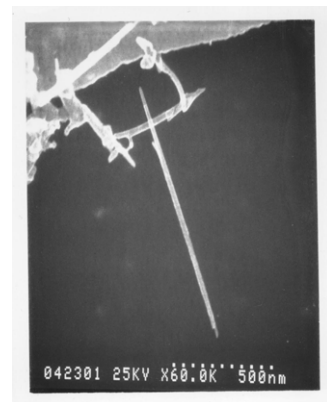


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THE 28th Annual
NORTHERN CALIFORNIA

ELECTRONIC MATERIALS SYMPOSIUM

A One-Day Symposium on Electronic
Materials Featuring Outstanding Authorities
in Their Respective Fields

SUNNYVALE HILTON
1250 LAKESIDE DR.
SUNNYVALE, CALIFORNIA

Monday
April 3, 2000
8:00 AM

PROGRAM

Monday, April 3, 2000

- 8:00 Registration
MORNING SESSION
Session Chair: Dr. Stacy Gleixner
San Jose State University, San Jose, CA
- 8:30 **Welcome Remarks and Introduction**
Dr. Scott McHugo
Lawrence Berkeley Laboratory, Berkeley, CA
- 8:40 "Integration issues for 0.1µm devices"
Dr. George Sery
INTEL, Santa Clara, CA
- 9:25 "The latest on Light Emitting Diodes"
Dr. Frank Steranka
LumiLeds, San Jose, CA
- 10:10 **REFRESHMENTS** (Vendor Exhibit Area)
- 10:40 "Ferroelectric Capacitors for Non-Volatile Memory Applications"
Dr. Ted Moise
Texas Instruments, Palo Alto, CA
- 11:30 **LUNCHEON**
- 12:15 **The twenty-sixth annual Ross Tucker Award and 2nd annual EMS Undergraduate Award**
- 12:25 "The Human Genome Project: Science and Policy Goals for the 21st Century"
Dr. Monique Mansoura
NIH/National Human Genome Research Institute, Washington D.C.
- AFTERNOON SESSION**
Session Chair: Dr. Steve Gilbert
Agilent, Palo Alto, CA
- 1:30 "Molecular nanotechnology: economically making and interconnecting molecular switches"
Dr. Ralph Merkle
Zyvex, Richardson, TX
- 2:15 "Low cost and high quality – the challenge for silicon wafers"
Dr. K.V. Ravi
INTEL, Santa Clara, CA
- 3:00 **REFRESHMENTS** (Vendor Exhibit Area)
- 3:30 "Molecular Dynamic simulations of point defects and their effect on front end processing"
Dr. Tomas Diaz de la Rubia
Lawrence Livermore Laboratory, Livermore, CA
- 4:15 "Magnetic Tunnel Junction Random Access Memory"
Dr. Stuart Parkin
IBM Almaden, San Jose, CA
- 5:00 **HOSTED COCKTAIL PARTY**
(Vendor Exhibit Area)
- *****
- VENDOR'S SHOW**
8:00-5:00 Vendors Exhibits

General Information

The Symposium registration covers admission to the Symposium sessions, abstracts of the Symposium presentations, luncheon, a vendor's exhibit, and a partially hosted cocktail hour following the Symposium. Beverage tokens for the cocktail hour will be available in the vendor area during the afternoon sessions. Physical limitations require the attendance to be limited to 400 registrants.

Costs of the Symposium have been kept to a minimum to encourage attendance. A discounted registration fee is available until March 27, 2000, because of the lower cost of handling pre-registration and early arrangement commitments. To reserve your place in the Symposium and in the luncheon, we urge you to register early by mail, using the attached form. All registration is transferable but not refundable.

During the Symposium, the twenty-sixth annual Ross N. Tucker Memorial Awards will be presented to two Bay Area graduate students in recognition of excellence in research. Additionally the 2nd annual EMS undergraduate award will be presented to two Bay Area undergraduate students for their academic achievements.

