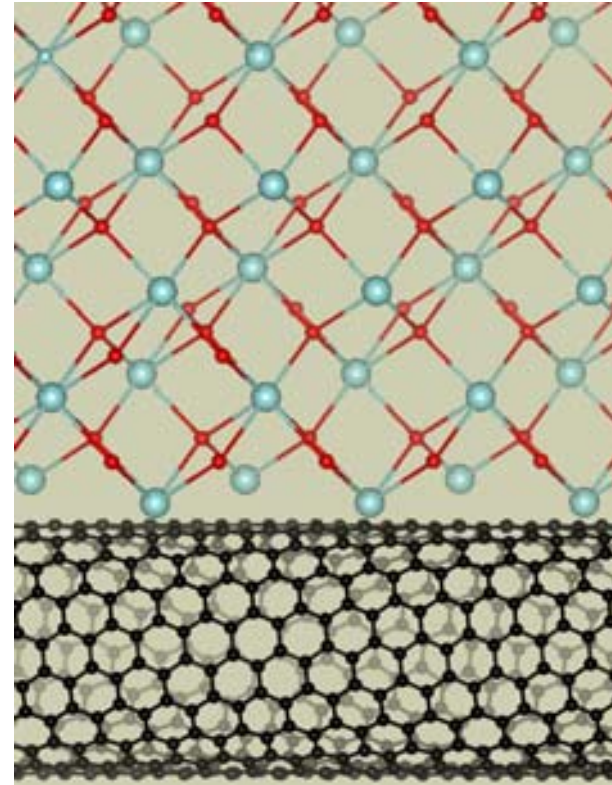


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Electronic Materials Symposium  
c/o Dr. Danielle Chamberlin  
Agilent Laboratories  
3500 Deer Creek Road, MS 26L  
Palo Alto, CA 94304



THE 32nd Annual  
NORTHERN CALIFORNIA

## ELECTRONIC MATERIALS SYMPOSIUM

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

TECHMART MEETING CENTER  
5201 Great America Parkway  
SANTA CLARA, CALIFORNIA

Friday  
April 23rd, 2004  
8:30 AM

<http://www.electronicmaterialssymposium.org>

(Online registration available)

## PROGRAM

Friday, April 23rd, 2004  
Network Meeting Center at Techmart  
Santa Clara, CA

8:00 Registration

### MORNING SESSION

Session Chair: Dr. Joseph Behnke  
Applied Materials, Santa Clara, CA

8:30 **Welcome Remarks and Introduction**  
Dr. Danielle Chamberlin, Chair  
Agilent Labs, Palo Alto, CA

8:40 “The Power of the Very Small: Nanoscience Innovation  
at the California NanoSystems Institute”  
**Prof. Evelyn Hu**, UC Santa Barbara and CNSI

9:55 “Self-Assembled Semiconductor Nanowires”  
**Dr. Ted Kamins**, Hewlett-Packard

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

10:40 “Computational Design of Nanostructures and  
Nanostructured Materials”  
**Dr. Giulia Galli**, Lawrence Livermore National  
Laboratory

11:25 “Carbon Nanotubes: Recent Progress in Synthesis and  
Devices”  
**Prof. Hongjie Dai**, Stanford University

12:10 **LUNCHEON**

1:10 **Luncheon Speaker:** “WOW, AHA, COOL: Inspiring the  
Materials Scientist in Everyone”  
**Greg Brown**, The Tech Museum of Innovation

### AFTERNOON SESSION

Session Chair: Dr. Joachim Krueger  
Agilent Technologies, San Jose, CA

1:55 “Materials for Visible Semiconductor Lasers”  
**Dr. David Bour**, Agilent

2:40 **30<sup>th</sup> Annual Ross Tucker Memorial Awards**  
**6<sup>th</sup> Annual EMS Undergraduate Scholarship**

3:00 **REFRESHMENTS** (Vendor Exhibit Area)

3:30 “Isotopically Controlled Semiconductors”  
**Prof. Eugene Haller**, UC Berkeley

4:15 “Silicon Nanotechnologies to Extend Moore's Law”  
**Dr. Robert Chau**, Intel

5:00 **Closing remarks**  
Dr. Joachim Krueger, Vice-chair  
Agilent Technologies, San Jose, CA

5:10 - **HOSTED COCKTAIL PARTY**  
6:00 **VENDOR'S SHOW**

## 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. Physical limitations require the attendance to be limited to 200 registrants.

Costs of the Symposium have been kept to a minimum to encourage attendance. A discounted registration fee is available until April 1, 2004. To reserve your place in the Symposium and in the luncheon, we urge you to register early by mail, using the attached form, or on our website, <http://www.electronicmaterialssymposium.org>. 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. Information and displays of new materials, processing equipment, characterization services, and analytical instruments will be presented by representatives of manufacturers. A special feature this year will be HR booths by a number of leading employers of materials scientists and engineers. Persons searching for jobs are encouraged to submit a resume.

