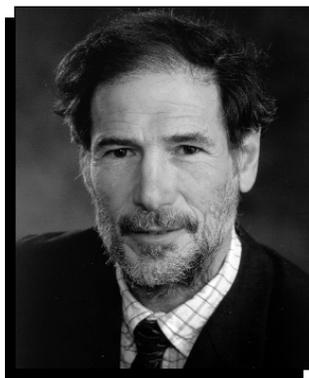


## Anseth, Averback, and Fitzgerald Chair Key MRS Committees for 2005



Kristi S. Anseth



Robert S. Averback



Eugene A. Fitzgerald

By appointment of the president of the Materials Research Society, **Kristi S. Anseth** (University of Colorado) now chairs the Board of Directors' Planning Committee, **Robert S. Averback** (University of Illinois at Urbana-Champaign) chairs the Operational Oversight Committee, and **Eugene A. Fitzgerald** (Massachusetts Institute of Technology) chairs the External Relations/Volunteer Involvement Committee. Averback was also appointed by the Board of Directors as Treasurer for 2005.

The Planning Committee leads the Board of Directors in all planning, including strategic planning and annual budget preparation, and the Operational Oversight Committee oversees the quality and financial performance of Society operations. The External Relations and Volunteer Involvement Committee develops policy and strategy recommendations for establishing and maintaining effective relationships with the Society's various external and internal constituencies, and ensures that involvement in the Society's programs is highly productive and satisfying for volunteers.

Each member of the Board sits on one of the three standing committees. A Governance Committee, comprising the chairs of the three standing committees and the Society officers, oversees the work of these committees.

**Kristi S. Anseth** is presently a Howard Hughes Medical Institute Assistant Investigator and professor of chemical and biological engineering at the University of Colorado at Boulder. She received her BS degree from Purdue University in 1992 and her PhD degree from the University of Colorado in 1994, both in chemical engineering. Following postdoctoral research appointments at Purdue and the Massachusetts Institute of Technology, she joined the faculty at

the University of Colorado in 1996. Anseth's research interests lie at the interface between biology and engineering of polymeric biomaterials and involve the application of photopolymerization technology to the development of new biomaterials for medical and biological applications, including tissue engineering, drug delivery, and microfluidic devices. Anseth is the author or co-author of over 60 articles, and she has presented over 80 invited lectures in the fields of photopolymerization and biomaterials. Among her honors are the National Science Foundation CAREER Award, National Institutes of Health FIRST Award, Packard Foundation Fellowship, DuPont Young Professor grant, Outstanding Young Investigator Award from the Materials Research Society, and the Curtis McGraw Award from the American Society for Engineering Education. She is the first engineer to be named a Howard Hughes Medical Institute Assistant Investigator. Anseth has been a member of MRS since 1991, serving the Society as a symposium organizer in the Fall of 2001.

**Robert S. Averback** is the Donald W. Hamer Professor of Materials Science and Engineering at the University of Illinois at Urbana-Champaign, where he has been a member of the faculty since 1987. Before coming to the university, Averback was a staff physicist at Argonne National Laboratory in the Materials Science Division for nearly 13 years. He spent an additional two years as a visiting scientist at the Forschungszentrum Jülich. He received his BS degree from Dickinson College and his PhD degree in physics from Michigan State University, and he was a postdoctoral student in the Department of Materials Science at Cornell University. Averback's principal work has been in the areas of ion-solid interactions and the synthesis

and processing of nanocrystalline materials. His research employs both experimental and computer simulation methods and includes such topics as driven systems, synthesis of magnetic nanoparticle qubits, and properties of solids under extreme conditions. He has published more than 200 articles in these areas and has received various awards, including co-recipient of the DOE Basic Energy Sciences award for sustained outstanding research, the Alexander Von Humboldt senior scientist award, and fellow of the American Physical Society. Averback first joined MRS around 1983; he served on the MRS Publications Committee, and he was co-organizer of three symposia: Clusters and Cluster Assembled Materials (1990); Beam-Solid Interactions, Fundamentals, and Applications (1992); and Metastable Phases and Microstructures (1995).