The Symposium features a Vendor's exhibit. Information and displays of new materials, processing equipment, and analytical instruments will be presented by representatives of manufacturers.

A partially hosted cocktail hour will follow the Symposium presentations. This provides an opportunity for informal discussions with Symposium speakers, vendors and attendees.

Registration material and abstracts of the Symposium presentations will be provided at the registration booth.

The opening session will begin promptly at 8:30AM. Registration begins at 8:00AM. The vendor area will be available for setup at 7:00AM.

Further questions regarding the Symposium should be directed to Dr. Scott McHugo, Lawrence Berkeley National Laboratory. Phone: 510-486-4874, email: samchugo@lbl.gov

The Electronic Materials Symposium Committee exists to promote the understanding of electronic materials within the industrial and academic communities of the San Francisco Bay area. This committee organizes the annual Electronic Materials Symposium, featuring presentations on advanced electronic, magnetic and optical materials processing, characterization and devices by outstanding speakers who have made significant contributions to their fields. Proceeds of the symposium are used to support electronic materials research and education in local universities.

ABOUT THE COVER IMAGE

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SEM image of a multi-walled carbon nanotube assembly. Assemblies are constructed by positioning the tubes relative to each other inside the SEM using a nanomanipulator designed and built by Zyvex. The tubes are attached using electron beam induced deposition. Image courtesy of Dr. George Skidmore of Zyvex.
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The
NORTHERN CALIFORNIA
ELECTRONIC MATERIALS
SYMPOSIUM



TIMS
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ABOUT THE SPEAKERS

Dr. George Sery

George E. Sery is an Intel Fellow and Director of Device Technology Optimization in Intel's California Technology and Manufacturing Group. Dr. Sery is responsible for directing process characterization, performance improvement and capability enhancement for Intel's 0.25 micron CMOS logic technology.

Dr. Sery received a B.S. and M.S. degrees in electrical engineering from the University of Minnesota in 1976 and 1978 respectively. He joined Intel in 1978 as part of the SRAM Technology Development group where he has been involved with development of NMOS and CMOS technologies for logic, SRAM, and Flash memory applications. For each technology, he has led the device physics team responsible for device development and process characterization.

Dr. Sery has received three Intel Achievement Awards for Flash memory and logic development improvements. He has co-authored numerous publications related to logic and Flash memory development, holds patents in Flash technology and is a member of the IEEE.

Dr. Frank Steranka

Frank Steranka received his Ph.D. in Physics from the University of Illinois in 1984 and immediately joined Hewlett-Packard's Optoelectronics Division (OED) where he worked on the development of high-brightness visible LEDs using the AlGaAs and AlInGaP materials systems for just over ten years. In 1995, he accepted an overseas assignment in Japan managing a small LED Product development team and returned in 1997 as the Worldwide Manufacturing Manager for OED. He joined LumiLeds lighting (the Agilent-Philips joint venture focused on LED-based lighting) in 1999 and is currently their materials Technology R&D Manager.

Dr. Ted Moise

Ted Moise received the Ph.D. degree in electrical engineering from Yale University, New Haven, CT, in 1992. Following graduation, he joined Texas Instruments where he was responsible for the development of high-performance III-V quantum-effect devices and circuits including hot-electron transistors, resonant-tunneling A/D converters, and optical detectors. In 1997, he became a Senior Member of TI's Technical Staff and started working on the development of high-k and ferroelectric memory devices and circuits. He is currently the team leader of TI's ferroelectric memory group which, in a joint program with Agilent Technologies, has recently demonstrated the operation of submicron ferroelectric capacitors. He has authored or co-authored more than 45 papers and holds 4 patents.

Dr. Monique Mansoura

Monique K. Mansoura, Ph.D., is a Policy Analyst in the Office of Policy and Public Affairs at the National Human Genome Research Institute at the National Institutes of Health (NIH). Among her primary responsibilities is the critical evaluation of policy issues related to ethical, legal and social implications of genetic research and genomic technologies. In addition, Dr. Mansoura serves as the liaison with voluntary health organizations and consumer groups with a shared interest in human genetics research.

