

MRS MEETS IN BOSTON

Planners of the annual fall meeting expect the largest attendance ever.

The Materials Research Society will hold its fall meeting from 27 November to 2 December at its regular venue in the Marriott and Westin hotels in Boston. Roughly 2500 papers will be given at 24 technical symposia and three poster sessions, giving meeting organizers reason to believe this year's will be the biggest fall MRS meeting ever held. As in past years, the meeting will have an interdisciplinary format. Organizers expect the six-day gathering to be attended by physicists, engineers, chemists and other materials researchers, from both the industrial and academic spheres.

On-site registration will be held on the fourth floor of the Marriott, at the following times: Sunday, 26 November, 4 pm–9 pm; Monday, 7 am–7 pm; Tuesday, Wednesday and Thursday, 7:30 am–5 pm; and Friday, 7:30 am–noon. MRS is also accepting telephone preregistration. (Ask for "meeting registration" at MRS headquarters: (412) 367-3003.)

At a session on Monday evening, Robert N. Noyce, a coinventor of the integrated circuit who is now chief executive officer of Sematech, will deliver the plenary address.

Symposia and short courses

A symposium entitled *Frontiers of Materials Research*, featuring five invited talks meant to provide authoritative reviews for nonspecialists, will be held Monday through Thursday at 12:05 pm. Monday's session will be broadcast live via satellite to selected industrial laboratories by the Public Broadcasting System. The invited talks will review newly designed types of steel, diamond Schottky diodes, liquid crystals, high- T_c thin films and materials synthesis using

biological processes.

The last of these talks touches on a new area of materials science, which will receive a more detailed treatment Tuesday through Thursday at its own symposium. Papers given at this symposium will discuss fabricating materials by mimicking natural processes such as the growth of bones or teeth. Another novel topic to receive some attention at the meeting is multifunctional materials, which will be the subject of a symposium on Wednesday, Thursday and Friday. Papers will describe a new approach to fabrication science whereby materials are designed to simultaneously optimize different properties, such as resistance to high temperatures and optical transmission. Though still in its infancy, the multifunctional approach has already produced some promising materials for high-technology electronics. For example, polymers designed to be both strong adhesives and good conductors have been

John B. Goodenough



used for shielding materials in aerospace applications.

In addition to the new topics, the schedule will feature many sessions that have become standards at the MRS meeting because of their well-established, wide-ranging interest to materials researchers. These include sessions on high- T_c superconductors, electronic materials, ceramics, polymers, beam processing, defects in semiconductors, and thin film epitaxy.

MRS has planned 22 short courses on topics related to materials research. The courses, which meet throughout the week, are scheduled so that attendees of a particular course can also attend all the symposia on closely related topics.

This year's slate of short courses includes some new topics, such as analytical electron microscopy, silicon integrated circuit fabrication, epitaxial growth of compound semiconductors, and optical characterization of III-V semiconductor epitaxial layers. (Student scholarships are available.)

The society's highest honor

Each year, MRS selects a scientist to receive the Von Hippel Award for contributions to interdisciplinary research on materials. This year, the award, which is the highest honor conferred by the society, will be presented to John Bannister Goodenough of the University of Texas at Austin, in recognition of his "distinguished contributions to the field of solid-state sciences, where his insights, ideas, knowledge and research have consistently drawn together the basic concepts of physics and chemistry in the conquest of wide-ranging fundamental topics." Goodenough

will receive the Von Hippel Award at a ceremony scheduled for 6 o'clock Wednesday evening.

Goodenough received his AB in mathematics from Yale University in 1943 and his PhD in physics from the

University of Chicago in 1952. He was a research physicist at the Lincoln Laboratory at MIT from 1952 until 1976, when he became a professor and head of the inorganic chemistry laboratory at Oxford. In 1986 he

came to the University of Texas at Austin, where he now holds the Virginia H. Cockrell Centennial Chair of Engineering.

