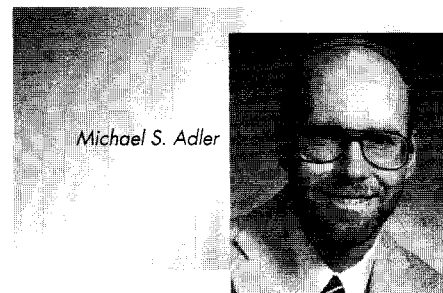
As outgoing president of the Society, I wanted to give members an update on the status of the Society and some of the new initiatives.

One of the most visible initiatives is this newsletter. The need for the newsletter became clear during our recent attempt to reach out to our chapters and become more global. It was obvious we were very disconnected from our chapters and that our chapters were very disconnected from each other. These problems were much greater internationally than in the US. The newsletter is an attempt to get back in touch with our members and chapters and to allow our chapters to communicate with their members and with other chapters. This increased interaction will be particularly important as we grow internationally by increasing our presence and offering new members more for their membership.

Relative to the above, international growth is the single biggest priority for the Society. Our field is already international and growing more so. Presently EDS has 33% of its members outside of the US with this number growing at a rate of 5-8% per year, offsetting a decline in membership in the US. In spite of this level of membership, we are presently not a major force in either Europe or Asia. On the other hand, we are the only society in the field of electron devices that has a reasonable chance of becoming a truly global society. By being truly global, we will be able to serve all of our membership better by providing for interchange among the entire worldwide technical community.

Last year the Society made two fact-finding trips, one to Asia in May and one to Europe in September. The goals of both trips were two-fold. The first was to improve our membership service by increasing our involvement with technical meetings and getting feedback on any issues with our journals or awards. The second was to increase our membership and the number of our chapters. In Europe, for example, we have eight chapters compared to 18 for the Microwave Theory and Techniques Society (MTTS) which is about the same size as EDS. Both trips concentrated on visiting our chapters, since they are our base of operations in both regions. The reaction to our visits was overwhelmingly positive and there was a genuine appreciation of the fact that we took the effort to make the trip. The salient points of the feedback we received were:

(continued on page 5)



Michael S. Adler

EDS ADCOM MEMBERS-AT-LARGE

Term Expires:

1994

J.T. Clemens
A.G. Foyt
J.L. Merz
L.C. Skinner, II
C.G. Sodini
R.B. True

1995

S. Asai
P.E. Cottrell
W.D. Johnston, Jr.
L.C. Parrillo
J.M. Woodall
C.Y. Yang

* 1996

B.F. Griffing
T. Ikoma
R.P. Jindal
J.B. Kuo
J.K. Lowell
I. Mojzes
T.H. Ning
R.J. Van Overstraeten

* Members elected 12/93

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1994 GaAs IC Symposium

(continued from page 1)

ICs as a cost-effective solution, particularly in clocking functions. The affordability of GaAs coupled with its compatibility with silicon circuits has shifted the use of the technology. Not only is GaAs successfully deployed in supercomputers, but in microprocessor based systems as well. In the analog market, the interest in compound semiconductor ICs can be summed up in the word wireless. Last year, the number of cellular and pager subscribers increased by over 5 million (source: Yankee Group). This growth is expected to continue. To this is added 1.5-1.8 million new wireless data LANs and WANs in the US for 1994 (source: Taylor & Associates). The wireless industry is more than just healthy. Some market analysts predict a 3-fold growth for the LANs and WANs after 1995 and the opportunity above 800 MHz is attracting solution suppliers to GaAs ICs. World wide, a conservative estimate projects new digital wireless sales to top 8 million units in 1994. So why use GaAs? Compound semiconductor technologies offer competitive advantages in noise, efficiency, and cost. These are but a few of the subjects to be covered in Philadelphia, PA October 16-19, 1994.

The 1994 GaAs IC Symposium will continue the previous year's successful format. Approximately 70-80 speakers will deliver reviewed papers in the field of integrated circuit engineering using GaAs and related compound semiconductors. In addition, the Technical Program Committee selects industry experts who will be invited to speak on subjects of topical interest. An integral part of the symposium is the Sunday short course. The 1994 Sunday short course topic is the particularly relevant subject "mixed-mode design". For further information on the short course, please contact Lisa Sobolewski at ARPA, E-MAIL: lsobolewski@arpa.mil or TEL # (703) 696-2254. In addition to the Conference Proceedings, selected peer-reviewed papers are published in a Special Issue of the IEEE J. Solid State Circuits.

As in the past, the Symposium will include lunch panel sessions, a technical exhibition, and a vendor product forum. The 1994 Technical Exhibition will include companies representing the spectrum of products related to the compound semiconductor industry. In past exhibitions, the participating vendors included not only those engaged in the production of materials, epi substrates, packages, software, and fab

equipment; but, IC suppliers, foundries, and design services were also represented. There is still some room for companies desiring booth space at the two-day technical exhibition. For more information, please contact Harry Kuemmerle at VIP Meetings and Conventions, TEL # (310) 459-4691 or FAX # (310) 459-0605.

The Symposium's breadth offers attendees not just technical presentations in their own specialty, but outside their specialty. Product architect, circuit designer, technologist, customer and vendor all gather at the Symposium for the year's most complete GaAs IC forum. If you're new to GaAs ICs, a Sunday evening primer will be given to allow you to better utilize the Symposium's wealth of information. The primer received very high marks from last year's attendees. The highest attendee ratings in the 1993 Vendor Product Forum went to the New IC Products section. This section is likely to be expanded, especially with the flood of new GaAs ICs for wireless applications. The composition of this forum depends on the responses we receive. For questions or comments on the Vendor Product Forum, please contact Wes Mickanin at TriQuint Semiconductor, E-MAIL: wesm@tqs.com or TEL # (503) 671-0767, ext. 248.

If the technical intensity has you worn down, then the Symposium's social events or the affable city of Philadelphia should revive the most exhausted spirit. With as many as four days of presentations, the Executive Committee tries to balance the program with informal social functions. Starting with an opening reception Sunday evening at the Wyndham and continuing Tuesday evening at the Franklin Institute Science Museum, the symposium organizers have sought to facilitate information exchange outside the traditional technical format. Even with last year's symposium topping 500 participants, most found the symposium highly interactive as well as informative. If you've been to the GaAs IC Symposium in the past, you know what we mean.

Consider a Saturday arrival! The middle of October, a perfect time to rejuvenate the technical juices in Philadelphia. The summer is over, the leaves have fallen, and it's too soon to ski. You might as well arrive in Philadelphia on Saturday. You can all take advantage of the "Saturday night stay provision" for a reduced fare airline ticket. For west coast travelers, the cost savings in airfare more than offsets the cost of an extra night lodging. Sunday beckons the GaAs IC Short Course or the city and surroundings of Philadelphia, one of the most walkable cities in America. The Wyndham hotel, host to the 1994 GaAs IC Symposium, is centrally located. It's a great starting place for a walk to dine, to shop, or to tour. Out of towners can avoid the rental car cost and hassle and rely on their legs and perhaps a few subway tokens (SEPTA). A short walk to the west is the world famous Philadelphia Museum of Art. Five subway stops east is the Delaware river with its shops and exciting night life. Also close by is Independence National Park, "America's most historic square mile", home to Independence Hall and the Liberty Bell. The arts and history come alive in Philadelphia. More relaxing are trips outside the city center to the Amish Homesteads in Lancaster or to Valley Forge in Montgomery. The more energetic high-rollers can take Amtrak from near the Wyndham Hotel to the Jersey shores and the casinos of Atlantic Beach. All totaled, Philadelphia and the 1994 GaAs IC Symposium represent the best opportunity in recent years to blend the best GaAs technology with a little vacation.

Finally, if you want to be added on the mailing list, please contact Tom Andrade at Cirrus Logic, E-MAIL: tandra@cirrus.com, TEL # (510) 249-4945. For general information, please contact the 1994 Symposium Chairman, Don D'Avanzo at Hewlett-Packard, E-MAIL: dond@sr.hp.com, TEL # (707) 577-2644.

