

# Preview

## 1991 MRS Fall Meeting

**Boston, Massachusetts**

**December 2-6**

**Meeting Chairs:**

**Julia M. Phillips, AT&T Bell Laboratories**

**Michael M.J. Treacy, NEC Research Institute, Inc.**

**Man H. Yoo, Oak Ridge National Laboratory**

It's nearly time to head for Boston and the 1991 MRS Fall Meeting, held at the Marriott and Westin Hotels in Copley Place and expanding this year into the theaters in the mall. Technical sessions will be held Monday through Friday, December 2-6, while the MRS Short Course Program on related subjects runs from Sunday through Saturday, December 1-7.

The extensive and diverse program, represented by the 2,700 abstracts accepted, gives new twists to familiar topics and unveils completely new ones. Related topics are cross referenced in the program for the first time this year, minimizing overlap of talks of related interest while encouraging interaction across disciplinary boundaries.

One of the new topics at this year's meeting is hierarchically structured materials. This symposium will examine complex materials that are designed at a spectrum of length scales varying from the atomic to the macroscopic. Biological materials such as bone naturally have hierarchically struc-

ture systems. The same concepts can be applied to synthetic composites. The first three days of this symposium will be held in one of the theaters in the mall.

Organic materials will appear in many forms—as conductors, in optical devices, and even as magnets. And those ever popular buckyballs make a special appearance, showing off their superconductivity and other interesting properties in an evening session on Chemical Modification and Applications of Fullerenes, Wednesday after the Von Hippel address and MRS reception.

A Tuesday evening postdeadline session on Light Emission from Silicon will cover the latest developments on obtaining visible luminescence at room temperature from porous Si (see the September *MRS Bulletin*, p. 41 and also July, p. 54).

Both electronic and optical materials will be heavily represented at this meeting, including wide bandgap semiconductors such as diamond and SiC, polymers, ce-

ramics, and the ever present III-V compounds. Anomalous characteristics in low temperature III-V materials are featured in an evening session.

High-temperature superconductors will be presented extensively, covering the status of current theory, flux pinning, critical current, as well as emerging applications such as SQUIDs and superconducting wire.

Other topics include beam modification of materials, theory and design, processing, physical and mechanical properties of thin films and interfaces, ferroelectrics, biomaterials, shape-memory materials, complex fluids such as gels and colloids, refractory metals and ceramics, catalysts, sample preparation for TEM, and cementitious materials.

See the matrix on pages 62-63 for a list of all the technical symposium and session titles. For information about late-news sessions, see page 67.

### Special Events

The plenary speaker Monday evening will be D. Allan Bromley, Assistant to the President for Science and Technology, and Director of the Office of Science and Technology Policy.

On Tuesday, Reza Abbaschian and Merton C. Flemings have organized a workshop on Materials Science and Engineering Education. Topics will span education and research for undergraduates, graduates, and young faculty. Any attend-

ees interested in helping enrich science education in their local schools can also go to the Grassroots Education Networking session Tuesday evening.

At lunchtime in Symposium X: Frontiers of Materials Research, leaders in various specialties will present reviews geared towards the nonspecialist. As part of Symposium X, the MRS medal awardees will give presentations.

Also, look for the student mixer, poster

sessions filled to capacity on three nights, Von Hippel and graduate student awards, short courses, equipment exhibit, job placement center, and more.

For further details about the meeting program and registration, see the 1991 MRS Fall Meeting Program, which is mailed to all MRS members. If you need a program, call the MRS Meetings Department (412) 367-3003; fax (412) 367-4373.