Also at Wednesday's ceremony, the winners of the MRS graduate student

Schedule of Sessions and Their Invited Speakers

Monday, 27 November

morning

Ion assisted deposition. *J. J. Cuomo; E. Chason; K. Miyake*
 Interfaces and heteroepitaxy. *D. K. Biegelsen; R. M. Tromp*
 Initial stages of heteroepitaxy. *J. E. Northrup*
 Heteroepitaxy: Metal/semiconductors. *J. P. Harbison*
 III-IV semiconductors: Bulk crystal growth and properties. *S. Sen; S. McDevitt*
 Characterization of plasma-enhanced CVD processes: Diagnostics and modeling. *A. Garscadden; J.-P. Boeuf; J. M. Jasinski; M. L. Mandich*
 Introduction to neutron scattering and experimental techniques. *J. D. Axe; R. Pynn; J. B. Hayter*
 Overview of advanced electronic packaging materials. *D. E. Eastman; S. D. Prough; J. P. Krusius; K. Kimbara; J. F. MacDowell*
 Theory and experiment of high- T_c superconductors. *P. W. Anderson; M. L. Cohen*
 Micromechanics of interfaces. *J. F. Mandell*
 Polymer-based molecular composites: Inorganics/emulsions. *H. Schmidt; G. L. Wilkes; F. Candau*
 General optical fiber processing I. *S. R. Nagel; A. J. Hurd*
 General optical fiber processing II. *I. M. Thomas*
 Organic solid-state materials: Plenary session. *D. O. Cowan; A. J. Heeger; A. F. Garito*
 Organic ferromagnets I. *Z. Yoshida*
 Nuclear waste management: Cementitious materials—aspects of durability. *F. P. Glasser*
 Phase behavior and structure: Polymers. *W. W. Graessley; L. Leibler; S. J. Candau*
 Phosphate cements. *L. C. Chow*

afternoon

Surface studies under growth conditions. *E. Bauer*
 Heterointerface structure. *R. C. Pond*
 II-VI semiconductors: Optical and electrical properties. *A. V. Nurmikko; Y. Marfaing*
 Electronic structure of semiconductors—shallow impurities. *L. M. Smith*
 PECVD of silicon oxides and nitrides. *A. S. Harrus; D. L. Smith; S. Dzioba*
 Neutron scattering: Surfaces, films and interfaces. *B. Farnoux*
 Advanced electronic packaging materials: Optoelectronics. *J. D. Crow; J. G. Fujimoto; M. M. Oprysko; T. L. Koch; P. R. Prucnal; K. S. Abbott*
 High- T_c superconductors: Novel materials. *A. W. Sleight; C. N. R. Rao*
 Polymer-based molecular composites: Emulsions/blocks. *C. M. Paleos; D. J. Meier*
 Optical fiber coatings. *R. G. Huff*
 Optical fibers: Environmental effects. *P. J. Lemaire*
 Conducting polymers I: Polyaniline. *A. G. MacDiarmid; A. J. Epstein*
 Nuclear waste management: Cementitious materials—aspects of leaching. *I. G. Richardson*
 Phase behavior and structure: Surfactant systems. *G. B. Benedek; R. B. Meyer; D. Roux; Y. Talmon*
 Frontiers of materials research I: TV session. *G. B. Olson; G. Gildenblat; M. Bednarski; G. S. Attard; T. W. Sigmon*
 Specialty cements with advanced properties: Special processing I—DSP. *S. Wise*

Tuesday, 28 November

morning

Ion beam mixing. *J. Böttiger; W. L. Johnson*
 Encapsulated surfaces. *K. Akimoto*
 Scanning tunneling microscopy. *W. J. Kaiser; J. C. H. Spence*
 General topics in strained-layer epitaxy. *P. S. Peercy; J. Y. Tsao*
 Doping of II-VI materials. *M. C. Tamargo; H. Kukimoto; J. M. DePuydt*