**Eugene A. Fitzgerald** is the Merton C. Flemings SMA Professor of Materials Engineering at the Massachusetts Institute of Technology. He received BS and PhD degrees in materials science and engineering in 1985 from MIT and in 1989 from Cornell University, respectively. From 1989 to 1994, Fitzgerald performed research at AT&T Bell Laboratories in the area of lattice-mismatched semiconductors and devices. In 1994, he accepted an associate professor position in the Materials Science and Engineering Department at MIT, and in 2000 was honored with the Lord Foundation Career Development Chair. In 1999, he became an SMA fellow in the Singapore-MIT Alliance. Fitzgerald was named a full professor in 2000 and received his current chair in 2003. At MIT, his group research activities include electronic materials, novel semiconductor heterostructures and devices, and heteromaterial integration. He currently holds 12 issued patents, has 40 patents pending, and has been author and co-author of

more than 100 articles. In 1998, Fitzgerald founded AmberWave LLC, which became AmberWave Systems Corporation in 1999. AmberWave is commercializing strained

Si materials, processes, and devices that increase the performance of Si CMOS fabrication. He established an AmberWave office in Singapore in 2001 for research

and development and Asia support. Fitzgerald is currently chair of the board of AmberWave Systems Corp. MRS

## MRS to Hold Workshop on Switching in Condensed-Matter Physics in April 2005

The Materials Research Society is holding a workshop on switching in condensed-matter physics immediately following the 2005 MRS Spring Meeting in San Francisco, Calif. With two days of technical talks on Friday and Saturday, April 1–2, and a rump session planned for Friday evening, the workshop, “Physics and Chemistry of Switching in Condensed Matter,” will explore fundamental mechanisms of switching in a variety of materials. The switching phenomena would include phase transitions as well as other sudden transitions. Examples include

rapid transitions in conductivity, magnetism, and optical density. Arthur Edwards of the Air Force Research Laboratory/V5 in Albuquerque is the technical committee chair of the workshop.

Over the last decade, several nonvolatile memory technologies have emerged based on a family of chalcogenide-containing alloys that undergo rapid transitions between crystalline and amorphous states. These transitions are accompanied by a significant change in reflectivity, used in rewriteable DVD technology, and a very large change in resistance, used in non-

volatile solid-state memory technologies. While the technologies are commercial, the phase-transition mechanism is not understood. This is but one example of a material system that undergoes a switching phenomenon large enough, rapid enough, and within a practical temperature range to be exploitable in a variety of technologies.

For more information, contact the Materials Research Society, 506 Keystone Drive, Warrendale PA 15086-7573 USA; tel. 724-779-3003, fax 724-779-8313, e-mail info@mrs.org, or Web site www.mrs.org/meetings/workshops. MRS

## MRS to Hold Workshop on Organic Microelectronics in July 2005

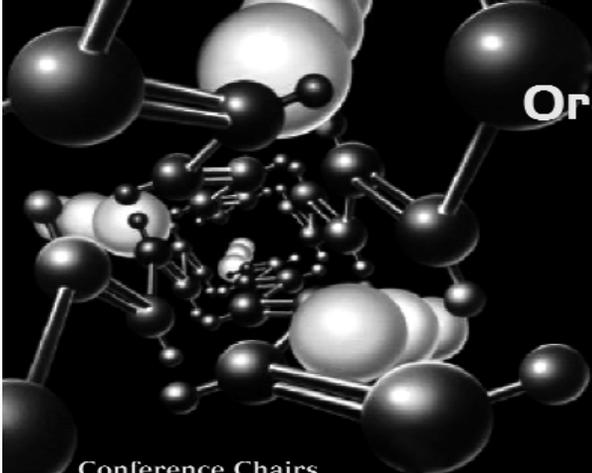
The Materials Research Society, in partnership with the American Chemical Society and the IEEE Components, Packaging, and Manufacturing Technology Society, is holding the “Organic Microelectronics Workshop” on July 10–13, 2005, in Newport, Rhode Island. The chairs are Tobin J. Marks (Northwestern University), Henning Sirringhaus (Cambridge University), and

George G. Malliaras (Cornell University).

The goal of the workshop is to build an interdisciplinary community working on applications such as radio frequency identification (RFID), displays, sensors, and photovoltaics while addressing some of the common scientific and manufacturing challenges to overcome in order to help these technologies advance in a more rapid, effective, and economical

manner. The technical program will focus on the areas of synthesis, theory, novel processing/patterning/fabrication, and device physics through a series of presentations by renowned invited speakers and poster sessions.