— Tom Andrade, Cirrus Logic,
231 Belgatos Road, Los Gatos,
CA 95032-5010

1994 Bipolar/BiCMOS Circuits and Technology Meeting (BCTM)

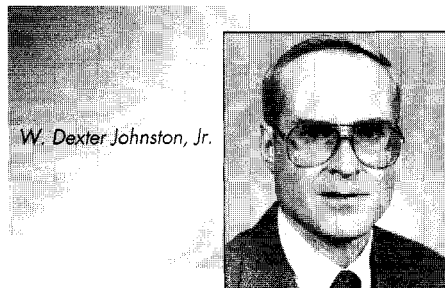
The 1994 BCTM will be held at the Minneapolis Marriott Hotel on October 10-11, 1994. This focused meeting will concentrate on developments in wide bandwidth analog and mixed-signal ICs and high-performance digital BiCMOS. Supporting subjects such as device modeling, device physics, and CAD will also be well repre-

sented. About 350 engineers from the US, the Pacific Rim and Europe are expected to attend. Preliminary indications are that we will have attendance and papers from a record number of foreign countries. The size and organization of the meeting fosters vigorous exchange of ideas in an

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EDS Officers for 1994

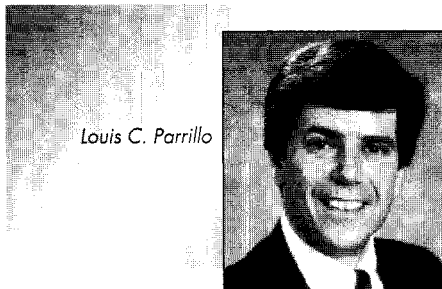
W. DEXTER JOHNSTON, Jr. (President) — (BS Physics 1961, Yale College; Ph.D Physics 1966, MIT). He joined the AT&T Bell Laboratories, Holmdel, NJ in



1966, and carried out research on lasers, nonlinear optics and ferroelectric materials, photovoltaic devices, and compound semiconductors. From 1980 through 1992 he led the development of vapor phase epitaxial growth for the manufacture of lasers used in AT&T fiber optic communications systems. He is currently Technical Manager, Semiconductor Laser R & D at AT&T Bell Laboratories, Murray Hill, NJ and is responsible for expediting advanced photonic devices from concept to prototype. He has authored over 100 papers, a book on solar cell technology, and holds 23 US patents. He was an Associate Editor of the EDS Electron Devices Letters from 1983 to 1989, and was EDS Publications Chairman from 1989 to 1991. He is a Fellow of the IEEE.

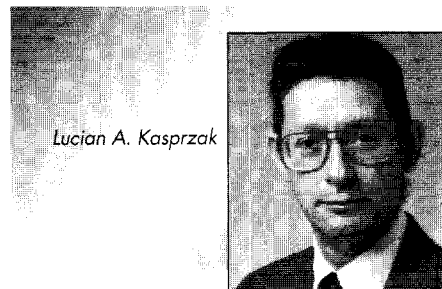
LOUIS C. PARRILLO (Vice President) — (BSEE 1964, Univ. of Connecticut; MSEE 1967 and Ph.D 1972, Princeton University). In 1972, he joined the AT&T Bell Laboratories, Murray Hill, NJ and worked on semiconductor technology, leading to the development of twin-tub CMOS. In 1984 he joined Motorola in Austin, TX, and in 1988 became Vice President of the Technical Staff and Director of the Advanced Products Research and Development Labo-

ratory, managing over 400 research and support staff responsible for the development and transfer to manufacturing of new CMOS and BiCMOS technologies. In 1992, he and Richard Payne received the EDS J.J. Ebers Award for their contributions to CMOS and Bipolar IC technology. He was General Chairman of the 1990 IEDM.



He has published over 40 conference and journal papers, and has 28 issued or pending patents. He is a Fellow of the IEEE.

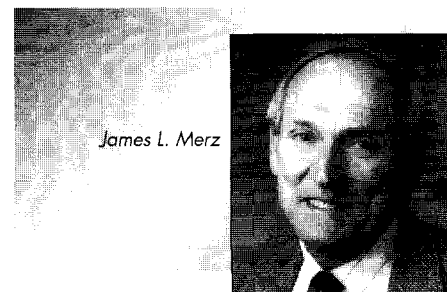
LUCIAN A. KASPRZAK (Treasurer) — (BS Physics 1965, Stevens Institute of Technology; MS Physics 1970, Syracuse University; Ph.D Materials 1972, Stevens Institute of Technology). He joined IBM in



1965, working on failure analysis, MOS and bipolar process development, and VLSI reliability. In 1992, he joined the faculty of Franciscan University, Steubenville, OH. He received IBM awards for the discovery of the hot electron effect (1974)

and development of a reliable low barrier Schottky diode (1980). He is Chair of the EDS Device Reliability Committee, EDS representative to the Int. Reliability Physics Symposium and was on the Advisory Board for the Circuits and Devices Magazine. He has been General Chairman and Technical Program Chairman for IRPS. He has 26 publications and 3 patents.

JAMES L. MERZ (Secretary) — (BS Physics 1959, Notre Dame University; MA Applied Physics 1961 and Ph.D Applied Physics 1967, Harvard University). He joined the AT&T Bell Laboratories in 1966, in 1978 became Professor of EE at UC Santa Barbara, Santa Barbara, CA and



since 1989 has been the Director of the Center for Quantized Electronic Structures, an NSF Science and Technology Center. His present research interests include optical properties of semiconductors, optoelectronic ICs, and low-dimensional quantum structures. He was Chairman of the Department of ECE 1982-84 and Associate Dean for Research Development of the College of Engineering 1984-1986. He received an honorary doctorate from Linköping University, Sweden, in 1993. He has over 250 publications and 5 patents. He is a Fellow of the IEEE and the American Physical Society.

— *Lewis M. Terman,*
IBM Research Center,
Yorktown Heights, NY

EDS Members Elected to the IEEE Grade of Fellow effective January 1, 1994

Yalcin Ayasli
Yiu-chung Cheng
Aristos Christou
Ching-Te K. Chuang
Mihai D. Draganescu
Lawrence N. Dworsky
Aicha Elshabini-Riad
Jeffrey I. Frey

Ronald J. Gutmann
Evelyn L. Hu
Genda J. Hu
Charles C. Huang
Huey liang Hwang
James Cheng M. Hwang
Walton J. Kitchen, Jr.
Herbert A. Leupold

Mark S. Lundstrom
Noel C. MacDonald
Akira Masaki
Toshiaki Masuhara
Hans W. Poetzel
Karl H. Schoenbach
James P. Spratt
Johannes M.C. Stork

Robert G. Swartz
Richard J. Temkin
Sandip Tiwari
Rory L. Van Tuyl
Wen I. Wang
Robert J. Weber
Horst R. Wittmann
Gerard T. Wrixon

Message from the Outgoing President

(continued from page 2)

1. The need for better communication with the Society and with other chapters; hence the newsletter.

2. The need for support for chapter meetings such as distinguished lecturers and video tapes of short courses and plenary talks.

3. Continued interaction with Society officers and Society sponsorship of a yearly regional chapter chairs' meeting.

4. The need for expanded financial support for chapter activities, support in sponsoring regional chapter technical meetings, and communications for chapter meetings.

5. The need to increase the number of IEEE awards, Fellow elections, and paper acceptances for Europe and Asia.

6. The need for special support for Eastern Europe such as subsidized memberships and filling gaps in technical libraries.

In the case of the latter, presently the Society is pursuing initiatives in both these areas. The first is being done jointly with MTTs where each society will sponsor a 50% reduction in IEEE dues for 12 members in each of five countries. We are also working with the Commission on European Community, IEEE Region 8, and the Technical Activities Board to give back issues of periodicals in microfiche/microfilm format to libraries in Eastern European countries. The latter is as a result of feedback that missing back issues and gaps were a major problem in their libraries.

