

MATERIALS RESEARCH SOCIETY MEETS IN BOSTON

Expected to attract more than 4000 participants this year, the MRS fall meeting has become a magnet for physicists, chemists and biologists, as well as materials scientists.

The Materials Research Society will hold this year's fall meeting from Monday, 26 November, to Saturday, 1 December, at the Marriott and Westin hotels in Copley Place, Boston.

In recent years, as materials science has broadened to encompass more and more subdisciplines of physics, chemistry, biology and engineering, participation in the MRS meetings has grown steadily. The 2509 papers scheduled for this year's meeting represent an increase of more than 100 over last year's number, making this the largest MRS fall meeting ever.

Although many of the 26 technical symposia cover topics with a long-standing tradition at the fall gatherings, this year's meeting organizers have added new titles to the list and have tried to shift the emphases of the traditional sessions to keep pace with research trends.

In an effort to bring together practitioners of various types of diffraction, planners of the meeting have created a symposium called *Advances in Surface and Thin Film Diffraction*. Attendees representing x-ray, electron and atomic diffraction, who in previous years might have found themselves in separate symposia, will this year learn about one another's efforts to characterize thin films on the submicron scale. At a new symposium entitled *Long-Wavelength Semiconductor Devices, Materials and Processes*, attendees will discuss competing technologies in near-infrared semiconductors for telecommunications and in far-infrared (and longer-wavelength) semiconductors for defense and medical applications.

MRS has also added to the schedule a new symposium entitled *Nanostructures: Fabrication and Physics*. This practically oriented symposium will focus on novel lithographic and processing techniques needed to create devices on 100-nanometer and smaller scales. For the first time the MRS program will contain a symposium

on the mechanical properties of porous and cellular materials. A symposium entitled *Advanced Tomographic Imaging Methods for the Analysis of Materials* has been organized at the suggestion of Jerome L. Ackerman of Massachusetts General Hospital and William A. Ellingson of Argonne National Laboratory, who pointed out that medical imaging methods such as magnetic resonance and x-ray tomography hold promise for materials research.

In the symposium on surface chemistry and beam-solid interactions, meeting organizers see a decided change in emphasis: This year the program will highlight laser-induced chemical reactions on surfaces. The symposium on kinetics of phase transformations is particularly well subscribed this year, and includes a special session on phase transformations involving amorphous silicon. As research on nuclear waste management has matured, employing sophisticated means of simulating the behavior of nuclear waste in the laboratory and in computer models, the symposium on that topic has shifted its emphasis to highlight thermodynamic and kinetic modeling.

Returning for its second year, the symposium on chemical perspectives of microelectronic materials betokens the growing interest in the fundamental chemistry of electronic materials processing. Of course, there will again be a symposium on high- T_c (ceramic) superconductors, but its focus will be shifted considerably toward practical applications. As in previous years, "Symposium X," on frontiers of materials research, will consist of noontime invited talks, each intended to acquaint nonspecialists with a particular area of active research.

Wednesday evening at 6 o'clock, Bonnie Dunbar, a ceramic and biomedical engineer who for the past nine years has been an astronaut with NASA, will deliver the plenary address

of the meeting. At the same session Dunbar will receive the Presidential Award from MRS President Russell R. Chianelli, for her work to raise public awareness of materials science.

The society's highest honor

In a ceremony at 6 o'clock Monday evening, Robert Balluffi of MIT will receive MRS's highest honor, the annual Von Hippel Award for contributions to interdisciplinary research on materials. Balluffi, an experimenter, has advanced the fundamental understanding of crystal defects, including vacancies, dislocations and grain boundaries.

With Ralph Simmons, Balluffi made the first measurements of equilibrium vacancy concentrations in metals, and in a separate set of experiments he helped identify sources and sinks for vacancies under nonequilibrium conditions. More recently Balluffi has studied grain boundaries—defects responsible for a host of electronic and mechanical properties. He uses simple thin film methods to produce controlled grain boundaries, thus facilitating detailed studies of their structure and properties. In his current work Balluffi employs synchrotron x-ray diffraction to map the atomic structures of grain boundaries.