For more information, call 202-872-4600 or 1-800-227-5558, e-mail acsprospectives@acs.org; or visit Web site www.mrs.org/meetings/workshops. MRS



**ACS/MRS/IEEE CPMT**  
**Organic Microelectronics**  
**Workshop**  
**July 10 - 13, 2005**  
**Newport, Rhode Island, USA**

The Workshop will bring together a broad spectrum of chemists, materials scientists, physicists, and engineers from both industry and academia in a stimulating forum to share information and ideas in the emerging field of Organic Microelectronics. The goal is to build an interdisciplinary community working on applications such as RFIDs, displays, sensors and photovoltaics while addressing some of the common scientific and manufacturing challenges to help these technologies advance in a more rapid, effective, and economical manner.

The technical program will focus on the areas of synthesis, theory, novel processing/patterning/fabrication and device physics through a series of presentations by renowned invited speakers and poster sessions.

**Conference Chairs**  
 Tobin J. Marks, Northwestern University  
 Henning Sirringhaus, Cambridge University  
 George G. Malliaras, Cornell University

**For Additional Information**  
[www.microelectronics.org](http://www.microelectronics.org), online registration available  
 Phone: 202-872-4600, Toll free: 1-800-227-5558  
 E-mail: [acsprospectives@acs.org](mailto:acsprospectives@acs.org)





## Preview: 2005 MRS Spring Meeting

Moscone West and San Francisco Marriott Hotel, San Francisco, California

Meeting: March 28–April 1 • Exhibit: March 29–31

Meeting Chairs:

**Joanna Aizenberg**

*Lucent Technologies/Bell Laboratories*

**Oliver Kraft**

*Forschungszentrum Karlsruhe/  
University of Karlsruhe*

**Neville R. Moody**

*Sandia National Laboratories*

**Ramamoorthy Ramesh**

*University of California, Berkeley*

The 2005 Materials Research Society Spring Meeting will be held March 28–April 1 in San Francisco, Calif. All 33 technical symposia will be located at the Moscone West Convention Center. The meeting will highlight advances in the synthesis, characterization, simulation, and application of materials, from understanding materials fundamentals to the fabrication of devices using electronic and electro-optic materials, nanostructured and molecular materials, and biological and hybrid materials.

The scientific sessions will include new and developing areas of materials science as well as well-established popular topics. Symposia on electronic and optoelectronic materials will present the state of the art in organic and inorganic materials, flexible electronics, superconducting materials, and materials for micro- and nanoelectromechanical systems. Several symposia on semiconductors will cover areas ranging from amorphous and nanocrystalline Si to the potential use of carbon nanotubes in nanoelectronics. A number of symposia will explore aspects of nanoscale and interfacial phenomena, while others will focus on still-emerging bio-related topics including properties of biomaterials and biologically inspired materials.

The technical program is divided into six clusters: Electronics and Photonics (Symposia A–J); Biological and Molecular Materials (K–N); Nanoscale and Interfacial Phenomena and Related Materials (O–U); New Approaches to Materials Synthesis and Fabrication (V–AA); Modeling and Computation (BB–EE); and General (FF–HH and Symposium X), covering laser remote sensing, hydrogen storage, and nanosensors.

Symposium X on Frontiers of Materials Research, beginning at noon, on Tuesday through Thursday, will feature topics related to materials science and its applications on current subjects of public interest. These include nanoscience at the national laboratories and science and sculpture.

In commemoration of the 100th anniversary of the first definition of the photon, by Albert Einstein, Symposium A opens on Tuesday morning with a session on Pioneers in the Use of Photons to Study Films. Invited speakers in this session are Lothar Ley (Universität Erlangen-Nuemberg, Germany), Warren Jackson (Hewlett Packard), and George Cody (Rutgers University).

Also on Tuesday morning, March 29, the topic of integrated nanosensors will be reviewed through the perspectives of the U.S. National Science Foundation and the U.S. Department of Energy (DOE) in Symposium HH. A representative from DOE will also present the department's view on key technical issues of hydrogen storage for fuel cell vehicles in Symposium GG that morning.

Symposium FF will host a special one-hour presentation on "Reliability of Laser Diode Pump Arrays in Space-Based Lidars" on Wednesday afternoon at 1:30. This will be followed at 3:00 with a one-hour panel discussion on the "Role of New Photonic Devices and Fiber Optics Lasers in Advancing Laser Remote Sensing."