The National Human Genome Research Institute (NHGRI), under the direction of Dr. Francis Collins, has the responsibility at the NIH for providing leadership and support for the Human Genome Project, an international collaboration to characterize the complete set of genetic instructions encoded in the estimated 3 billion base pairs of DNA. In addition, scientists at NHGRI conduct a vigorous research program aimed at understanding and treating both simple and complex genetic disorders.

The Ethical, Legal and Social Implications (ELSI) Research Program of NHGRI is the largest federal supporter of bioethics research. One of the most active areas of the ELSI program has been policy development related to the privacy and fair use of genetic information. Dr. Mansoura was a co-author of "Privacy in Genetics Research", published last year in the journal, *Science*

(285:1359-1361, 1999). She has also co-authored "Medical Implications of the Genetic Revolution" with Dr. Francis Collins for the *Journal of Health Care Law and Policy* (1:329-352, 1998).

Dr. Mansoura received a Master's degree in Human Genetics (1992) and Doctoral degree in Bioengineering (1996) from the University of Michigan. Prior to joining the Office of Policy and Public Affairs staff, Dr. Mansoura was a Postdoctoral Fellow in the Laboratory of Dr. Melissa Ashlock at the NHGRI. Her research focused on the design and establishment of improved model systems for the study of Cystic Fibrosis and the identification of methods to overcome the defects associated with cystic fibrosis at the cellular level.

Dr. Ralph Merkle

Dr. Merkle received his Ph.D. from Stanford University in 1979 where he co-invented public key cryptography. He joined Xerox PARC in 1988, where he pursued research in computational nanotechnology until 1999. He is now a Principal Fellow at Zyvex (www.zyvex.com), where he continues to pursue research in nanotechnology. He chaired the Fourth and Fifth Foresight Conferences on Nanotechnology, is on the Executive Editorial Board of the journal Nanotechnology, was co-recipient of the 1998 Feynman Prize for Nanotechnology for theory, and was co-recipient of the ACM's Kanellakis Award for Theory and Practice. Dr. Merkle has eight patents and has published extensively. His home page is at www.merkle.com.

Dr. K.V. Ravi

Dr. Ravi is the Silicon Technology Manager in the Fab Materials Operations of Intel Corporation. His prior affiliations include Applied Materials, Lockheed-Martin Corporation, Crystallume, Mobil Solar Energy Corporation, Motorola and Texas Instruments Inc. Dr. Ravi is the author of over 100 technical publications in the fields of metals, semiconductors, photovoltaics and CVD diamond technology and the author of the book "Imperfections and Impurities in Semiconductor Silicon". He has a Ph.D in Materials Science from Case Western University, an M.S. in Materials Science from the University of California, Berkeley, a B.S in Metallurgy from the Indian Institute of Science and a B.Sc in Chemistry from the University of Madras, India.

Dr. Tomas Diaz de la Rubia

Tomas Diaz de la Rubia obtained his B.S. at the State University of New York at Albany in 1984 and his Ph.D. under the direction of Prof. R.S. Averback in 1989. At present, he is Deputy Division Leader for Science and Technology of the Materials Science and Technology Division at LLNL as well as Scientific Capability Leader for Computational Materials Science. His current research interests focus on the application of dislocation dynamics to predicting mechanical behavior of materials and the use of ab initio electronic structure methods to investigate the properties of defects and impurities in nanostructured materials. He has published over 100 papers and given over 70 invited presentations at conferences and workshops mainly in the areas of radiation effects in metals and defect and dopant diffusion in semiconductors. Tomas has chaired numerous International conferences and workshops as well as focussed sessions at the APS and symposia at the MRS on topics ranging from microstructure evolution of irradiated materials to multiscale modeling of materials. Tomas will be one of the chairs of the Spring 2001 Materials Research Society Meeting that will take place in San Francisco in April of 2001.

