TMS
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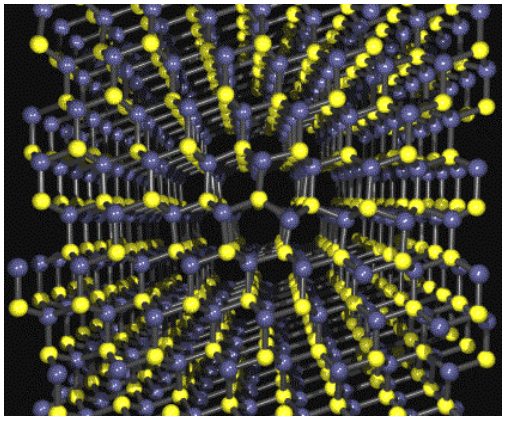

IEEE

The 31st Annual

ELECTRONIC MATERIALS SYMPOSIUM

Friday, April 11, 2003
Network Meeting Center at Techmart
5201 Great America Parkway
Santa Clara, California

For registration & conference schedule go to:
http://www.electronicmaterialssymposium.org/

A One-Day Symposium on Electronic Materials
Featuring Outstanding Authorities in the Field

Program:

8:30 Registration

MORNING SESSION
Session Chair: Dr. Danielle Chamberlin
Agilent Technologies

9:00 **Welcome Remarks and Introduction**
Dr. Valeska Schroeder, Hewlett-Packard Co., CA

9:10 *"Perspectives on Nanosciences and Nanotechnology"*, Prof. Mildred Dresselhaus, MIT

9:55 *"If we could only see single atoms! The ongoing revolution in electron microscopy."*
Dr. Christian Kisielowski, NCEM, Lawrence Berkeley Laboratory

10:40 **REFRESHMENTS** (Vendor Exhibit Area)

11:10 *"Polymer-based Semiconductor Electronics"*, Prof. Sue Carter, UC Santa Cruz

12:00 **LUNCHEON**

12:45 **29th Annual Ross Tucker Award**
5th Annual EMS Undergraduate Scholarship

12:55 **Luncheon presentation:** *"Materials in the History of Wine"*, Prof. Stefan Estreicher, Texas Tech

AFTERNOON SESSION
Session Chair: Dr. Joe Behnke, Applied Materials

2:00 *"Gigahertz Manipulation of Electron Spins in SemiconductorNanostructures"*, Prof. David Awschalom, UC Santa Barbara

2:45 *"WLCSP with Lead-free Solders and Conductive Adhesives"*, Dr. John Lau, Agilent Technologies

3:30 **REFRESHMENTS** (Vendor Exhibit Area)

4:00 *"Applications of stress engineered metal films"*, Dr. Dave Fork, PARC

4:45 *"Materials Analysis and Process Monitoring in MegaFabs"*, Dr. Bryan Tracy, AMD

5:30 **Closing remarks**, Dr. Danielle Chamberlin, Agilent Technologies

5:40 **HOSTED COCKTAIL PARTY**
VENDOR'S SHOW

About The Speakers

Prof. David D. Awschalom received his B.Sc. in physics from the University of Illinois at Urbana-Champaign, and his Ph.D. in experimental physics from Cornell University. He was a Research Staff member and Manager of the Nonequilibrium Physics Department at the IBM Watson Research Center in Yorktown Heights, NY. In 1991 he joined the University of California-Santa Barbara as a Professor of Physics, and is presently Director of the UC Center for Spintronics and Quantum Computation. His group has active research activities in optical and magnetic interactions in semiconductor quantum structures, spin dynamics and coherence in condensed matter systems, macroscopic quantum phenomena in nanometer-scale magnets, and implementations of quantum computation in the solid state. He has developed a variety of femtosecond-resolved spatiotemporal magneto-optical spectroscopies and micromagnetic sensing techniques aimed at exploring charge and spin motion in the quantum domain. This research has been presented in over 300 invited lectures and in over 200 scientific publications. Some of these discoveries have been described in the public press, including the New York Times, the Wall Street Journal, the San Francisco Chronicle, the Dallas Morning News, Discover Magazine, Scientific American, and New Scientist. Professor Awschalom received an IBM Outstanding Innovation Award, the Outstanding Investigator Prize from the Materials Research Society, and was the Institute of Physics Wohlfarth Prize Lecturer. Dr. Awschalom is a member of the American Association for the Advancement of Science, the Materials Research Society, and is a Fellow of the American Physical Society.