**Take  
Advantage  
of  
Pre-Meeting  
Fees.**

**Register  
by  
November 22.**

Activity	Monday, December 2		Tuesday, December 3		
	a.m.	p.m.	a.m.	p.m.	eve
AA. Light Emission from Silicon					Light Emission from Silicon (W)
A. Beam-Solid Interactions	A1: Formation of Amorphous Semiconductors by Ion Beams (W)	A2: Ion-Beam Modified Semiconductors (W) A3: SOL Formation by Implantation	A4 and A5: Phase Formation by Ion Implantation and Mixing (W)	A6: Phase Formation by Ion Implantation (W)	Poster Session
B. Photons and Low Energy Particles			B1: Laser Etching and Ablation (W)	B2: Laser Deposition (W)	
Ca. Interface Dynamics and Growth		Ca1: Growth Kinetics (W)	Ca2: Instability and Growth Morphology (W)	Ca3: Phase Transition (W)	
Cb. Interfaces in Materials	Cb1: Interfacial Crystallography and Structure (W)	Cb2: Interfacial Defects and Reactions (W)	Cb3: Interfacial Kinetics and Migration (W)	Cb4: Interfaces and Transformations (W)	Poster Session
D. Thin Films	D1: Microstructural Processes and Intrinsic Stresses (W)	D2: Stresses and Deformation Processes (W)	D3: Mechanical Properties and Testing Techniques (W)	D4: Indentation: Modelling and Experiments (W)	Poster Session
E. III-V Compound Semiconductors	E1: Gas-Source Epitaxial Growth (M)	E2: Implantation and Annealing (M)	E3: Dry Etch/Deposition (M)	E4: III-V Devices and Contacts (M)	Poster Session
F. Low Temperature GaAs & Related Materials					
G. Wide Band-Gap Semiconductors	G1: Diamond (M)	G2: Diamond (M)	G3: II-VI Compounds (M)	G4: Theory on Wide Band-Gap Semiconductors (M)	
H. High-Temperature Superconductors	H1: Fundamentals (W)	H2: Materials: Properties and Synthesis I (W)	H3: Materials: Properties and Synthesis II (W)	H4: Thin Films I: MBE and PLD (W)	Poster Session
I. Ferroelectric Thin Films	I1: Optical Characterization; Integrated Sensors and Detectors (W)	I2: Electrodes and Electrical Property Characterization (W)	I3: Physical and Chemical Vapor Deposition Techniques (W)	I4: Processing by Spin Pyrolysis (W)	Poster Session
J. Optical Waveguide Materials	J1: Plenary Session J2: Defects J3: Photoinduced Phenomena (W)	J4: Fiber Strength J5: Infrared Fibers (W)	J6: Active Fibers - I J7: Active Fibers - II (W)	J8: Nonlinear Materials J9: Thin Films (W)	
K. Advanced Cementitious Systems		K1: Pozzolanic and Cementitious By-Products (M)	K2: Nuclear and Hazardous Waste Immobilization (M) K3: Novel Inorganic Cements (M)	K4: Novel Inorganic Cements (cont.) (M)	
L. Materials for Infrastructure					
M. Shape-Memory Materials			M1: Fundamentals (W)	M2: Martensitic Transformation and Phase Stability (W)	
N. Organic Solid State Materials	N1: Plenary Session N2: Nonlinear Optics: Second Order Processes (M)	N3: Molecular Superconductors and Related Phenomena (M)	N4: Conducting Polymers (M)	N5: Nonlinear Optics (M)	
O. Complex Fluids	O1: New Architectures (M)	O2: Gels, Foams and Emulsion (M)	O3: Colloids (M)	O4: Electrorheological and Magnetic Colloids (M)	
P. Disordered Materials			P1: Dynamics and Self-Organization (M)	P2: Dynamics and Hydrodynamics (M)	Special Evening Session
Q. Synthesis and Processing of Ceramics	Q1: Polymeric Precursors for Non-Oxides, Sol-Gel Chemistry (M)	Q2: Polymeric Precursors for Oxides and Powders Synthesis (M)	Q3: Dispersion and Rheology (M)	Q4: Forming Processes and Texture Development (M)	
R. CVD of Refractory Metals and Ceramics					
S. Gas Pressure Effects on Materials			S1: General Papers (M)	S2: New Application (M)	
T. Tissue-Inducing Biomaterials					
U. Catalysts	U1: Cluster Chemistry and Catalysis (T)	U2: Highly Dispersed Structures (T)	U3: Zeolites and Microporous Materials (T)	U4: Synthesis and Reactivity of Oxides (Part I) (T)	
V. Multiple Scattering Theory	V1: History and Foundations of MST (M)	V2: Classical Applications of MST (M)	V3: Full Potential MST (M)	V4: Applications of MST to Alloys (M)	
W. Specimen Preparation for TEM					
X. Frontiers of Materials Research	12:05 p.m. - 1:25 p.m. (W)		12:05 p.m. - 1:25 p.m. (W)		
Z. Hierarchically Structured Materials		Z1: Structures, Properties and Design Rules (T)	Z2: Synthetic Hierarchical Structures and Design Rules (T)	Z3: Composite Structures and Mechanical Properties (T)	