Dr. Stuart Parkin

Dr. Stuart S.P. Parkin joined IBM Research in San Jose in 1982 as a World Trade Post-doctoral Fellow, becoming a permanent member of the staff the following year. His current work involves the study of magnetic tunnel junctions and the development of an advanced non-volatile magnetic random access memory based on magnetic tunnel junction storage cells.

His earlier research interests have included organic superconductors, ceramic high temperature superconductors and, most recently, the study of magnetic thin-film structures and nanostructures exhibiting giant mangetoresistance (GMR). In 1991, he discovered oscillations in the magnitude of the interlayer exchange coupling in transition-metal magnetic multilayered GMR systems. For this and related work, Dr. Parkin shared both the American Physical Society's International New Materials Prize (1994) and the European Physical Society's Hewlett-Packard Europhysics Prize (1997). Dr. Parkin has received other awards including the Materials Research Society Outstanding Young Investigator Award (1991), the Charles Vernon Boys Prize from the Institute of Physics, London (1991), and the 1999-2000 American Institute of Physics Prize for Industrial Application of Physics, as well as several awards from IBM.

A native of the United Kingdom, Dr. Parkin received his B.A. degree (1977) and was elected a Research Fellow (1979) at Trinity College in Cambridge, England, and was awarded his Ph.D degree (1980) at the Cavendish Laboratory, also in Cambridge. Dr. Parkin is a Fellow of the American Physical Society. In 1997, he was selected a member of the IBM Academy of Technology and named one of IBM's Master Inventors. In June, 1999 he was appointed an IBM Fellow, IBM's highest technical honor.

The Twenty-Sixth Annual Ross Tucker Award Recipients

Danielle R. Chamberlin

Department of Materials Science and Engineering

University of California, Berkeley

Thesis Title: "High Duty Cycle Operation of Far-Infrared Germanium Lasers"

Eugene M. Chow

Department of Electrical Engineering

Stanford University

Thesis Title: "Micromachine Technology for through-wafer interconnects and scanning probes"

Symposium Committee

<i>Emily Allen</i> (SJSU)	<i>David Fork</i> (Xerox)	<i>Paul McIntyre</i> (Stanford)
<i>Raj Apte</i> (Xerox)	<i>Steve Gilbert</i> (Agilent)	<i>Eugene Meieren</i> (INTEL)
<i>Maximilian Biberger</i> (SuperCritical Sys.)	<i>Judy Glazer</i> (HP)	<i>Bill Miller</i> (IBM Almaden)
<i>Melisa Buie</i> (Applied Materials)	<i>Stacy Gleixner</i> (SJSU)	<i>Irfan Saadat</i> (National)
<i>Larry Comstock</i> (SJSU)	<i>Bill Imler</i> (Agilent)	<i>Rick Schneider</i> (Agilent)
Scott McHugo (Lawrence Berkeley National Laboratory) <i>2000 Chair</i>		

Symposium Sponsors

Northern California Section of TMS
IEEE Electron Device Society, Santa Clara Valley
Chapter

REGISTRATION FORM - 28TH ANNUAL ELECTRONIC MATERIALS SYMPOSIUM (2000)

Name:	_____	Title:	_____
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Org.:	_____	City, St., Zip:	_____
Mailing Add.:	_____	<u>Pre-registration by March 27, 2000</u>	\$80
<u>Symposium Date:</u> April 3, 2000		<u>Registration Fee</u>	\$95
<u>Regular Registration</u> (please circle)			\$40
<u>Full-Time Registered Student</u>			

Make checks payable to: Electronics Materials Symposium and send along with the above information to: EMS, c/o Dr. Stacy Gleixner, SISU, Dept. of Materials Engineering, One Washington Sq., San Jose, CA 95192-0082. Any questions should be directed to Prof. Gleixner at (408) 924-4051 or email: gleixner@email.sjsu.edu. Do not send purchase orders. The Tax ID for the Symposium is: 25-1484913. Please make sure your name and affiliation are clearly identified. Cancellation: Registration may be transferred/substituted but are non-refundable. No confirmation of registration will

be sent