Diamond for electronics: Growth and characterization. *A. T. Collins; T. R. Anthony*
 Electronic structure of semiconductors—Complex defects in Si. *M. L. W. Thewalt; Th. Wichert*
 Hydrogen in Si, I. *G. D. Watkins; G. L. Chiarotti*
 Characterization of plasma-enhanced CVD processes: Semiconductors. *J. E. Greene; T. M. Mayer; R. A. Rudder*
 Neutron scattering: Phase transformations and high- T_c . *W. Petry; W. I. F. David*
 Advanced electronic packaging materials: Polymers. *H. Hiramoto; S. I. Stupp*
 High- T_c superconductors: Thin film deposition—laser ablation technique. *R. K. Singh; H. S. Kwok*
 Interfaces in polymer composites I. *A. T. DiBenedetto; N. Sung; M. R. Piggott*
 Polymer-based molecular composites: Rigid-flexible systems. *R. S. Stein; S. J. Krause*
 Halide glasses and fibers. *P. W. France*
 Organic superconductors and organic metals I. *G. Saito; V. N. Laukhin; M. Tokumoto*
 Biological and biomimetic mineralization I. *R. P. Blakemore; H. C. Slavkin; A. I. Caplan*
 Fractal aspects of materials: Pattern formation and growth. *C. M. Knobler; F. Family; W. Klein*
 Modeling the dissolution of nuclear waste forms. *A. Navrotsky*
 Non-newtonian flow. *D. S. Pearson; S. T. Milner; R. Bruinsma; G. H. Fredrickson*
 New cement systems. *J. F. Macdowell; W. D. Kirkpatrick*

afternoon

Beam-solid interactions: Modeling/fundamental studies. *B. J. Garrison*
 Probes of chemisorbed layers. *R. J. Hamers*
 Molecular dynamics. *G. H. Gilmer*
 SiGe epitaxy. *S. S. Iyer; R. Hull*
 II-VI semiconductors: Thin films and heterostructures I. *T. C. McGill; T. Yao*
 Hydrogen in Si, II. *T. L. Estle*
 Hydrogen in III-V semiconductors. *B. Pajot*
 Characterization of plasma-enhanced CVD processes: Novel materials/applications. *P. K. Bachmann; M. Hirose; E. Kay*
 Neutron scattering: Alloys I. *J. Peisl*
 Advanced electronic packaging materials: Composites. *R. E. Newnham; G. Arjavalingam; J. Kim*
 High- T_c superconductors: Bulk materials. *P. H. Hor; B. C. Giessen*
 Interfaces in polymer composites II. *L. T. Drzal*
 Polymer-based molecular composites: Blends/IPN's. *W. J. MacKnight; R. M. Briber; H. L. Frisch*
 Optical fibers: Polymers and planar waveguides. *T. Yamamoto; N. Takato*
 Organic metals II. *E. B. Yagubskii; A. M. Kini*
 Conducting polymers II: Polyheterocyclics. *R. L. Elsenbaumer*
 Biological and biomimetic mineralization II. *E. D. Eanes*
 Fractal measures and pattern formation II. *C. Tricot; G. M. Dimino*
 Colloids. *H. N. W. Lekkerkerker; D. A. Weitz; W. B. Russel; J. W. Goodwin*
 Frontiers of materials research II. *J. Narayan; A. W. Urquhart*
 Specialty cements with advanced properties: Special processing II—MDF. *J. F. Young*

Wednesday, 29 November

morning

In-situ patterning: Selective area deposition and etching. *G. Taylor; A. Wilson; T. W. Sigmon*
 Silicide interface reactions and structure. *D. J. Eaglesham*
 Metallic superlattices. *C. P. Flynn*
 III-IV semiconductors: Thin films and heterostructures II. *M. Konagai; T. Taguchi*

awards, given for papers delivered at the meeting, will be announced.

