

Preview: 2006 MRS Spring Meeting

Moscone West and San Francisco Marriott Hotel, San Francisco, Calif.

Meeting: April 17–21 • Exhibit: April 18–20

www.mrs.org

Meeting Chairs:

J. Charles Barbour

Sandia National Laboratories

Paul S. Drzaic

Alien Technology Corporation

Gregg S. Higashi

Intel Corporation

Viola Vogel

*Swiss Federal Institute of Technology
(ETH Zurich)*

The 2006 Materials Research Society Spring Meeting will be held April 17–21 in San Francisco, Calif. The technical meeting and exhibits will be located at the Moscone West Convention Center, including 37 symposia and a technical forum (Symposium KK) on Education in Nanoscience and Engineering. The meeting will highlight advances in microelectronic device processing and fabrication; materials research for photonics, electronics, magnetics, and sensors; complex and biological nanoscale materials and systems; and materials for energy and environmental applications. To complement the scientific sessions, tutorials will provide a detailed introduction to particularly exciting areas of research, and the exhibit will showcase products of interest to the materials community.

The scientific sessions will include many new and developing areas of materials research as well as some well-established and popular topics. In the cluster of symposia on Microelectronic Device Processing and Fabrication (A–H), topics range from amorphous and polycrystalline silicon thin films to chalcogenide phase-change materials. The cluster of symposia on Photonics, Electronics, Magnetics, and Sensors (I–S) will bring forth the state of the art from organic, inorganic, and hybrid materials systems, as well as the latest breakthroughs in nanowires and nanostructured materials systems. Complex materials behavior and biological nanoscale systems will be explored in symposia with topics ranging from nanomanufacturing to the mechanics of nanoscale systems to biological machines and nanoscale probes for molecular bioimaging within the cluster Complex and Biological Nanoscale Materials and

Systems (T–CC). An additional focus will be placed during the meeting on materials research affecting energy and environmental applications such as hydrogen storage and water purification. This cluster of symposia on Energy and Environment (DD–JJ), popular at the 2005 MRS Fall Meeting, is being carried over into the Spring Meeting.

A special one-day symposium (LL) will be held in recognition of John Poate's contributions to materials research over his career. Poate played a seminal role in developing several key areas in materials physics, particularly in semiconductor materials processing. He also collaborated with scientists worldwide, mentoring young scientists at critical stages in their careers. The symposium consists of all invited speakers who worked with Poate, and it follows the pathways of the science from Poate's tenure at Bell Laboratories to current research and future directions. The program begins with historical data and proceeds toward cutting-edge applications of the processes and the developments in the underlying science that have emerged; the talks are grouped into topical areas focused on critical processes and issues in semiconductor technology.

Symposium X, Frontiers of Materials Research, will feature presentations on "cool tools," entrepreneurship, and nanotechnology risk assessment.

The plenary talk and awards ceremony will be held Wednesday evening, with a plenary address by Craig R. Barrett, chair of the board at Intel Corporation. This year's Outstanding Young Investigator, Ju Li of the Ohio State University, will be honored for his work in materials deformation and fracture. Gold and Silver Graduate Student Awards will be presented to graduate students for symposium papers that exemplify significant and timely research.

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

The 2nd annual "Science as Art" contest

is planned in which artwork (e.g., micrographs) related to materials science and aesthetic scientific imagery will be exhibited and judged for awards. MRS is also pleased to announce Entrepreneurship Challenge, a competition designed to help MRS members develop the entrepreneurial skills that get ideas out of the laboratory and directly into the marketplace. Student scientists and business students have formed 26 "virtual teams" that will submit short Powerpoint presentations to be judged by a panel of 18 practicing venture capitalists. The top three teams will present their entries at the 2006 MRS Spring Meeting. The grand prize is \$3,000.

Government-sponsored seminars on topics of interest to the broad materials community are planned, with a particular emphasis on global competitiveness. MRS will also host a Career Center; services offered to attendees include access to current job postings, a resume file for prospective employers, and on-site interview opportunities.

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.

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, tel. 724-779-3003, and fax 724-779-8313. The deadline to preregister for the meeting is **March 31, 2006**. The MRS Web site can be accessed for updated information on confirmed talks and details on special events, visas, and preregistration at www.mrs.org. 

Craig R. Barrett to Give Plenary Address at 2006 MRS Spring Meeting

Craig R. Barrett, chair of the board of Intel Corporation, will give the plenary address at the 2006 Materials Research Society Spring Meeting to be held April 17–21 in San Francisco. Barrett joined Intel in 1974 as a technology development manager. He was promoted to vice president in 1984, senior vice president in 1987, and executive vice president in 1990. Barrett was elected to Intel's board of directors in 1992 and was named the company's chief operating officer in 1993. He became Intel's fourth president in May 1997, chief executive officer in 1998, and chair of the board on May 18, 2005. Barrett is a leading advocate for improving education in the United States and around the world. He is also a vocal spokesperson for the value technology can provide in raising social and economic standards globally.

Barrett is the current chair of the National Academy of Engineering, and in this role, he promotes the Academy and its policies to the engineering community and the public. He also chairs the Computer



Craig R. Barrett

Systems Policy Project and co-chairs the National Innovation Initiative Leadership Council. He is a recent appointee to the President's Advisory Committee for Trade Policy and Negotiations and to the American Health Information Community. Barrett serves on the board of directors for the U.S. Semiconductor Industry Association, the National Forest Foundation, Achieve, and TechNet, and is

a member of the National Academies Committee on Prospering in the Global Economy of the 21st Century: An Agenda for American Science and Technology, and of the board of trustees for the U.S. Council for International Business.