(M) Marriott Hotel (W) Westin Hotel (T) Theaters in the Mall, Loews Copley Place

# Sessions Locator

Wednesday, December 4			Thursday, December 5			Friday, December 6	
a.m.	p.m.	eve	a.m.	p.m.	eve	a.m.	p.m.
A8: Irradiation-Induced Transformations (W)	A9: Beam-Induced Formation of Carbonaceous Phases (W) A10: Dep. with Ion Beams: ICB, IBAD		A11/B5: Ion-Assisted and Plasma Deposition (W)	A12/H10: Enhanced Flux Pinning (W)	Poster Session	A16/B9: Pulsed Laser Deposition (W)	
B3: Electron and Neutral Beam Processing (W)	B4: Plasma Etching and Ion-Induced Damage (W)		B5/A11: Ion-Assisted and Plasma Deposition (W)	B6: Laser Surface Modification (W)	Poster Session	B9/A16: Pulsed Laser Deposition (W)	
Ca4: Step Flow and Film Growth (W)	Ca5: Epitaxial Growth (W)	Poster Session	Ca7: Self-Assembled Layers and Electrochemical Interfaces (W)	Ca8: Self-Assembled Monolayers (W)	Poster Session	Ca10: Growth and Characterization Techniques-I (W)	Ca11: Growth and Characterization Techniques-II (W)
Cb6: Interfaces in Thin Films	Cb7: Segregation and Deformation at Interfaces (W)	Poster Session	Cb9: Interfaces High-T and Composite Materials (W)	Cb10: Interfaces in Ceramics and Electronic Materials (W)			
D6: Strain Relaxation and Misfit Dislocations in Heteroepitaxy (W)	D7: Multilayers: Stresses and Mechanical Properties (W)		D8: Adhesion and Fracture Properties of Thin Films	D9: Electromigration and Stress Voiding in Interconnects (W)			
E6: Contacts and Characterization (M)	E7/F1: Novel Growth and Characterization E8: Growth and Characterization (M)		E9: Impurities and Characterization (M)	E10: Defects, Hydrogen and Diffusion (M)			
	F1/E7: Novel Growth and Characterization (M)		F2: Electrical Properties of LT GaAs (W)	F2: Electrical Properties of LT GaAs F3: Structural Properties of LT GaAs (W)	F4: Anomalous Characteristics in LT III-V Materials	F6: LT GaAs in FETs (W)	F6: LT GaAs in Optical Devices F7: In-Based Compounds Grown by LT MBE (W)
G5: III-V Nitrides (M)	G6: Boron Compounds (M)		G7: Silicon Carbide (M)	G8: Amorphous and Micro-Crystalline Semiconductors (M)	Poster Session	G11: Chalcopyrites, Oxides and Halides (M)	
H6: Toward Circuit Technologies I: Devices Needs and Processes (W)	H7: Toward Circuit Technologies II: Junctions and Circuit Technologies (W)	Poster Session	H9: Microwave Properties (W)	H10/A12: Enhanced Flux Pinning (W)	Poster Session	H13: Thin Films II: Sputtering and CVD (W)	H14: Critical Currents, Wires and Tapes (W)
I8: Pulsed Laser Ablation of Thin Film Ferroelectrics (W)	I9: Lithium Niobate Potassium Niobate and Late News (W)						
J10: Planar Waveguides-I (W) J11: Planar Waveguides-II (W)	J12: Ion Implantation (W)						
K4: Novel Experimental Approaches (T)	K5/L1: Cement-Based Materials for the Infrastructure (T)						