AIP will organize an exhibit on the third floor of the Marriott, displaying analytical and processing equipment used in materials research. The ex-

hibit hours are as follows: Tuesday, 28 November, noon–7 pm; Wednesday, 9 am–5 pm; and Thursday, 9 am–2 pm. There will be a reception at the equipment exhibit on Tuesday evening from 5 pm until closing. AIP is

also running a job placement center, open Tuesday through Thursday from 9 am to 5 pm, where resumes will be made available to prospective employers and job interviews will be scheduled. ■

Diamond for electronics. *M. W. Geis*

Diffusion in Si. *S. T. Pantelides*

Microcrystalline silicon: Growth. *A. Matsuda; S. Vepřek*

Neutron scattering: Alloys II and residual stress. *R. G. Downing; A. D. Krawitz*

Aluminum nitride. *G. R. Miller*

Chemical vapor deposition of refractory metals and ceramics: Fundamentals/modeling. *C. Bernard; K. E. Spear; K. F. Jensen*

High- T_c superconductors: Thin film deposition—Other techniques. *J. Kwo; T. Geballe*

Adhesion and strength of interfaces. *M. Tirrell; H. T. Hahn; R. A. Lowden*

Ionomers/structure. *A. Eisenberg; R. Kopelman*

Optical fibers: Rare earth doped glasses. *R. H. Stolen; E. Snitzer*

Organic ferromagnets II. *A. J. Epstein; J. B. Torrance; F. Wudl; H. Iwamura; K. Itoh*

Nuclear waste management: Spent fuel performance. *G. Choppin*

Applications of complex fluids. *H. H. Winter; J. Bock; N. A. Clark; F. Candau; F. E. Filisko*

afternoon

In-situ patterning: Selective area deposition and etching. *S. Kishida; F. Bozso*

Electrical properties and devices in diamond and diamond-like materials.

W. E. Pickett; N. Fujimori; M. A. Tamor

III–V (A). *U. K. Mishra*

II–VI semiconductors: Novel growth and characterizations.

N. C. Giles; J. M. Arias

Ordering in alloys. *G. Stringfellow*

Semiconductor compounds: Nanocrystals. *L. Brus; P. D. Persans*

Neutron scattering: Polymers and disordered systems. *J. S. Huang; D. L. Price*

Metallization and interconnects. *M. Krishnan*

High- T_c superconductors: Crystal chemistry. *C. Chaillout*

Interfaces in ceramics and ceramic composites. *T. A. Michalske*

Polymer-based molecular composites: Synthesis/electro-optical properties. *L. R. Gilliom; T. Kajiyama*

Non-linear optical molecules. *J. Zyss; D. S. Donald*

Multifunctionality in ceramics/polymers. *I. A. Aksay; R. Roy;*

L. L. Hench; R. Lytel; H. K. Hall Jr

Fractal aspects of materials, and nuclear waste management: Sizing and scaling effects. *J. Feder; C. C. Barton*

Interfacial behavior: Solid/liquid, liquid/liquid. *M. W. Kim;*

D. Andelman; S. Garoff

Fly ash and coal conversion by-products characterization, utilization and disposal I. *G. J. McCarthy*

Frontiers of materials research III. *D. Ulrich; R. C. Dynes*

Thursday, 30 November

morning

Beam modification of ceramics and superconductors. *O. Meyer*

In-situ patterning: Selective area deposition and etching. *Y. S. Liu*

III–V (B). *F. Capasso; P. I. Cohen*

HgCdTe: Surfaces, passivants, and processing. *Y. Nemirowsky*

Silicon-carbide: Growth, characterization electrical properties, and devices I. *H. Matsunami; R. F. Davis*

Superlattices—electronic structure. *D. C. Reynolds; J. Dow*

DX centers I. *T. Theis*

Microcrystalline silicon: Properties. *S. Wagner; I. Shimizu*

Chemical vapor deposition of refractory metals and ceramics: Process—microstructure relationships. *R. F. Davis*

High- T_c superconductors: Dissipation. *M. Tinkham; P. H. Kes; Y. Iye*

Polymer-based molecular composites: Interfaces/mechanical properties. *P. F. Green*

Conducting polymers III: Polyacetylene and polysilane. *E. W. Conwell*

Nonlinear optics in multifunctional materials. *P. N. Prasad;*

D. Davidov; H. A. Goldberg; M. R. Worboys

Fractal aspects of materials: Surfaces I. *P. Pfeifer*

Macromolecular liquids: Exotic systems I. *T. A. Witten; M. Kardar; S. Leibler*

afternoon

In-situ patterning: Selective area deposition and etching. *G. Bronner*

Small angle x-ray characterization and amorphous layers.