Other outcomes of the trip are initiatives to form new chapters in Europe and Asia. Presently, discussions are underway with Austria, Benelux, Egypt, Finland, France, Central/South Italy, Poland, South Africa, Spain, Sweden, and Turkey. A new chapter was formed in Hong Kong as a result of the Asia trip. We will also be increasing our involvement in a number of technical meetings, most notably the ESSDERC meeting which is Europe's premier yearly meeting on electron devices. In addition, we are expanding our support activities for chapters whereby we offer approximately US\$500 a year for chapter projects. This program is administered by our Sections/Chapters Chair. His committee evaluates proposals that are submitted by chapters on a yearly zero based budget process.

Our present plans are to have another round of these visits in 1994 to further extend our initiatives and to jump-start a chapter chairs' meeting in Region 8. One

EDS Distinguished Lecturer Program

EDS is seeking qualified candidates for its Distinguished Lecturer Program. It is designed to present leading-edge and exciting technical research to the EDS chapters and members as well as facilitate communications among members, chapters, EDS and IEEE. Anyone who routinely gives talks at major technical meetings should consider participating in this program. If you are interested, please contact the EDS Educational Activities Chair, Jerry M. Woodall; his contact information is listed on page 2.

of the keys to these trips will be to foster new chapter formation and begin to form alliances with regional technical societies.

In other Society news, we now have a revised Society Constitution and By-Laws which updates many of our procedures. Most notably, the number of elected AdCom Members-at-Large has been increased from 18 to 22, with the requirement of at least two members from each of IEEE Regions 8 and 10 (Europe/Mid East/Africa and Asia, respectively). We also have a Society logo as a result of Lew Terman's (our Senior Past President) efforts in this area. The Society continues to grow in its meeting support, now sponsoring or co-sponsoring 32 meetings and cooperating with 45 more. Our ten journals are healthy and our newest one, the Journal of Microelectromechanical Systems is entering its second full year of operation. Society membership stayed about constant or slightly down at ~11,000 members, not a bad feat in the poor economic times of the last few years. Finally, the Society remains very strong financially with a growing surplus resulting from strong meeting revenues and break-even performance on journals.

Overall, the Society is in excellent condition and is on a track to grow in member technical services and become a truly glob-

al society. I am personally very pleased to have been part of the Society growth and will continue to work for the Society as past president.

— Michael S. Adler,
General Electric Co., 1 River Road,
Schenectady, NY 12301

Chapter Subsidies for 1995

Requests for subsidies from Chapters are due on August 1, 1994. Last year the EDS AdCom awarded funding for 1994 to 13 Chapters, with amounts ranging between US\$350 and US\$1,000. Letters to Chapter Chairs were sent in May, 1994 notifying them of the current funding cycle. A list of guidelines was enclosed with each letter. In general, activities which are considered fundable include, but not limited to: membership promotion; travel allowances for invited speakers to Chapter events; and support for student activities at local institutions. Letters requesting subsidies should be sent to the EDS Executive Office at the address given on page 2. Final decisions on awards will be made by the EDS Sections/Chapters Committee by early October.

IEEE Electron Devices Society 1994 J.J. Ebers Award Nominations

The IEEE Electron Devices Society invites the submission of nominations for the 1994 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 \$2,000, presented at the International Electron Devices Meeting (IEDM).

Nomination forms can be obtained from the EDS Executive Office. The deadline for the submission of nominations for the 1994 award is **July 15, 1994**. Completed nomination forms should be sent to the Executive Office at the address given on page 2.

BCTM *(continued from page 3)*

atmosphere of participation.

Minneapolis and St. Paul are the core of a metropolitan area of 2 million, with all the big-city attractions of night life, museums, a widely-acclaimed orchestra, professional sports, and the "Mall of America," acclaimed by its developers to be the world's largest shopping mall. Early October is a pleasant season of the year with warm days, cool nights, and fall color.

While the final program has not yet been set, it is expected that the following topics will be well-represented:

- Submicron BiCMOS technology
- Ultra-fast bipolar devices, including Si-Ge and HBTs
- Mixed-signal telecommunication and wireless chips
- Gbit/sec bipolar and BiCMOS logic techniques

The 1994 BCTM will feature two evening panel sessions. The first of these will take up "SiGe — What For?" in which the merits of this exciting technology for various real-world applications will be discussed. Touted by some as a competitor for GaAs in the GHz and Gbit/sec area, SiGe devices may re-shape the competitive forces in a number of industries if claimed advantages of cost and performance can be realized in products. This panel session will be organized by David Hame (IBM) and Alan Solheim (BNR). The second panel session, organized by Tom Fletcher of Intel, will take up "Low Power Design Techniques." This is quite timely considering the widespread expectations that the next few years will see the emergence of "battery powered everything." The methods used to achieve acceptable power consumption will be quite diverse. Not only must favorable logic forms such as static CMOS be used, but selected digital and analog blocks need to be turned off when unused, and the logic clocks will be only selectively activated. How is this selection of circuit blocks to be done? By a master controller? By "messages" or "thresholds" inherent in the signals used ... ? Can the power-up and power-down be done "glitchlessly"? This should be plenty of fuel for lively exchanges.

A popular feature of BCTM is the presentation of double-length "tutorial" talks on state-of-the-art subjects. Among the commitments received are a talk on "BiCMOS Technology for Analog Integrated Circuits" by Sone and Yotsutanagi of NEC, Japan and a tutorial on "Chip-Level Interconnection Issues" by J. L. Prince of the University

Report on ESSDERC

One of the results of the Electron Devices Society visit to Europe (IEEE Region 8) was a decision to increase our participation with the ESSDERC meeting. We are currently having discussions on publishing key papers from the conference in our Transactions as well as having an EDS representative on the steering committee. In keeping with the spirit of this increased cooperation, we are including the following information in our newsletter.

GENERAL SCOPE OF THE CONFERENCE

ESSDERC'94 will be the 24th in the series of well established annual meetings devoted to the physics, technology, characterization and modeling of solid state devices. The conference will be held in the Edinburgh Conference Centre at Heriot-Watt University and delegates will be able to reserve, through The Institute of Physics, residential accommodation in single-study bedrooms on the University campus. Edinburgh also has a number of excellent hotels. The dates for the conference are Sept. 11-15, 1994.

SCIENTIFIC PROGRAM

The program will consist of oral presentations of contributed papers and invited papers grouped in sessions dealing with the four main themes of the conference. The invited papers will be given by international experts in currently important theme topics, and will include the following

of Arizona, Tucson, AZ. There will be 3 or 4 more invited talks on other topics. In addition to the conference digest of extended papers, a special issue of the J. Solid-State Circuits entitled "High-Speed IC Design" will feature selected papers from the conference.

If you would like to be placed on the mailing list for the Advance Program, contact Jan Jopke at TEL # (612) 934-5082 or FAX # (612) 934-6741. The Program Committee Chairman is Prof. C. R. Selvakumar of the University of Waterloo, TEL # (519) 885-1211, ext. 3978 and the Vice Chairman is Krishna Shenai of the University of Wisconsin - Madison, TEL # (608) 265-3806.

— John Shier, VTC, Inc.,
2800 E. Old Shakopee Road,
Bloomington, MN 55425

speakers and topic areas: Mr. Doug Dunn, Chief Executive Officer, Philips Semiconductor International: The Importance of European Silicon VLSI; Prof. Henry Baltes, ETH Zurich: Microsensors Integrated into VLSI; Dr. Conor Rafferty, AT&T Bell Laboratories: Process Modeling of Silicon VLSI Technology; Dr. Peter Baltus, Philips Research Laboratories: High Frequency Communication Integrated Circuits; and Dr. Robert Walker, GEC-Marconi: Microwave-Modulated Optical Waveguides. The main conference themes are: Silicon VLSI Devices and Technology; Silicon Devices and Materials; Silicon Modeling; Compound Semiconductor Devices and Technologies.

LOCATION

The city lies at the heart of the Scottish Microelectronics Industry. The so-called "Silicon-Glen" boasts the largest wafer fabrication capacity in Europe. This is augmented by close links with a number of highly rated university research laboratories and substantial systems design and manufacturing industry.