Tutorials will provide a detailed introduction to particularly exciting areas of research. With special emphasis given to this part of the program, the unusually high number of 12 tutorials will be offered (Symposia A, B, E, F, G, I, J, O, U, W, AA, GG). The tutorial for Symposium F on characterization techniques for thin-film solar cells will be presented by young researchers, intended for students and recent graduates who are new in this field.

The tutorials on Monday will be accompanied by a complimentary workshop on "The Road to Entrepreneurship: An Interactive Workshop on Company Formation and Venture Capitalism," by Bill Frezza, a general partner of Adams Capital Management, Inc., a national capital venture firm. Also, plans are underway to offer a seminar on how to write a successful grant proposal to government agencies funding materials research.

The plenary talk and awards ceremony will be held Wednesday evening, with a plenary address by George M. Whitesides of Harvard University on "The Intersection of Biology and Materials Science." This year's Outstanding Young Investigator, Harold Y. Hwang of the University of Tokyo, will be honored for his work in materials physics. He will present his talk, "Atomic Control of the Electronic Structure at Complex Oxide Heterointerfaces,"

on Tuesday, March 29, at 5:05 p.m. Gold and Silver Graduate Student Awards will be presented to graduate students on Wednesday evening for symposium papers that exemplify significant and timely research.

Poster sessions will be held in the Marriott on Tuesday through Thursday evenings from 8:00 p.m. to 11:00 p.m. The meeting chairs will sponsor a Best Poster Award competition, selecting recipients each night on the basis of the posters' technical content, appearance, graphic excellence, and presentation quality.

A "science and art" contest is planned in which artwork related to materials science and aesthetic scientific imagery (e.g., micrographs) will be exhibited and judged for awards.

MRS will host a Career Center, in which services include access to current job postings, a resume file for prospective employers, and on-site interview opportunities. Also, the exhibit will showcase products of interest to the materials community.

Graduate students and members of MRS University Chapters are invited to attend the student mixer reception. Also, chapter officers and faculty advisors are invited to attend a meeting of MRS University Chapter representatives to compare notes on recent activities and brainstorm on new projects and issues of common concern. Those interested in starting new chapters are welcome.

An MRS workshop on switching in condensed matter physics will be held immediately following the meeting, on April 1–2 (for more information, see page 113 in this issue).

See the following pages for a matrix of symposium sessions, a list of tutorials, profiles of exhibitors, and information on hotel and transportation arrangements. International travelers are reminded to begin the visa process early. The date, time, and location of various special events will be announced in the *Program & Exhibit Guide* at the meeting.

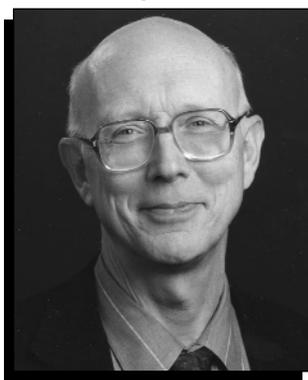
For additional information on the meeting, contact MRS Member Services, Materials Research Society, 506 Keystone Drive, Warrendale, PA 15086-7573, USA; e-mail [info@mrs.org](mailto:info@mrs.org), tel. 724-779-3003, and fax 724-779-8313. The deadline to preregister for the meeting is **March 11, 2005**. The MRS Web site can be accessed for updated information on confirmed talks and details of special events, visa information, and for preregistration at [www.mrs.org](http://www.mrs.org). 

## George M. Whitesides to Give Plenary Address at 2005 MRS Spring Meeting

George M. Whitesides, the Mallinckrodt Professor of Chemistry at Harvard University, will present the plenary talk on the intersection of research in biology and materials at the 2005 Materials Research Society Spring Meeting in San Francisco on March 30 at 6:00 p.m. in the San Francisco Marriott Hotel, Salon 7.

Whitesides's research interests include materials science, biophysics, complexity, surface science, microfluidics, self-assembly, micro- and nanotechnology, and cell-surface biochemistry. He has an AB degree (1960) from Harvard and a PhD degree (1964) from the California Institute of Technology. He was a member of the faculty of the Massachusetts Institute of Technology from 1963 to 1982. He joined the Department of Chemistry of Harvard University in 1982, and was department chair from 1986 to 1989.