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 vendors' area will be available for setup at 8:00AM.

Further questions regarding the Symposium should be directed to Dr. Danielle Chamberlin  
Agilent Laboratories,  
3500 Deer Creek Road, MS 26L, Palo Alto, CA 94304  
email: [chair@electronicmaterialssymposium.org](mailto:chair@electronicmaterialssymposium.org)  
650-485-2184

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

A depiction of zirconium dioxide gating a carbon nanotube. Picture provided by Prof. Hongjie Dai, Stanford University

## ABOUT THE SPEAKERS

**Dr. David Bour** is an Agilent Fellow in the Photonics and Electronics Research Lab of Agilent Laboratories, in Palo Alto, CA, where he is working on the epitaxial growth of semiconductor lasers by metalorganic chemical vapor deposition. From 1991-1999 he was a Principal Scientist in the Electronic Materials Laboratory of the Xerox Palo Alto Research Center, fabricating nitride blue laser diodes and phosphide red laser diodes for laser printing. From 1987-1991 he was a Member of Technical Staff at Sarnoff Corporation. He received a B.S. degree in Physics from MIT in 1983, and a Ph.D. degree in Electrical Engineering from Cornell University in 1987. David was elected a Fellow of the IEEE in 2000, for contributions to the growth and understanding of quantum well lasers.

**Gregory J. Brown** is Vice President of Engineering and Technology for the Tech Museum of Innovation in San Jose, CA. Greg earned his BS and Master's degrees in Engineering at Stanford University. During his 20-year career in research, Greg worked on robotics, computer vision and other advanced engineering areas at FMC's Corporate Technology Center. In addition, Greg put on popular workshops on creativity and brainstorming. He holds two patents. Since joining The Tech in 1994, Greg has managed many different aspects of the museum's operation. In addition to actively participating in the development of 250 new interactive exhibits, Greg lead a small team responsible for acquiring \$32M worth of high-tech equipment donations for use in the facility. He also initiated The Tech Challenge, an exciting design contest for youthful engineers. This event is going into its 16th successful year, and will attract 1000 inventive young people to The Tech Museum when it takes place this April.

**Dr. Robert Chau** received his B.S., M.S. and Ph.D. degrees, all in electrical engineering, from The Ohio State University. Dr. Chau joined Intel in 1989 and has developed seven generations of Intel gate oxides along with many transistor innovations used in various Intel logic products. He is the co-inventor and patent holder of the SiGe S/D, strained-Si PMOS transistor used in Intel's 90nm technology node. He and his team have also done pioneer research work in transistor miniaturization (30nm, 20nm and 15 nm transistors), have demonstrated the fully-depleted Tri-gate CMOS architecture with high performance and low off-state leakage, and have developed high-K/metal-gate CMOS transistors with record-setting performance. Dr. Chau was promoted in 2000 to the rank of Intel Fellow, and he is currently Director of Transistor Research. Dr. Chau holds 42 U.S. patents in device and process technologies, and has received five Intel Achievement Awards and 13 Intel Logic Technology Development Division Recognition Awards for his outstanding technical achievements in R&D. Dr. Chau received the 2003 Alumni Professional Achievement Award from The Ohio State University Alumni Association. He was invited by the National Science Foundation to be a member of the US delegation to attend and participate in the first joint Korea-US Nano Forum on nanotechnology in Seoul in October 2003. He has been selected by the Industry Week magazine in December 2003 as one of the 16 "R&D Stars" in the U.S. who "continue to push the boundaries of technical and scientific achievement".

**Prof. Hongjie Dai** received his B.S. in 1989 from TsingHua University, his M.S. in 1991 from Columbia University, and his Ph.D. in 1994 from Harvard University. He was a Postdoctoral Fellow, from 1994-1995 at Harvard University and a Postdoctoral Fellow from 1995-1997 at Rice University. His honors include Camille and Henry Dreyfus New Faculty Award, 1997; Terman

Fellowship, 1998; Packard Fellowship for Science and Engineering, 1999; Alfred P. Sloan Research Fellow, 2001; American Chemical Society Pure Chemistry Award, 2002; Camille Dreyfus Teacher-Scholar Award, 2002.

**Prof. Giulia Galli** is the Quantum Simulations Group Leader in the Physics and Advanced Technologies Directorate at the Lawrence Livermore National Laboratory (LLNL). She received a Ph.D. degree in Physics from the International School for Advanced Studies in Trieste, Italy in 1986. After postdoctoral positions at the University of Illinois at Urbana Champaign and the IBM Research Division in Zurich, Switzerland, she joined the Swiss Institute for Numerical Research at the Swiss Poly-technical School in Lausanne, where she was Senior Researcher and then Senior Scientist. In 1998 she moved to LLNL as a Staff Scientist. In 2000, she received a Department of Energy/Defense Program award of excellence for "Technical Excellence in Advanced Simulations" and in 2001 she was awarded two LLNL Awards of Excellence, by the Defense and Nuclear Technology and the Computation Directorates, respectively. She was elected a Fellow of the American Physical Society in 2003. Her current research activity is focused on computational investigations of systems and processes relevant to condensed matter physics, physical chemistry, materials and nano-science, using quantum simulations.