SOCIAL EVENTS

An extensive social program is planned taking advantage of the numerous places of interest in the Edinburgh area. This will comprise an afternoon devoted to tours of these many attractions and a program for accompanying spouses. All delegates are invited to a Welcome Reception at The Conference Centre on the evening of Sunday, Sept. 11, when they will also be able to register for the conference. On Tuesday, Sept. 13, all delegates and accompanying persons are invited to attend a Civic Reception at The National Museum of Scotland. The Conference Dinner will be held on the evening of Wednesday, Sept. 14, at Hopetoun House, one of Scotland's finest stately homes.

FURTHER INFORMATION

Further information on all aspects of the conference can be obtained by contacting: The Meetings and Conferences Department, The Institute of Physics, 47 Belgrave Square, London SW1X 8QX, UK; Tel: +44 71 235 6111; Fax: +44 71 259 6002; E-mail: IOPCONF@ULCC.AC.UK; Registered Charity Number 293851. The Institute of Physics is a member of IAPCO (International Association of Professional Congress Organizers).

— Michael S. Adler,
EDS Jr. Past President

Chapter Reports

Regions 1-6, 7 & 9

EDS Chapters from Eastern United States

During the last quarter of 1993 and the first quarter of the current year, many of the EDS chapters in the Eastern United States sponsored a series of regular lectures by invited outside speakers. The Schenectady, NY chapter, for example, teamed up with Rensselaer Polytechnic Institute to co-sponsor a series of lectures on topics which ranged from device physics to semiconductor manufacturing. According to Robert Kwasnick, chapter chair, these lectures were held on a weekly basis during the Fall and Spring Semesters, with speakers coming from both industry and academia. Another chapter which also had scheduled talks was the Princeton, NJ chapter. According to A. Katz of the Princeton chapter, they had 2-3 EDS related talks last year. These talks were also co-sponsored by the MTT and AP chapters. The most important event of the year at the Princeton chapter is usually the Sarnoff Symposium held in April in conjunction with the LEOS chapter. From Rochester, NY, S. Verdonckt-Vanderbroek reports that they typically organize several activities. One such activity was a lecture on April 27, 1994 at Kodak by Prof. T. P. Ma of Yale University. Prof. Sundaram, at the University of Central Florida, also reports that they have similar lectures.

In the Central Virginia region, Prof. Michael Shur of the University of Virginia, Charlottesville, VA reports that the major event of the year in 1993 was the 2nd International Semiconductor Device Research Symposium (ISDRS-93) which took place in Charlottesville, VA from December 1-3, 1993. This symposium was attended by leading EDS members from around the world. The attendees included participants from Europe, Asia and the former Soviet Union. There were four plenary talks during the symposium. Academician Alferov of the Ioffe Institute of Physics and Technology in St. Petersburg gave a talk devoted to the pioneering work carried out on III-V heterostructure materials at the Ioffe Institute. Dr. Alfred Cho of AT&T Bell Laboratories discussed the impact of MBE technology and Prof. Robert Dutton of Stanford University discussed critical device design issues in next generation computer-aided-design tools. The last plenary talk was by Prof. Rupprecht of the Fraunhofer Institute in Freiburg, Germany. His talk concentrated

on superfast circuits fabricated from III-V compounds at the Fraunhofer Institute. Another highlight at the symposium was the presentation of the van der Ziel award to Prof. Arthur Milnes of Carnegie Mellon University, Pittsburgh, PA. This award was established in honor of the late Prof. van der Ziel of the University of Minnesota, Minneapolis, MN. The award is sponsored by the Westinghouse Corporation and is awarded biennially during ISDRS to a scientist or engineer who most reflects those qualities that made Prof. van der Ziel such a universally respected and admired educator and engineer-scientist. ISDRS is held every two years and the next one will be in 1995.

— Elias D. Towe, Associate Editor

San Diego MTT/AP/ED Joint Chapter

The San Diego, CA Joint Chapter usually holds six to seven meetings each year. These meetings consist of a luncheon followed by one hour lecture; four having been held since September 1993. The first, in September 1993, featured Prof. Lawrence Milstein from University of California, San Diego, CA who delivered an insightful introduction into the burgeoning field of spread spectrum communication. In October 1993, Mr. Jonathan King of Qualcomm Inc. presented a discussion of direct digital synthesis and its application to the rf/microwave engineering. In November 1993, Prof. David Rutledge of the California Institute of Technology, Pasadena, CA explained the utility of a microwave grid placing package in the design of amplifiers and oscillators that his research group has developed. Recently, in January 1994, Art Oliner, Prof. Emeritus, from Polytechnic University in Brooklyn, NY lectured to a feisty crowd on the subject of surface waves and leaky modes in MMICs. In addition, the San Diego Joint Chapter will be the co-host, with the Los Angeles MTT Chapter, of the 1994 IEEE International Microwave Symposium, to be held in the San Diego Convention Center from May 23-27, 1994. It is anticipated to be a great success, as several members of the local chapter have committed themselves to long hours of preparation for the event.

Central Texas EDS Chapter

The Central Texas Chapter of EDS was formally approved in November 1993. The co-organizers were Charles Yarling and John Lowell who are also serving as interim officers until formal elections are held.

They feel that the Austin/San Antonio, TX area is ideal for this chapter, drawing interest from the University of Texas at Austin as well as many Semiconductor firms (Motorola, Sony, AMD, Cypress, and Sematech). They anticipate that the chapter will grow to support, co-sponsor, or initiate workshops and seminars in addition to the many other functions such as SEMICON Southwest that meets in Austin, TX. There are also many opportunities for joint work with the local LEOS and Computer Society Chapters. The organizers wish to thank all those who lent their support to this chapter, and they are looking forward to their inaugural year.

Phoenix Waves and Devices Joint Chapter

The Waves and Devices Chapter of the IEEE Phoenix, AZ Section provides local representation for members of six IEEE societies. In addition to EDS, the chapter represents MTT-S, AP-S, LEO-S, UFFC-S and EMC-S. The chapter is very active, holding one or two technical meetings per month; seventeen held last year. Two of these talks were by EDS speakers: Brian Skromme (3/11/93) and Dieter Schroder (12/2/93). The chapter is planning a workshop for the fall of 1994.

Spokane Computers/Electronics Joint Chapter

Three meetings are held annually. Their next meeting will be in March 1994 with the title: "Interfacing into Internets." In May 1994, they will co-sponsor, together with Instrument Society of America, the Inland Empire Electrotechnology '94 Conference at Spokane, WA.

— Paul K. L. Yu, Associate Editor

Region 8

United Kingdom & Republic of Ireland MTT/ED/AP Joint Chapter:

The British and Irish interests of the EDS are served by the United Kingdom and Republic of Ireland (UKRI) MTT/ED/AP Joint Chapter. Other chapters incorporated in the UKRI Section include Aerospace and Electronic Systems, Circuits and Systems, Communications, Computer, Control Systems, Electromagnetic Compatibility, Magnetics, Professional Communications, Signal Processing and Power Electronics. The UKRI Section has about 4000 members. The UKRI MTT/ED/AP Joint Chapter

is managed by a 14 member AdCom, this meets four times each year and represents the interests of the joint parent Societies IEEE membership. Liaison with the national professional bodies is an important function. It has in place a self-accountancy structure and bylaws. The chapter membership as of Sept. 1993, totals 542, subdivided as approximately 275, 188, and 223 for the MTT, ED and AP Societies, respectively (some members belonging to more than one Society).

Briefly, the chapter activities, since 1991, have comprised about ten events each calendar year. An evening lecture series of about 6-8 events, in general spread over venues at London, Leeds, Belfast and Dublin, has formed the core of the program. Other activities, such as self-financing colloquiums, workshops and one-day technical meetings, have also been included, when practical. Additional features have been co-operative sponsorship of educational courses and other European chapter events, and membership promotions. All events are publicized in advance in the Region 8 news. In general, meetings attendance has been in the 13 to 60 range. Low meeting attendance, aggravated by the current economic climate and the many wide ranging activities sponsored by the national professional bodies, presents one of the main concerns for the chapter. Financially, the UKRI Section rebate, funding from the parent Societies and support from UKRI universities (e.g. Leeds, London, Belfast, Dublin) have been essential for establishing the chapter and funding the core program.