Balluffi received his BS in 1947 and his ScD in physical metallurgy in 1950, both from MIT. For 10 years he was on the faculty of mining, metallurgy and petroleum engineering at the University of Illinois, Urbana-Champaign, and for 14 years he was the Francis Norwood Bard Professor of Materials Science and Engineering at Cornell. In 1978 Balluffi returned to MIT as a professor of materials science.

Also at the awards ceremony, the winners of the MRS medals will be announced. Each of these medals recognizes a recent scientific or technical research achievement.

Other services

As in the past, the MRS fall meeting will feature a major exhibit of equipment used in materials-science-oriented research and industry. The exhibit, which is organized by AIP on behalf of MRS, will be open Tuesday from noon to 7 pm, Wednesday from 9:30 am to 5 pm, and Thursday from 9:30 am to 2 pm. There will be a

reception Tuesday evening from 5 to 7 in the exhibit hall, which is on the third floor of the Marriott Hotel.

In the Brandeis Room, adjacent to the equipment exhibit, AIP will operate a job placement center for MRS from 8 am to 5 pm on Tuesday, Wednesday and Thursday. The placement center staff will accept one-page resume forms from prospective employees and will arrange on-site inter-

views with participating employers. Preregistration for the placement center will be held Monday morning.

During the meeting MRS will give a full complement of short courses, each designed to familiarize scientists and engineers with a specific experimental technique or facet of research.

On-site registration for the short courses will begin on Sunday, 25 November. —MATT SIEGEL ■

Schedule of sessions with invited speakers

Monday, 26 November

morning

Ion implantation I. *A. Polman*

Si-Ge Heterostructures for electronic and optical devices. *G. Patton*

Mechanical and deformation properties of polymer interfaces. *K.-S. Kim, D. M. Shinozaki*

GaAs Surface chemistry. *J. S. Foord, J. A. Strosio, M. L. Yu*

Beam-induced phase transformations I. *F. Prolo*

Metal clusters. *W. A. Goddard III*

Metal clusters and magnetism. *P. Jena, M. Abshagen*

Status of high-temperature superconductivity. *J. W. Halley, A. P. Malozemoff, J. M. Rowell*

Physics of high-temperature superconductivity. *K. Kitazawa*

Mechanics and failure of cellular materials. *M. F. Ashby*

Defects in metals. *C. G. Windsor, R. W. Siegel*

Application of solid-state ionics. *J. Schoonman, S. D. Jones, S. J. Visco, M. Shabang*

Dynamics in small confining systems. *P. G. de Gennes, J. Israelachvili, P. Levitz, D. D. Awschalom*

Fiber-reinforced cementitious materials: toughening mechanisms. *S. P. Shah*

Nuclear-waste management: glass. *W. L. Bourcier, J. K. Bates*

Nonlinear optical effects in polymers I. *M. G. Kuzyk*

Synthesis and properties of new catalysts: oxides. *J. M. Thomas, P. A. Stevens*

Frontiers of materials research I. *P. Hagemuller, D. Geohegan*

afternoon

Beam-induced phase transformations I. *F. Prolo*

Beam-induced phase transformations II. *P. R. Okamoto*

Orientation relationships and nucleation. *J. W. Cahn*

Mechanical and deformation properties of polymer interfaces and optoelectronics packaging. *S. Numata, S. E. Molis, G. Blonder, J. Lipson*

III-V Precursors. *R. A. Jones, W. L. Gladstetter, J. W. Mitchell*

Beam-induced phase transformations II. *P. R. Okamoto*

Clusters and cluster-surface interaction. *R. L. Whetten*

Clusters and cluster-surface interaction. *D. M. Cox*

Infrared applications of high-temperature superconductivity. *P. L. Richards*

Magnetic sensing applications of high-temperature superconductivity. *W. J. Gallagher, J. Clarke*

Theory and simulation of defects. *J. D. Joannopoulos, G. H. Gilmer*

Microstructural influences on elasticity and fracture. *D. J. Srolovitz, S. C. Cowin*

Theory of solid-state ionics. *P. Vashishta, W. Dieterich, K. Funke, J. C. Wang, R. F. Wallis, M. Ratner, S. E. Sigaryov*