P. D. Persans; J. Kakalios

HgCdTe: Epitaxial growth. *S. K. Ghandi*

Silicon-carbide: Growth, characterization electrical properties, and devices II. *B. Molnar*

Other wide band-gap semiconductors I. *J. I. Pankove*

Impurities, defects and diffusion in semiconductors: DX centers II. *D. Chadi*

Impurities, defects and diffusion in semiconductors: EL2 defects. *G. A. Baraff; J. M. Baranowski*

Microcrystalline semiconductors: Optical properties. *S. Furukawa*

Silicon alloys. *Y. Matsumoto*

Chemical vapor deposition of refractory metals and ceramics: Microstructure—mechanical property relationships. *V. K. Sarin*

High- T_c superconductors: Thin film characterization and composite materials. *S. J. Pennycook; R. S. Feigelson*

Polymer-based molecular composites: Miscellaneous/conventional composites. *T. Kurauchi*

Spin density waves. *G. Grüner; P. Garoche; J. S. Brooks*

Materials synthesis utilizing biological processes: Structure and self-assembly. *J. G. Sivak*

Multifunctional inorganic materials. *J. D. Mackenzie; R. E. Newnham; R. F. Kovar; N. J. Phillips*

Fractal aspects of materials: Surfaces II. *P. Meakin*

Fly ash and coal conversion by-products characterization, utilization and disposal III. *R. F. Feldman*

Frontiers of materials research IV. *D. Vaughan; A. MacDiarmid*

Friday, 1 December

morning

Beam-solid interactions: Fast transient processing. *M. O. Thompson*

In-situ patterning: Selective area deposition and etching I. *F. G. Bachmann*

Optical characterization of strained layers, quantum wells and superlattices. *T. P. Pearsall*

Hg-based superlattices; DMS materials. *S. Y. Auyang; C. A. Hoffman; J. K. Furdyna*

Other wide band-gap semiconductors II. *O. Mishima; Y. Kumashiro*

Doping in III–V's. *W. Walukiewicz*

Superlattices—diffusion. *L. J. Guido; U. Gösele*

Microcrystalline semiconductors: Devices and applications. *T. Matsuyama*

Chemical vapor deposition of refractory metals and ceramics: Novel/large-scale technologies. *P. D. Shalek*

Thin films: Bi and Tl compounds. *K. Wasa; D. A. Rudman; D. S. Ginley*

Nonlinear optical polymers I. *P. D. Townsend; D. J. Sandman*

Polymers for ultrastructures. *G. Williams; G. S. Attard; N. Ogata; G. R. Davies*

Gelation. *M. E. Cates; M. Rubinstein*

Fly ash and coal conversion by-products characterization, utilization and disposal IV. *R. H. Mills; P. L. Pratt*

Macromolecular liquids: Exotic systems II. *G. S. Grest; P. S. Pershan; M. Robbins*

afternoon

Beam modification of metals. *E. Johnson*

In-situ patterning: Selective area deposition and etching II. *D. W. Bauerle*

Optical characterization of epitaxial layers. *O. J. Glembocki*

Metal-organic chemical vapor deposition. *G. S. Girolami*

High- T_c superconductors: Thin films—properties and devices. *L. H. Greene; J. M. Triscone; P. Mankiewicz*

Multifunctional design. *A. H. Windle; E. L. Thomas;*

L. R. Dalton; D. M. P. Mingos

Fractal aspects of materials: DLA, electrodeposition kinetics. *C. Everts; T. Vicsek*