	L1/K5: Cement-Based Materials for the Infrastructure (T)		L2: Nondestructive Methods for Characterizing Pavements (M) L3: Performance Properties	L4: New Materials for Infrastructure (M)			
M3: Structure and Properties (W)	M4: Shape Memory Effects (W)	Poster Session	M6: Processing, Alloy Design, and Industrial Applications (W)	M7: Processing, Alloy Design, and Industrial Applications (W)			
N6: Molecular Engineering (M)	N7: Ferromagnetism and Related Phenomena (M)	N8: Fullerenes (C-60) (M)	N9: Nonlinear Optics: Second and Third Order Processes (M)	N10: Conjugated Polymers, Insulating Foams (M)	Poster Session	N12: Nonlinear Processes and Materials (M)	N13: Conjugated Polymers, Conducting Forms (M)
O5: Interfaces: Patterns and Forces (M)	O6/P5: Friction Fracture and Adhesion (M)	Poster Session	O8: Membranes and Lamellae (M)	O9: Polymer Interfaces and Structure (M)		O10: Shear-Induced Effects (M)	O11: Wetting and Interfaces (M)
P4: Pattern Formation (M)	P5/O6: Friction Fracture and Adhesion (M)	Poster Session	P7/A7: Scattering and Multiple Scattering (M)	P8: Scattering and Porous Media (M)		P9: Phase Transitions and Networks (M)	
Q5: Processing Aid Removal and Processing Effects on Particle Surfaces (M)	Q6: Densification and Microstructure Characterization (M)		Q7: Composites, Reaction Bonding, Solid State Reactions (M)	Q8: Novel Processing and Synthesis (M)	Poster Session	Q10: Synthesis IV: Coatings and Films (M)	
R1: Fundamentals/Modeling (M)	R2: In Situ Diagnostics (M)		R3: Microstructure-Process-Property Relationships (M)	R4: Chemical Vapor Infiltration (M)		R5: Organometallic CVD (M)	R6: Diamond Films (M)
S3: Densification I (T)	S4: Densification II (T)		S5: Electronic Materials and Glass (M)	S6: Superconductors (M)		S7: Porous Material (M)	
T1: Osteo-Inducing Materials Preparation and Characterization (M)	T2: Collagen-Based Scaffolds (M)		T3: Osteo-Inductive Materials Cell and Tissue Interactions (M)	T4: Cell-Surface Interactions and Tissue-Specific Materials (M)		T5: Materials for Morphogen Delivery (M)	T6: Biodegradable Polymers and Materials for Tissue Reconstruction (M)
U5: Synthesis and Reactivity Of Oxides (Part II) (T)	U6: Transient Characterization Methods (T)	Poster Session	U8: Microscopy (M)				
V5: Relativistic MST (M)	V6: Application of MST to Surfaces and Extended Defects (M)		V7/P7: Scattering and Multiple Scattering	V8: Application of MST to Lead, Photoemission and Spectroscopies (M)			
					Poster Session		W2: Workshop on Specimen Preparation (M)
12:05 p.m. - 1:25 p.m. (W)			12:05 p.m. - 1:25 p.m. (W)				
Z4: Pattern Formation in Synthetic and Natural Composites (T)	Z5: Electronic, Optical and Magnetic Properties (T)		Z6: Scaling and Structural Characterization (W)	Z7: Processing of Synthetic Hierarchical Structures (W)		Z8: Molecular Design of Hierarchical Structures (W)	