Upon receiving his BS, MS, and PhD degrees in materials science from Stanford University, Barrett joined the faculty at Stanford in the Department of Materials Science and Engineering, and remained through 1974, rising to the rank of associate professor. Barrett was a Fulbright Fellow at Danish Technical University in Denmark in 1972 and a NATO Postdoctoral Fellow at the National Physical Laboratory in England from 1964 to 1965. Barrett is the author or co-author of more than 40 technical papers dealing with the influence of microstructure on the properties of materials, and is co-author with William D. Nix and Alan S. Tetelman of the materials science textbook *Principles of Engineering Materials* (Prentice Hall, 1973). MRS

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Chapter Challenge ²⁰⁰⁶

—an event designed to spark a little
“friendly competition” among MRS Chapters.

The premise is simple. We've come up with a theme, **Biology—The Next Frontier of Materials Science and Engineering**, and we want to see just what your members can do with it.

That's it. We're giving you the theme and not much more. Your challenge is to come up with a creative program or activity that relates to biology and materials science & engineering... and then make it happen!

Details for the competition can be found on our Web site:
www.mrs.org/university/2006challenge

So get your Chapter together and set the creative juices flowing. It's a great way to energize your membership, increase student involvement, and showcase your Chapter.

Deadline for entries is **April 1, 2006**.
 The winning Chapter will be announced May 1, 2006 and will be featured in a summer issue of the *MRS Bulletin*.

Don't lose another minute. The Chapter **Challenge** starts NOW!



Ju Li Named 2006 MRS Outstanding Young Investigator

Ju Li, assistant professor at the Ohio State University, has been named the 2006 Materials Research Society Outstanding Young Investigator. He is cited for "innovative work on the atomistic and first-principles modeling of nano-indentation and ideal strength in revealing the genesis of materials deformation and fracture." He will deliver an award talk at the 2006 Materials Research Society Spring Meeting to be held April 17–21 in San Francisco.

During his postdoctoral appointment at the Massachusetts Institute of Technology (MIT), Li led the modeling effort in Sidney Yip's and Subra Suresh's groups in providing quantitative information on the conditions for defect nucleation during nanoindentation. A series of important articles resulted from this work, beginning with a publication in *Nature* **418** (July 18, 2002), p. 307, on elastic limit and incipient plasticity in crystals based on atomistic and finite element simulations, and in *Science* **298** (October 25, 2002), p. 807, on the high intrinsic stacking-fault energy and ideal shear strength of Al based on density functional theory calculations. Li's subsequent work influences a wide range of topics, including theoretical solid mechanics, electronic and thermal transport, multiscale methodology development, and biomechanics.

Li's current research focus is on the development of robust analytical and



Ju Li

computational approaches to the modeling of the structural and functional properties of materials, including Ni- and Ti-based superalloys, fuel cell catalysts, ultra-high-temperature ceramics, hydrogen storage materials, electroactive polymers, and metallic glasses. In these endeavors, he is leading the rapidly growing multiscale modeling effort in bridging continuum, atomistic, and electronic scales.

In addition to his research contributions, Li is providing leadership in materials science and engineering (MSE) education. As computational skills have become increasingly important to the careers of MSE students, Li is introducing fresh content into the MSE curriculum at Ohio State, including courses on modeling of materials processing at the undergraduate level and

computational thermodynamics at the graduate level. Li has created the molecular visualization software AtomEye (<http://alum.mit.edu/www/liju99/Graphics/A/>), and Web-based teaching modules for undergraduate students, beginning with a module showing movies of dislocation simulations.

Li was born in Beijing in 1975. He received his bachelor's degree from the University of Science and Technology of China in 1994, and his PhD degree in nuclear engineering from MIT in 2000. He then became a postdoctoral associate (2000–2002) and research scientist (2002) at MIT before joining the faculty at Ohio State in the fall of 2002. He has been a visiting scientist at Honda R&D Wako Research Center in Saitama, Japan; and Ames Laboratory in Iowa. Li has more than 50 peer-reviewed journal publications (a categorized list is available at <http://alum.mit.edu/www/liju99/Papers/>). He served as lead organizer of the Air Force Office of Scientific Research Workshop on Modeling Materials in Extreme Environments in Washington D.C. in 2005.

Li received an MRS Graduate Student Silver Award in 1998 and the Outstanding Paper Award at the Fifth International Conference on Advanced Materials, sponsored by the International Union of Materials Research Societies, in 1999. **MRS**

strange MATTER

Experience this interactive materials science exhibition

Science Museum of Minnesota, St. Paul, MN
February – April 2006

American Museum of Science and Energy, Oak Ridge, TN
February – April 2006

Strange Matter is presented by the Materials Research Society.
This exhibition and its tour are made possible by the generous support
of the National Science Foundation, Alcan Inc., Dow,
Ford Motor Company Fund, Intel Innovation In Education,
and the 3M Foundation.

To volunteer for activities with the exhibition, contact
Amy Moll
Community Resources Coordinator at amoll@boisestate.edu