In 1993, the chapter program consisted of a six lecture series, co-sponsorship of the short course on "Compound Semiconductor Modeling" organized by Leeds University, technical program co-operation for the European chapter workshop on "CAE, Modeling & Measurement Verification" held in Germany, and the joint organization with King's College, University of London, of the workshop on "High Performance Electron Devices for Microwave and Optoelectronic Devices" (EDMO'93) held in London. EDMO'93 proved to be a highlight of the 1993 activities, combining a successful technical program and organization; 54 delegates attended and the activity was self-financed.

The Chapter AdCom activities planned for 1994 currently include fourteen events, consisting of ten evening lecturers and several events of international interest. The chapter lecture series is summarized below:

The chapter is pleased to welcome Lin-

da P. B. Katehi (AP-S AdCom member) and Ferdo Ivanek (MTT-S Distinguished Lecturer) in its 1994 planning.

The remaining evening lectures for 1994 include:

Sept. 20: University of Edinburgh; Sept. 22: University College Dublin; and Sept. 28: King's College, London University. "Progress and Change in Microwave Radio Communications."

Oct. 6: Queen's University, Belfast "Development of the Microwave Mixer: an Industrial Experience," by Terry Oxley.

Dec. 7: King's College, London University. "Intelligent Driver Support" by Raglan Tribe, Lucas Advanced Engineering Center.

Early announcement of international events include:

Autumn 1994 (Event to be finalized): Colloquium on Selected European Papers from the 1994 MTT-S International Microwave Symposium and MTT-S/ED-S Microwave & MM Wave Monolithic Symposium, San Diego USA. Note: The aim of the meeting is to provide an opportunity for UKRI (European) engineers who were unable to attend the Symposia in San Diego, CA to hear some of the papers and participate in discussion.

Oct. 24: The Wembley Conference Center, Wembley. The 2nd European Chapter Workshop on "CAE, Modeling and Measurement Verification," in co-operation with Microwaves 1994 (M'94), the technical program being organized by the UKRI chapter. Please contact Prof. J. A. C. Stewart, Technical Program Committee Chairman, The Queen's University of Belfast for more information. Note: The first Workshop was held May 24, 1993 at MIOP'93 Sendelfingen Germany, with the technical program organized by the German chapter in co-operation with the UKRI, French and Italian chapters.

Oct. 25-27: The Wembley conference Center, London. Membership booth at Microwaves 1994 (M'94). Note: The 1992 chapter membership booth held at MM'92 resulted in approximately 9% increase in chapter membership.

Nov. 14: King's College, London. EDMO'94, The 2nd Workshop on "High Performance Electron Devices for Microwave and Optoelectronic Applications," jointly organized by King's College, London and the UKRI chapter. The chapter welcomes the IEEE EDS co-operative sponsorship of this year's event. Please contact Dr. Ali A Rezazadeh, Workshop Chairman, King's College, Strand, London WC2R 2LS for further information. Note: The first Workshop was held on Oct. 18,

1993 at King's College. The aim is to bring together engineers in the field of compound semiconductor devices applied to microwaves and optoelectronics, to discuss the ever demanding system requirements for advances in semiconductor materials, device processing and circuit design.

Germany Chapter

The elections for the steering committee of the chapter were held by mail. The IEEE Headquarters had given the addresses of 234 EDS members living in Germany. Of these, 10 letters were returned as undeliverable, and from the rest, 112 (50%) responded and cast their votes. The following members were elected to the steering committee (each of them obtained at least 68% of the votes): Dr. M. Berroth, Freiburg Research Institute; Prof. K. Heime, Aachen University; Prof. B. Hofflinger, Stuttgart Research Institute; Dr. W. A. Kellner, Munchen; Prof. D. E. Kohn, Ulm University; and Prof. E. Seegebrecht, Kiel University.

— Terry H. Oxley, Associate Editor

Switzerland CAS/ED Chapter

1993 has been a fruitful year. It started with the election of Prof. Daniel Mlynek, Swiss Federal Institute of Technology, Lausanne as the chairman for the Joint CAS/ED Chapter. Mr. Jacques Kowalczyk of the same institute has been appointed to help as the secretary. Several meetings were held on various technical subjects such as a course on fuzzy logic applications, high-level modeling tools, mixed-mode system simulation and an international seminar on VLSI testing. Meetings were also organized as specialized training courses for professional engineers interested in FPGA and VLSI system design. Some 150 people participated in these courses. It is important to note that these courses were organized in cooperation with the Microswiss Program which is a state program created to promote the use of microelectronics in the Swiss industry. The chapter also participates in the standardization process of the VHDL-A language suited for the specification and simulation of analog systems. In addition, it was decided with Prof. Mani Soma, Chairman of the International Working Group for the IEEE 1149.4 Standardization for Mixed Analog/Digital ICs and Boards to use the chapter as a recipient of the work performed in this field.

Some of the remaining activities planned for 1994 are listed below:

- Systems Testing & Reliability, Jul. 6-10, 1994

- Mixed-Mode Modeling & Simulation, Oct. 3-5, 1994
- Design Verification with Dracula, Nov. 9-11, 1994

An international conference on multimedia and/or microsystems is planned in Sept. 1994. The program is still under study and details will be reported in future reports.

— *Adrian Veron, Associate Editor*

Region 10

The EDS has a total of eight chapters in Region 10 (Asia Pacific) including: Australian Capital Territory Section, Beijing Section, Hong Kong Section, Indian Council, Korea Council, Malaysia Section, Taipei Section and the very large Tokyo Section. This first issue will introduce only the IEEE EDS Chapters in Beijing, Hong Kong, Taipei, and Tokyo leaving the other Chapters for the next issue.

Beijing EDS Chapter

The Beijing EDS Chapter is relatively new but is growing into an important part of IEEE in China under the leadership of its Interim Chairman, Dr. Han C. Hu. Among the events planned for 1994 is the co-sponsorship of the 3rd International Conference on Millimeter Wave and Far-Infrared Science and Technology in Guangzhou in August 22-26, 1994. This event is sponsored by the Chinese Institute of Electronics, the U.S. Army Research Office and the Georgia Institute of Technology. The Chapter is planning to invite the EDS Distinguished Lecturer, Prof. Dieter K. Schroder, to present a lecture tour in three major cities of Beijing, Nanjing and Xian in 1994 (The confirmed schedule will be published in a future report). The Chapter is working with IEEE Romania EDS Chapter Chairman, Mr. Adrian Veron, to initiate some joint technical and professional cooperation and hope to see an actual program started in 1994. Later in the year, the Chapter is planning to co-sponsor a technical seminar on HDTV and Display Devices with the Society of Information and Display Chapter in Beijing. For any information on the above events or the Beijing Chapter, please contact Dr. Han C. Hu (Fax: 86-1-4363521).

Hong Kong EDS Chapter

The brand-new Hong Kong EDS Chapter is a direct consequence of the EDS Outreach Program in 1993 when the Section was visited by Lew Terman and Jim Clemens. The

Chapter's inaugural event was a very successful one-day workshop. The Chapter is also actively working with the Hong Kong Section to prepare for the 1995 Region 10 International Conference (TENCON'95) on Microelectronics and VLSI. The conference will be chaired by Prof. Ping Ko, University of California, Berkeley, CA. For further information, please contact Dr. Man Wong (Fax: 852-358-1485 or E-mail: eemwong@uxmail.ust.hk).

Taipei EDS Chapter

With the rapid development of microelectronics manufacturing in Taiwan, the Taipei Chapter has flourished under the distinguished leadership of Dr. C.Y. Lu, who has been recently granted the highest national honor for his contribution in technical leadership and academic excellence. On the industry and technology front, TSMC and UMC, two leading IC foundries in Taiwan, are expected to mass-produce 4Mb SRAM using 4-play 2-metal TFT 0.5 micron CMOS technology. TSMC has broken ground on its 8-in. Fab-III line which is likely to be followed by UMC in 1994. The major activities in 1994 include a two-day Semiconductor Manufacturing Technology Workshop to be held at the Submicron Laboratory, Hsinchu, Apr. 18-19, 1994; and a joint international conference by Japanese MicroProcess Conference and Taiwan Electronic Devices & Material Symposium (EDMS'94) at National Chiao Tung University from Jul. 11 to 15, 1994. For further information, please contact Dr. C.Y. Lu (Fax: 886-35-787954).