Dynamics in small confining systems. *W. I. Goldburg, J. R. Banavar, J. Machta*

Fiber-reinforced cementitious materials: synthetic and glass fibers. *R. W. Rice*

Nuclear-waste management: radionuclide migration I. *Z. E. Peterman, R. B. Wanty*

Nonlinear optical effects in polymers II. *K. D. Singer, A. Blumstein*

Metals in catalysis. *A. Baiker, J. S. Bradley*

Plenary session: fundamental issues and quantum size effects in semiconductor structures. *A. C. Gossard, N. K. Dutta, R. Landauer, E. D. Wolf*

Tuesday, 27 November

morning

Hot neutrals and cold ions: Deposition and etching I. *R. J. Madix, D. Eres*

Properties of delta doped and graded structures. *W. Walukiewicz, E. F. Schubert*

Coarsening and agglomeration. *S. P. Marsh*

Grain growth. *H. J. Frost*

Protective coatings for IC's. *R. M. Latanision, G. Chandra, A. S. Voloshin, L. Manzione*

Si growth and chemistry. *J. E. Crowell, J. M. Jasinski*

Kinetics of phase separation, interface segregation and ordering. *P. W. Voorhees*

Transformations in metallic clusters. *J. Bernholc, J. H. Parks*

Cluster structure. *R. Reifenberger*

Processing and characterization of cellular materials. *J. H. Aubert, A. J. Sherman*

Surface structures. *Tong, A. Ichimiya, J. C. H. Spence*

Point and line defects. *J. Peisl, S. D. Hudson*

Solid-state ionics: materials and techniques. *J. A. Duffy, A. Doi, J. Maier, B. C. H. Steele*

Dynamics in small confining systems. *R. O. Pohl, M. H. W. Chan, L. M. Schwartz, W. P. Halperin*

Fiber-reinforced cementitious materials: cracking under static and impact loading. *A. Bentur*

Nuclear-waste management: grout and concrete. *E. W. McDaniel, F. P. Glasser*

Alloy theory and phase stability I. *A. J. Freeman*

Molecular sieves. *E. M. Flanigen, E. G. Derouane*

Mercury cadmium telluride: devices and processing. *R. Reynolds, A. Sher*

Enzymes as catalysts in materials synthesis. *G. Whitesides, M. Callstrom, M. Bednarski, C. J. Morrow, J. F. Kirsch*

Fractal growth. *B. B. Mandelbrot, E. Ben-Jacob, J. G. Amar*

In-situ processing. *L. R. Harriot*

Nanostructure fabrication. *S. Beaumont, A. Scherer*

afternoon

Ion-assisted epitaxy. *S. A. Barnett*

Low-energy ion mixing and sputtering. *Y. T. Cheng*

Properties and devices in metal-semiconductor structures. *A. E. White, C. J. Palmstrom*

Development of microstructure in polycrystalline films. *M. Atzmon, H. A. Atwater*

Measurement of material properties and thermomechanical modeling. *J. A. Carpenter Jr, R. J. Farris*

Kinetics of ordering and nonlinear diffusion. *K. F. Ludwig Jr*

Cluster-assembled interfaces. *J. H. Weaver*

Thin films. *I. Yamada*

High-temperature superconductivity: bulk materials. *S. Jin*

Scaling approaches of mechanics in disordered solids. *P. M. Duxbury, Y. H. Ohashi, H. R. Brown*

Adsorption and phase transformations. *J. M. Gibson, Hinch, D. L. Mailander*

Defects in semiconductors. *T. N. Theis, S. Iijima*

Solid-state ionics: materials and techniques. *A. R. West, J. H. Kennedy, A. P. Owens, N. J. Dudney, J. B. Bates*

Dynamics in small confining systems. *H. T. Davis, D. J. Diestler, B. Abeles*

Fiber-reinforced cementitious materials: new fibers and processing techniques. *P. Stroeve*

Nuclear-waste management: radionuclide migration II. *H. Nitsche*

High-temperature ordered intermetallic alloys: defects and microstructure I. *V. Vitek, P. M. Hazzledine*