Prof. Sue A. Carter received her BA in physics, chemistry and mathematics from Kalamazoo College and her Ph.D. in Physical Chemistry from the University of Chicago. She was a postdoctoral research at AT&T Bell Laboratories (now Lucent Technologies) and a research fellow at IBM Almaden Research Center in San Jose. She is currently an Associate Professor of Physics at the University of California in Santa Cruz, California. Over the last decade, her research has focused on the electronic, magnetic, thermal and optical properties of metal-oxide, superconducting, and organic materials. Her research at UCSC focuses on the properties of biomaterials and semiconducting polymers and the applications of these materials to emerging technologies, including flat panel displays, solar cells, and electronic and optical switching. She has published over 50 articles in the above areas and has served as a key speaker, chair and organizer at many conferences on organic-based electronics. She also holds several patents in polymer electronics and is an active consultant to the polymer electronics manufacturing industry.

Dr. Dave Fork currently is a Principal Scientist at the Palo Alto Research Center (formerly Xerox PARC). He graduated *Summa Cum Laude* from the University of Rochester in 1987 with degrees in Physics and Electrical Engineering. He completed his Ph.D. from Stanford University in Applied Physics in 1991. He has studied and worked since 1988 at the Palo Alto Research Center, primarily on thin film electronic materials and devices. His research activities have included complex oxide epitaxial thin films, laser crystallized display materials, organic electroluminescent devices, semiconductor LEDs and lasers, electronic imaging systems, and micro-electromechanical systems. Currently, Dr. Fork is Program Manager for the Claw Consortium – a NIST Advanced Technology partnership created to commercialize microfabricated spring technology for semiconductor probes and packages. He has over one-hundred scientific publications and over thirty US patents. His honors include the Warren Prize for Science 1983, the Bausch & Lomb Medal for Science 1983, the Bausch & Lomb Scholarship 1983, the John R. Flagg Award 1987, an AT&T Scholarship1988, the Materials Research Society's Graduate Student Award - for outstanding performance in research 1991, a Certificate of Congressional Recognition for Community Service, 1997 and Xerox's Excellence in Science and Technology Award in 2000.

Dr. Christian Kisielowski was awarded his PhD and his habilitation in physics at the University of Cologne / Germany in 1985 and in 1990, respectively, for spectroscopic studies of dislocations in semiconductors. He joined the Microphysics Department at AT&T Bell Laboratories, Holmdel, NJ, in 1991 to develop a quantitative method for High Resolution Electron Microscopy that he applied to study solid state processes in subsurface systems at a near atomic level. In 1994 he joined the University of California at Berkeley and performed studies on growth and characterization of GaN and related compounds. Since 1997 he has been working as a staff scientist at the National Center for Electron Microscopy where he leads the High Resolution Transmission Electron Microscopy efforts. He was the first to demonstrate sub Ångstrom resolution in phase contrast microscopy and detection of columns made from light atoms such as C,N,O, even at sub Ångstrom spacing.

Prof. Mildred Dresselhaus was born and grew up in New York City. She received her undergraduate education at Hunter College in New York City. After a year of study at Cambridge University and another year at Harvard University, she completed her Ph.D. degree at the University of Chicago, with her Ph.D. thesis in 1958 on the subject of microwave properties of superconductors in a magnetic field. Following her doctoral studies, Dr. Dresselhaus spent 2 years at Cornell University as an NSF postdoctoral fellow, and then 7 years as a staff member of the MIT Lincoln Laboratory in the Solid State Physics Division. She joined the MIT faculty in the Department of Electrical Engineering and Computer Science in 1967 and the Department of Physics in 1983, and was named an Institute Professor in 1985. She served as the Director of the Office of Science at the US Department of Energy in 2000-2001. She is a member of the National Academy of Sciences, the National Academy of Engineering, the American Philosophical Society, and a Fellow of the American Academy of Arts and Sciences, the American Physical Society, the IEEE, the Materials Research Society, the Society of Women Engineers, the American Association for the Advancement of Science, and American Carbon Society. Dr. Dresselhaus has served as President of the American Physical Society, Treasurer of the National Academy of Sciences, President of the American Association for the Advancement of Science (AAAS), and on numerous advisory committees and councils. Dr. Dresselhaus has received numerous awards, including the National Medal of Science and 17 honorary doctorates. She is the co-author of four books on carbon science. Her research interests are in experimental solid state physics, particularly in carbon related materials, novel forms of carbon, including fullerenes, carbon nanotubes, porous carbons, activated carbons and carbon aerogels, as wellas other nanostructures, such as bismuth nanowires and the use of nanostructures in low dimensional thermoelectricity. For relaxation, she is an enthusiastic chamber music player, where she plays either violin or viola, and enjoys spending time with her husband, 4 children and 4 grandchildren.