— *Paul Y. S. Cheung, Associate Editor*

Tokyo, Japan EDS Chapter

There is just one large EDS chapter in Japan, the Tokyo Chapter, which was founded in 1971. It is responsible for all IEEE EDS activities.

The Chapter had 988 members as of the end of 1993, but see great potential for that number to expand in the future, especially given that more than one third of all IEDM papers are from Japanese authors. We might then be able to set up one or more regional EDS chapters around the country. At the general meeting of the Chapter held on Dec. 22, 1993 at the University of Tokyo, the new committee members for 1993-94 were elected. They are: Dr. Mukai of Oki Industry Co., Ltd., Chairman; Prof. Hamaguchi of Osaka University, Vice Chairman; Dr. Ueda of Oki Industry Co., Ltd., Secretary; and Prof. Taniguchi, Osaka University, Treasurer.

The major activities of the Chapter in

1992-93 included joint technical meetings with the IEICE (Institute of Electronics, Information, and Communication Engineers) in locations ranging from Okinawa, the southernmost tip of the Japanese Archipelago to Hokkaido in the north. The Chapter holds 12 meetings a year in the areas of "Silicon Devices and Materials" and "Integrated Circuits and Devices." These meetings are informal and are mostly in Japanese. The Chapter also held one international meeting in Korea on June 24 and 25, 1993. Every year, a meeting is held in December to report on IEDM papers for those who cannot attend the conference.

In 1994-95, the Chapter is planning a similar series of joint technical meetings with the IEICE. The schedule for upcoming meetings is as follows.

Silicon Devices and Materials:

Jul. 25, 1994, Tokyo, "MOS Structure and Related Technologies - MOS, Hot Carrier, Insulator, and Reliability," - Contact Prof. Oonishi (Tel: +81-474-69-5459 Fax: +81-474-67-9683).

Jul. 26 - 27, 1994, Tokyo, cosponsored by the Korean Institute of Telematics and Electronics (KITE), "Process and Devices of Scaled LSIs," Contact Dr. N. Sasaki (Tel: +81-462-48-3111 ext. 4720 Fax: +81-462-48-3473).

Aug. 18 - 19, 1994, Sendai, "Semiconductor Manufacturing Technology and Process Purification," Contact Prof. Shibata (Tel: +81-22-263-9395 Fax: +81-22-224-2549).

Sept. 21 - 22, 1994, Atsugi, "Process, Device, and Circuit Simulation," Contact Dr. Konaka (Tel: +81-462-40-2426 Fax: +81-462-40-4316).

Integrated Circuits and Devices:

Jul. 25, 1994, Tokyo, "Low Voltage, Low Power Consumption and High Speed Technologies for CMOS, BiCMOS, ECL and GaAs LSIs," Contact Dr. Ichino (Tel: +81-462-40-2257 Fax: +81-462-40-4146).

Aug. 25 - 26, 1994, Sapporo, "Multimedia and Image Processing LSIs, High Vision and MUSE LSIs and CCDs," Contact Dr. Ichino (Tel: +81-462-40-2257 Fax: +81-462-40-4146).

Sept. 21 - 22, 1994, Nagoya, "ASIC, ASSP-LSIs and Automotive LSIs," Contact Dr. Usami (Tel: +81-423-23-1111 ext. 3117 Fax: +81-423-27-7764).

If you have any ideas, comments, or proposals regarding the Tokyo Chapter's activities, please send them to Dr. Ueda, Chapter Secretary (Tel: +81-426-62-6680, Fax: +81-426-67-8367).

— *Hiroshi Iwai, Associate Editor*

25th IEEE SEMICONDUCTOR INTERFACE SPECIALISTS CONFERENCE



December 7-10, 1994
San Diego Hilton, San Diego, California, USA

IEEE

The 1994 SISC will be held at the San Diego Hilton, San Diego, California, December 7-10, 1994, immediately prior to the IEDM. The SISC is sponsored by the Electron Devices Society of IEEE.

The SISC provides a unique forum for device and solid-state physicists and materials scientists to discuss issues of common interest both formally, through invited and contributed talks, and informally during a variety of scheduled activities. Some interests include the various semiconductor interfaces, the physics of insulating thin films, and the interplay between materials science, device physics, and state of the art technology issues. The conference emphasizes Si-based systems, including Si alloys.

DEADLINE FOR SUMMARY SUBMISSION IS AUGUST 15, 1994

The program committee solicits contributed papers for all areas of MOS science and technology including, but not limited to:

- physics of thin dielectrics and their interfaces
- ultracleaning technology and its effect on interface and dielectric properties
- microroughness measurement, modeling, and device-related effects
- metal-, silicide-, and semiconductor-semiconductor interfaces
- radiation and hot-carrier effects
- Si/SiO₂ interface defects
- analytical and electrical characterization of semiconductor/dielectric interfaces
- novel oxidation, deposition, and etching techniques

A summary of the work, **not to exceed two pages**, outlining the major results, accomplishments, and conclusions should be submitted in **22 copies: one copy with the names of the author(s) and institution(s), and 21 copies without the names of the author(s) and institution(s), to be used for paper selection by the committee.**

Send all summaries to:

Karen Kuiper
6446 Tucker Ave.
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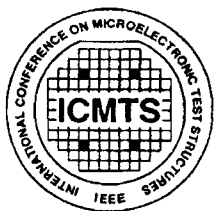
- a. Purpose of work
- b. Manner in which it advances the art
- c. Specific results and their significance

Abstract Requirements — Deadline is July 1, 1994

- One-page abstract plus up to two pages of figures and tables
- Include title, names, affiliation, address, phone, fax number, technical area
- Accepted abstracts may be used for pre-conference publicity
- Obtain all clearances by deadline
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- No facsimiles are accepted for submission
- Send 50 copies of abstracts and figures to:

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CALL FOR PAPERS IEEE INTERNATIONAL CONFERENCE ON MICROELECTRONIC TEST STRUCTURES

Nara, Japan

March 23-25, 1995



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**Please send summaries, with
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The IEEE Electron Devices Society is sponsoring the 1995 International Conference on Microelectronic Test Structures to be held in cooperation with The Institute of Electronics, Information and Communication Engineers, and The Japan Society of Applied Physics. The purpose is to bring together designers and users of test structures to discuss recent developments and future directions. The Conference will be held at the New Public Hall in Nara on March 23-25, 1995. The Conference will be preceded by a one-day Tutorial Short Course on Microelectronic Test Structures on March 22. There will be an equipment exhibition relating to test structure measurements. Original papers presenting new developments in both silicon and gallium arsenide microelectronic test structure research, implementation, and application are solicited. A Best Paper Award will be presented by the Technical Program Committee. Suggested topics include:

Test Structures for Material & Process Characterization

- Carrier Transport Parameters
- Silicon-On-Insulator Material Evaluation
- GaAs Wafer Fabrication
- Polysilicon and Amorphous Silicon Films

Dimensional & Electrical Integrity of Replicated Features

- MOS Effective Gate Length
- Level-to-Level Registration
- Interconnect System Functionality
- Non-Electrical Techniques

Test Structures for Device & Circuit Modeling

- Modeling Parameter Extraction
- Radiation Hardness Modeling
- Monolithic Microwave Integrated Circuits
- High Frequency Measurement Techniques

Product Failure Analysis from Test Structure Data

- Failure Identification and Mapping
- Machine-Assisted Diagnostics
- Latchup, Soft Error, and Total Dose Effects

Test Structures for Reliability Analysis

- Time-Dependent Dielectric Breakdown
- Wafer-Level Fast Tests
- Electromigration
- Hot-Carrier Injection
- Thermal Monitoring and Analysis

Wafer Fabrication Process Control Test Structures

- Process Uniformity and Worst-Case Analysis
- Wafer Screening and Yield Enhancement
- Experimental Design
- Yield Modeling and Statistical Process Control

Test Structure Measurement Utilization Strategy

- Database Management
- Test Equipment and Programmable Testing
- Expert System and Related Techniques
- Test Structures for Quality Assurance

Paper Submission

Authors are asked to submit for review 36 copies of a 500- to 1000-word summary, a title page, major figures, and data. These should reach the ICMTS95 secretariat by Thursday, **August 18, 1994**. The title page must include a five-line abstract, the full address and FAX number of the lead author, and author preference for oral or poster session presentation. The selection process will be based on technical merit and will be highly weighted in favor of papers that include measurement data and their analysis. Notices of paper acceptance with instructions for manuscript preparation will be sent to authors of papers selected for presentation by Friday, **October 28, 1994**. Camera-ready copy will be required from the authors for inclusion in the Conference Proceedings by Monday, **January 9, 1995**.