**Prof. Eugene E. Haller** is Professor of Materials Science at UC Berkeley and holds a joint appointment at the Lawrence Berkeley National Laboratory where he heads the Electronic Materials Program. He received his Ph.D. degree in nuclear and applied physics from the University of Basel, Switzerland for surface studies of large volume p-i-n germanium diodes used as gamma-ray detectors. His research interests cover a wide spectrum of semiconductor topics including basic semiconductor physics, thin film and bulk crystal growth and advanced detectors for electromagnetic radiation ranging from the far-infrared to gamma rays, neutrinos and dark matter. In recent years he has pioneered numerous scientific studies and applications of isotopically controlled semiconductors. He has authored and co-authored over 800 scientific/technical publications. He is a fellow of the American Physical Society, has won an Alexander von Humboldt U.S. Senior Scientist Award in 1986, two Miller Research Professorships in 1990 and 2001, the Max-Planck-Research Prize in 1994 and the James McGroddy Prize for New Materials of the American Physical Society in March 1999. He held visiting professorships at the Max-Planck-Institute for Solid State Research in Stuttgart, at the Imperial College in London and at the DLR (German Aerospace Corporation) in Berlin. He is a member of the Editorial Advisory Board of the "Journal of Physics and Chemistry of Solids," of "Materials Science Foundations" and of the "Journal of Applied Physics Reviews".

**Prof. Evelyn Hu** worked at AT&T Bell Laboratories, developing microfabrication and nanofabrication techniques to facilitate the study of superconducting and semiconducting devices and circuits. She joined UCSB in 1984 and has continued those research themes, through a variety of collaborative efforts, examining processes critical for the fabrication and operation of superconducting, electronic and optical devices. In particular, she has focused on ion-assisted chemical etching techniques having high spatial resolution, photo-driven processing tuned to the unique optical properties of the materials, and passivation treatments to enhance optical and electrical properties of structures at submicron dimensions. She has studied the formation of high quality, heterogeneous interfaces, such as those between semiconductors and superconductors, oxide and semiconductor, or two non lattice-

matched semiconductors. She has served as Director of QUEST, the NSF Science and Technology Center for Quantized Electronic Structures. She as well directs Nanotech, the UCSB component of the NSF National Nanofabrication Users Network. She is currently serving as Scientific Director of the California NanoSystems Institute (CNSI). She has served as Vice Chair (1989-92), and subsequently Chair (1992-94) of the ECE Department. She received the Tau Beta Pi Outstanding Faculty Award in ECE for 1989-90. Professor Hu is a Fellow of the APS and IEEE. In 1995, she was awarded an honorary Doctor of Engineering from Glasgow University.

**Dr. Ted Kamins** is Principal Scientist in the Quantum Science Research group at Hewlett-Packard Laboratories in Palo Alto, California, where he is conducting research on advanced nanostructured electronic materials and devices. He is also a Consulting Professor in the Electrical Engineering Department at Stanford University. He received his degrees from the University of California, Berkeley. He then joined the Research and Development Laboratory of Fairchild Semiconductor, where he worked with epitaxial and polycrystalline silicon before moving to Hewlett-Packard. Ted is co-author with R. S. Muller of the textbook "Device Electronics for Integrated Circuits" and is author of the book "Polycrystalline Silicon for Integrated Circuits and Displays." He is a Fellow of the IEEE and a Fellow of the Electrochemical Society. He received the 1989 Electronics Division Award of the Electrochemical Society.

## Symposium Committee

<i>Joseph Behnke (Applied Materials)</i>	<i>Zhen Guo (Intel)</i>
<i>Ying-Lan Chang (Agilent Technologies)</i>	<i>Seongsin Kim (Stanford)</i>
<i>Oscar Dubon (UC Berkeley)</i>	<i>Joachim Krueger (Agilent Technologies)</i>
<i>Stacy Gleixner (San Jose State )</i>	<i>Valeska Schroeder (Hewlett-Packard)</i>

*Danielle Chamberlin, 2004 Chair  
(Agilent Technologies)*

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<b>Make checks payable to: Electronic Materials Symposium</b> 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. Danielle Chamberlin at 650-485-2184, e-mail: <a href="mailto:danielle_chamberlin@agilent.com">danielle_chamberlin@agilent.com</a> . Please make sure your name and affiliation are clearly identified. The tax ID for the symposium is: 25-1484013. Registrations may be transferred/ substituted but are non-refundable.			