Among his awards and honors are an



George M. Whitesides

Alfred P. Sloan Fellowship (1968); the American Chemical Society (ACS) Award in Pure Chemistry (1975), the Arthur C. Cope Award (1995), and the Madison Marshall Award (1996); the Award for

Excellence in Surface Science from the Surfaces in Biomaterials Foundation (1999); and the Von Hippel Award from MRS (2000). Whitesides is a member of the American Academy of Arts and Sciences, the National Academy of Sciences, and the American Philosophical Society. He is also a fellow of the American Association for the Advancement of Science and the New York Academy of Science, a foreign fellow of the Indian National Science Academy, and an honorary fellow of the Chemical Research Society of India.

His recent advisory positions include the National Research Council, the National Science Foundation, and the Defense Advanced Research Projects Agency. Whitesides serves on the editorial board of several publications, including *Bioorganic and Medicinal Chemistry Letters*, *Chemistry of Materials*, *Langmuir*, *Nanotechnology*, and *Sensors and Actuators*. 

## Harold Y. Hwang Named 2005 Outstanding Young Investigator

Harold Y. Hwang, an associate professor in the Department of Advanced Materials Science and the Department of Applied Physics at the University of Tokyo, has been named the 2005 Materials Research Society Outstanding Young Investigator (OYI). He is cited for "innovative work on the materials physics of transition metal oxides, relating local structure to electronic and magnetic properties, and on the atomic-scale synthesis of complex oxide heterostructures, enabling unique control of the interface electronic structure." He will deliver his award talk, "Atomic Control of the Electronic Structure at Complex Oxide Heterointerfaces," at the 2005 Materials Research Society Spring Meeting in San Francisco in the Moscone West, room 2010/2012, on Tuesday, March 29, at 5:05 p.m.

Early in his research, Hwang studied the electronic properties of strongly correlated electron systems, making important contributions to the study of cuprates and nickelates. He then focused on the colossal-magnetoresistance manganites and related magnetic oxides, where he established a direct correlation between structural distortions, electronic bandwidth, and magnetic properties, framing the physical origins of the magnetoresistance of central interest. He also demonstrated magnetotransport effects arising from half-metallic ferromagnetism.

Switching from bulk to thin-film materials research, Hwang focused on the electronic structure of oxide heterointerfaces, a fundamental issue underlying both new



Harold Y. Hwang

materials discoveries as well as device applications of oxide materials. Hwang and co-workers demonstrated the growth of very high-quality oxide heterostructures. These heterostructures consisted of a controllable number of atomic layers of a correlated electron material (LaTiO<sub>3</sub>—a Mott, or interaction-induced, insulator) interleaved with a controllable number of layers of a conventional band insulator (SrTiO<sub>3</sub>), the measurement of the longitudinal and Hall resistivities (demonstrating that although the two components are insulating, the heterostructure is metallic), and the use of a transmission electron microscope (TEM) to measure the spatial distribution of the Ti *d* electron charge. This pioneering work shows the possibility of combining the control of oxide molecular-beam epitaxy and TEM with correlated electron physics, opening the possibility of

systematic, controlled studies of correlated electron behavior in spatially inhomogeneous nanoscale environments.

In addition, Hwang has made significant advances with his demonstration of atomic control of the electronic structure at oxide heterointerfaces (2004); established spin-polarized tunneling in half-metallic oxide ferromagnets (1996–1997) and established the role of phonon coupling in the spin dynamics in manganites (1998); and developed chalcogenide glasses and thin-film waveguides for nonlinear optical response (1999), followed by his co-invention of chalcogenide lateral waveguide claddings for high-speed electro-optic devices (2000).

Hwang received an MS degree in electrical engineering from the Massachusetts Institute of Technology in 1993, and a PhD degree in physics from Princeton University. He has more than 50 publications and holds eight patents, with three patents pending. Before joining the faculty at the University of Tokyo in 2003, Hwang was a Member of Technical Staff in the Materials Physics Research Department at Bell Laboratories/Lucent Technologies in New Jersey from 1996 to 2003. He is a member of MRS and the American Physical Society, and he served as a symposium organizer for the 1998 and 2001 MRS Fall Meetings. Hwang's honors and awards include the Mitsubishi Foundation Award (2004), the Japan Science and Technology Agency Sakigake Fellowship (2003–2006), and the National Science Foundation Graduate Fellowship (1993–1996). 