1995 INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM

April 3-6, 1995 ♦ Riviera Hotel ♦ Las Vegas Nevada

CALL FOR PAPERS

The 1995 Symposium will continue emphasizing building-in reliability for VLSI devices and hybrid components during their design, manufacture and test. Papers are solicited that illustrate the incorporation of reliability physics, reliability engineering, out-of-spec design tolerance, fabrication, assembly, and manufacturing process control to improve system reliability. We encourage papers that address the identification of new microelectronic failure mechanisms, improve insights into existing failure mechanisms, and new or innovative analytical techniques. Papers demonstrating the reliability of advanced packaging techniques/concepts for multichip modules incorporating known good die are also requested.

YOUR PAPERS ARE SOLICITED ON:

♦ BUILDING-IN RELIABILITY:

- Integration of reliability engineering with all elements of design
- Establishing effects of input parameters on product reliability & control
- Physical basis for design rules & concepts for minimizing jeopardy with experimental validation
- Particulate control and its effects on reliability
- Improved manufacturing techniques for wafer fabrication and assembly

♦ TESTING METHODOLOGIES FOR RELIABILITY, including:

- In-process wafer fabrication control and assembly, monitors, and sensors
- Novel test structures and materials
- Evaluation at wafer level or after full or partial processing
- Reliability modeling & field failure rate prediction

♦ ANALYZING FOR RELIABILITY:

- VLSI failure mechanisms and models applied to:
 - dielectric integrity
 - low power/low voltage issues
 - electromigration
 - corrosion
 - hot-carriers
 - latchup/ESD/EOS
- Optoelectronic failure mechanisms and models applied to:
 - LED/laser degradation
 - passive element degradation
 - lithographic wave guide
 - optical fiber issues
 - burn-in/aging/wearout
 - ESD/EOS
- Assembly related failure mechanisms and models applied to:
 - bonding
 - package integrity
 - surface mount issues
 - thermomechanical stress
 - multichip packages
 - die overcoats
- SYSTEM related failure mechanisms, including:
 - automotive
 - consumer
 - military & aerospace
- Failure analysis techniques: new, advanced, & simplified
- Analytical instruments & techniques
- Computer-Aided Reliability (CAR) applications & simulation with experimental validation

SUBMISSION DEADLINE: Received no later than September 23, 1994

Please submit twenty copies of both a one page 50-word abstract, and a two-page summary (including figures) that states clearly and concisely the specific results of your previously unpublished work, why the results are important, and how the results relate to prior work. The twenty copies of the abstract and summary must either be on 8-1/2 by 11-inch or A4 paper and include the title of the paper, and the name, affiliation, complete return address, telephone and telefax numbers, and **e-mail address, if available**, for each author. Line drawings, key references, and coarse halftones may be included, but please no continuous-tone photographs. **Submissions should be by post or express mail** rather than by telefax, because telefax is not necessarily legible for review after subsequent duplication. All submissions will be acknowledged. Please allow three weeks. Contact the Technical Program Chair if you have not received acknowledgement for your submission.

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Tel. 408-734-2987
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PAPER SELECTION: Papers, received by the September 23, 1994 deadline, will be selected based on their technical merits and on their relevance to the Symposium's focus. Paper selection will be performed by groups chosen from industry, government, and university organizations representing a broad spectrum of reliability expertise. Please note that the most common causes for rejection are: incomplete data, prior publication, and insufficient novelty, significance, or relevance to the Symposium.

LATE PAPERS: A limited number of late papers reflecting **important last-minute** developments will be considered on a space-available basis. Abstract and summary must be received no later than December 1, 1994.

PROCEEDINGS MANUSCRIPT: Final, camera-ready manuscripts must be received by February 2, 1995 so that the Proceedings can be available at the Symposium.

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Electron Devices Society Meetings Calendar

(As of May 16, 1994)

<u>DATE</u>	<u>NAME/LOCATION</u>	<u>CONTACT</u>
<u>1994</u> July 3-7	1994 IEEE INTERNATIONAL VACUUM MICROELECTRONICS CONFERENCE/ ATRIA Grenoble Center, Grenoble, France	D. Celier Tel: 33-1-42-78-15-82 Fax: 33-1-42-78-63-20
July 6-8	1994 IEEE LEOS SUMMER TOPICAL MEETING: INTEGRATED OPTOELECTRONICS/ Hyatt Regency Lake Tahoe Hotel, Lake Tahoe, NV	Samantha Phillips Tel: (908) 562-3894 Fax: (908) 562-8434
July 11-14	1994 INTERNATIONAL MICROPROCESS CONFERENCE/National Chiao Tung University, Hsinchu, Taiwan, ROC	Bus. Ctr. for Academic Soc. Tel: 81-3-5814-5800 Fax: 81-3-5814-5823
July 13-15	1994 INTERNATIONAL ELECTRON DEVICES AND MATERIALS SYMPOSIUM/ National Chiao Tung University, Hsinchu, Taiwan, ROC	Chien-Ping Lee Tel: 886-35-726100 Fax: 886-35-713403
July 18	1994 IEEE HONG KONG ELECTRON DEVICES MEETING/The University of Science & Technology, Clear Water Bay, Kowloon, Hong Kong	Man Wong Tel: 852-358-7057 Fax: 852-358-1485
July 18-22	1994 INTERNATIONAL CONFERENCE ON EMERGING OPTOELECTRONIC TECHNOLOGIES/Indian Institute of Science, Bangalore, India	Krishna Shenai Tel: (608) 265-3806 Fax: (608) 262-1267
July 24-29	1994 INTERNATIONAL CONFERENCE ON SCIENCE AND TECHNOLOGY OF SYNTHETIC METALS/KOEX Convention Center, Hotel Intercontinental, Seoul, Korea	Yung Woo Park Tel: 82-2-880-6607 Fax: 82-2-873-7037
Aug. 7-12	1994 INTERSOCIETY ENERGY CONVERSION ENGINEERING CONFERENCE/ Doubletree Hotel and Conference Center, Monterey, CA	Robert C. Winn Tel: (719) 548-1601 Fax: (719) 548-1601
Aug. 17-19	1994 TOPICAL WORKSHOP ON HETEROSTRUCTURE MICROELECTRONICS/ Teijin Fuji Conference Center, Mt. Fuji Resort Area, Susono-City, Japan	Dimitris Pavlidis Tel: (313) 747-1778 Fax: (313) 747-1781
Aug. 22-26	1994 INTERNATIONAL CONFERENCE ON MILLIMETER-WAVE AND FAR- INFRARED SCIENCE AND TECHNOLOGY/Xigiao Hills Hotel, Fushan, (Guangzhou) China	Gail Tucker Tel: (404) 894-3500 Fax: (404) 894-5875
Aug. 23-26	1994 INTERNATIONAL CONFERENCE ON SOLID-STATE DEVICES AND MATERIALS/ Pacific Convention Plaza Yokohama, Yokohama, Japan	Bus. Ctr. for Academic Soc. Tel: 81-3-5814-5800 Fax: 81-3-5814-5823
Sept. 5-7	1994 INTERNATIONAL CONFERENCE ON MICROELECTRONICS/Sheraton Hotel, Istanbul, Turkey	M.I. Elmasry Tel: (519) 885-1211 Fax: (519) 746-5195
Sept. 11-15	1994 EUROPEAN SOLID-STATE DEVICE RESEARCH CONFERENCE/Heriot-Watt University, Edinburgh, Scotland	Jacki Butler Tel: 44-71-235-6111 Fax: 44-71-259-6002
Sept. 18-22	1994 IEEE INTERNATIONAL SYMPOSIUM ON COMPOUND SEMICONDUCTORS/ Hotel del Coronado, San Diego, CA	James Harbison Tel: (908) 758-3386 Fax: (908) 758-4372
Sept. 19-21	1994 INTERNATIONAL SYMPOSIUM ON ULTRA CLEAN PROCESSING OF SILICON SURFACES/St. Johns Hospital, Bruges, Belgium	Marc Heyns Tel: 32-16-28-13-48 Fax: 32-16-28-12-14
Oct. 4-6	1994 IEEE INTERNATIONAL SOI CONFERENCE/White Elephant Resort, Nantucket Island, MA	Witek P. Maszara Tel: (410) 964-4051 Fax: (410) 992-5813
Oct. 10-11	1994 IEEE BIPOLAR/BICMOS CIRCUITS AND TECHNOLOGY MEETING/ Marriott City Center, Minneapolis, MN	Janice V. Jopke Tel: (612) 934-5082 Fax: (612) 934-6741
Oct. 10-11	1994 INTERNATIONAL WORKSHOP ON DISPLAY MATERIALS/ Hyatt Regency Hotel, Monterey, CA	Ralph Nadell Tel: (212) 620-3341 Fax: (212) 620-3379
Oct. 10-11	1994 INTERNATIONAL WORKSHOP ON ACTIVE-MATRIX LCDs/Hyatt Regency Hotel, Monterey, CA	Miltiadis K. Hatalis Tel: (610) 758-3944 Fax: (610) 758-4561
Oct. 10-13	1994 INTERNATIONAL DISPLAY RESEARCH CONFERENCE/Hyatt Regency Hotel, Monterey, CA	Ralph Nadell Tel: (212) 620-3341 Fax: (212) 620-3379
Oct. 10-13	1994 IEEE INTERNATIONAL CONFERENCE ON COMPUTER DESIGN: VLSI IN COMPUTERS AND PROCESSORS/Royal Sonesta Hotel, Cambridge, MA	IEEE Computer Society Tel: (202) 371-0101 Fax: (202) 728-0884