Dr. John H. Lau, P.E., has been working in IC electronics packaging and interconnection since 1984, first for Hewlett-Packard Company and then for Agilent Technologies, Inc. He has been helping these companies to design and develop their IC packages and electronic assembly processes, and to design and ensure the quality and reliability of their products. Currently, he is the Lead-Free Program Manager for Agilent. John authored and co-authored over 200 peer-reviewed technical publications and is the author and co-author of 14 technical books in electronic packaging and manufacturing. He is an IEEE Fellow and an ASME Fellow.

Dr. Bryan Tracy joined the semiconductor industry in 1984 and established Transmission Electron Microscopy as a regular analytical technique at Intel's Santa Clara's facility. In 1991, he joined AMD as section manger in charge of SEM, TEM and FIB instrumentation. In 1996, Bryan became manger of the Materials Technology Development Department and directs AMD's Sunnyvale Materials Analysis Laboratory. This group of twelve engineers and five technicians perform the materials analysis to support AMD's advanced process development for both logic and flash devices. Bryan is especially interested in the use of electron microscopy to characterize semiconductor materials. Bryan's education includes a B. S. from Cal Poly San Luis Obispo in Metallurgical and Welding Engineering (1977), an M. S. from UC at Berkeley in Materials Science and Mineral Engineering (1980), and a PhD from Rensselaer Polytechnic Institute in Material Engineering (1984).

Luncheon speaker

Prof. Stefan Estreicher received his Ph.D. in theoretical physics from the University of Zurich, Switzerland, in 1982. He was a postdoc and Assistant Professor at Rice U. 1983-1986. In 1986 he joined the faculty at Texas Tech U., where he currently is the Paul W. Horn Professor of Physics. He was named a Fellow of the APS in 1997 and was granted the Humboldt research award in 2001. His research interests include first-principles theory of defects in semiconductors (mostly Si) as well as the electronic and vibrational properties of defects. One of his hobbies deals with old and unusual wines, and the history of wine. His paper on this subject is available at: http://jupiter.phys.ttu.edu/stefanke/HoW.pdf

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General Information

The Symposium registration covers admission to the Symposium sessions, abstracts of the Symposium presentations, luncheon, a vendor's exhibit, and a hosted cocktail hour following the Symposium.

Costs of the Symposium have been kept to a minimum to encourage attendance. A discounted registration fee is available until March 21, 2003. To reserve your place in the Symposium and in the luncheon, we urge you to register early on the web or by mail, using the attached form. All registration is transferable but not refundable.

During the Symposium, the Ross N. Tucker Memorial Awards will be presented to two Bay Area graduate students in recognition of excellence in research. The EMS Undergraduate Awards will be presented to a Bay area undergraduate in recognition of excellent scholarship in electronic materials.

The Symposium features a Vendor's exhibit. Representatives of local laboratories and equipment manufacturers will present information and displays of analytical services, materials processing equipment, and analytical instruments. A special feature this year will be HR booths by a number of leading employers of materials scientists and engineers.

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 a Symposium program that features abstracts of the presentations will be provided at the registration booth.

The opening session will begin promptly at 9:00AM. Registration begins at 8:30AM. The vendors' area will be available for setup at 8:00AM.

Further questions regarding the Symposium should be directed to Dr. *Valeska Schroeder*, Hewlett-Packard Co. Phone: (650) 857-4795, email: valeska@electronicmaterialssymposium.org.

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. Any proceeds of the symposium are used to support education in local universities.

For registration either mail in the attached form or go to our website for registration with a credit card payment:

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S.P. Beckman, X. Xu, P. Specht, E.R. Weber, C. Kisielowski, D.C. Chrzan, J. Phys.: Condensed Matter, 2003, in press

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Symposium Date: April 11, 2003	Registration Fee	Pre-Registration by March 21, 2003
Regular Registration	$100	$90
Full-time Registered Student	$50	$45

Make checks payable to: Electronic Materials Symposium and send along with the above information to Dr. Danielle Chamberlin, Agilent Laboratories, 3500 Deer Creek Road, MS 26L, Palo Alto, CA 94304. Any questions should be directed to Dr. Valeska Schroeder, Hewlett-Packard Co., Phone: (650) 857-4795, email: valeska@electronicmaterialssymposium.org. Please make sure your name and affiliation are clearly identified. The tax ID for the symposium is: 25-1484913. Registrations may be transferred/ substituted but are non-refundable.