DATE	NAME/LOCATION	CONTACT
Oct. 11-16	1994 ROMANIAN ANNUAL SEMICONDUCTOR CONFERENCE /Sinaia Hotel, Sinaia, Romania	Doina Vancu Tel: 401-633-30-40 Fax: 401-312-75-19
Oct. 16	1994 GALLIUM ARSENIDE RELIABILITY WORKSHOP /Wyndham Franklin Plaza Hotel, Philadelphia, PA	Anthony A. Immorlica Tel: (315) 456-3514 Fax: (315) 456-0695
Oct. 16-19	1994 IEEE GALLIUM ARSENIDE INTEGRATED CIRCUITS SYMPOSIUM /Wyndham Franklin Plaza Hotel, Philadelphia, PA	Donald C. D'Avanzo Tel: (707) 577-2644 Fax: (707) 577-2036
Oct. 16-19	1994 IEEE INTERNATIONAL INTEGRATED RELIABILITY WORKSHOP /Stanford Sierra Camp, South Lake Tahoe, CA	Tin Yau Ying Tel: (617) 271-8170 Fax: (617) 271-2734
Oct. 17-19	1994 INTERNATIONAL CONFERENCE ON MATERIALS FOR MICROELECTRONICS /Hotel Fera Palace, Barcelona, Spain	Juliet A. Upton Tel: 44-71-235-1391 Fax: 44-71-823-1638
Nov. 6-10	1994 IEEE INTERNATIONAL CONFERENCE ON COMPUTER-AIDED DESIGN /Red Lion Hotel, San Jose, CA	IEEE Computer Society Tel: (202) 371-0101 Fax: (202) 728-0884
Nov. 14	1994 WORKSHOP ON HIGH PERFORMANCE ELECTRON DEVICES FOR MICROWAVE AND OPTOELECTRONIC APPLICATIONS /King's College London, Strand, London, England	Ali A. Rezazadeh Tel: 44-71-873-2879 Fax: 44-71-836-4781
Nov. 14-15	1994 IEEE/SEMI ADVANCED SEMICONDUCTOR MANUFACTURING CONFERENCE AND WORKSHOP /Hyatt Regency Hotel, Cambridge, MA	Margaret M. Kindling Tel: (202) 457-9584 Fax: (202) 659-8534
Nov. 14-16	1994 TOPICAL CONFERENCE ON THE SYNTHESIS AND PROCESSING OF ELECTRONIC MATERIALS /San Francisco Hilton Hotel, San Francisco, CA	Denise DeLuca Tel: (212) 705-7344 Fax: (212) 752-3297
Dec. 5-9	1994 IEEE WORLD CONFERENCE ON PHOTOVOLTAIC ENERGY CONVERSION /Hilton Waikoloa Village, Waikoloa, HI	Dennis J. Flood Tel: (216) 433-2303 Fax: (216) 433-6106
Dec. 7-10	1994 IEEE SEMICONDUCTOR INTERFACE SPECIALISTS CONFERENCE /San Diego Hilton, San Diego, CA	Robert E. Stalhush Tel: (914) 945-2837 Fax: (914) 945-2141
Dec. 11-14	1994 IEEE INTERNATIONAL ELECTRON DEVICES MEETING /San Francisco Hilton & Towers, San Francisco, CA	Melissa Widerkehr Tel: (202) 986-1137 Fax: (202) 986-1139
<u>1995</u>		
Jan. 31-Feb. 2	1995 IEEE MULTI-CHIP MODULE CONFERENCE /The Cocoanut Grove, Santa Cruz, CA	Robert Frye Tel: (908) 582-5353 Fax: (908) 582-2913
Feb. 16-18	1995 IEEE INTERNATIONAL SOLID-STATE CIRCUITS CONFERENCE /San Francisco Marriott, San Francisco, CA	Diane Suiters Tel: (202) 639-4255 Fax: (202) 347-6109
Mar. 23-25	1995 IEEE INTERNATIONAL CONFERENCE ON MICROELECTRONIC TEST STRUCTURES /New Public Hall, Nara, Japan	Takuo Sugano Tel: 81-492-31-1131 Fax: 81-492-33-1855
April 3-6	1995 IEEE INTERNATIONAL RELIABILITY PHYSICS SYMPOSIUM /Riviera Hotel, Las Vegas, NV	Joseph W. McPherson Tel: (214) 995-2183 Fax: (214) 995-2932
May 1-4	1995 IEEE CUSTOM INTEGRATED CIRCUITS CONFERENCE /Santa Clara Convention Center, Santa Clara, CA	Melissa Widerkehr Tel: (202) 986-2166 Fax: (202) 986-1139
May 9-13	1995 IEEE INTERNATIONAL CONFERENCE ON INDIUM PHOSPHIDE AND RELATED MATERIALS /Hokkaido University Conference Hall, Sapporo, Hokkaido, Japan	Susan Evans Tel: (908) 562-3896 Fax: (908) 562-8434
May 15-16	1995 IEEE MICROWAVE AND MILLIMETER-WAVE MONOLITHIC CIRCUITS SYMPOSIUM /Orlando, FL	Eric W. Strid Tel: (503) 626-9223 Fax: (503) 626-9255
May 16-17	1995 IEEE UNIVERSITY/GOVERNMENT/INDUSTRY MICROELECTRONICS SYMPOSIUM /Austin, TX	Michael A. Fury Tel: (914) 894-3248 Fax: (914) 892-6399
May 23-25	1995 IEEE INTERNATIONAL SYMPOSIUM ON POWER SEMICONDUCTOR DEVICES AND INTEGRATED CIRCUITS /Yokohama, Japan	H. Ohashi Tel: 81-44-549-2138 Fax: 81-44-549-2259
May 31-June 2	1995 INTERNATIONAL SYMPOSIUM ON VLSI TECHNOLOGY, SYSTEMS AND APPLICATIONS /Taipei, Taiwan	Genda J. Hu Tel: (408) 943-4861 Fax: (408) 943-2118

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