Preview

1992 Spring Meeting

April 27 - May 1 ■ San Francisco, Marriott Hotel

Meeting Chairs:
June Passaretti, Pfizer, Inc.
Lynn Rehn, Argonne National Laboratory
Dale Schaefer, Sandia National Laboratories

The Spring MRS Meeting returns to San Francisco this year, where it will stay for the decade. While the location is set, the program continues to grow and change. This year's program includes 26 symposia and has 2,400 oral and poster presentations planned, substantially more than any previous spring meeting.

A cluster of symposia will address environmental concerns. One symposium covers recycling of wood-based materials, encompassing recycling paper, removing ink and contaminates, and creating composite structures using recycled fiber. The second symposium of this cluster covers materials for alternative energy sources, such as chemically selective membranes and catalysts, and materials for high-temperature and high-pressure energy conversion. The third symposium addresses materials separation using membranes, zeolites, etc. to handle toxic waste, remove metals, or filter gases.

Fullerenes, fullerides, and fulleroids settle into a symposium on novel forms of carbon, joined by diamond films, carbon clusters, fibers, amorphous carbon, graphite, extraterrestrial carbon, and foams, bringing together diverse interests but focusing on a common element.

The largest symposium will consider "better ceramics through chemistry." As science looks to build unique materials from the atom up, more attention is focusing on the versatility and insight gained through chemistry.

A symposium on "smart materials" and micro-electro-mechanical systems teases the imagination with a vision of tiny modern machines performing tasks by sensing and responding to light, chemistry, temperature, and even biological stimuli.

As computers grow in complexity and capability, so too do computational methods to explain and predict structure, properties, and other materials phenomena. A symposium addressing computational methods will cover modeling of polymers, ceramics, superconductors, interfaces, clusters, processing, and more.

Semiconductors are broadly represented in a series of symposia, including two new ones on photo-induced space charge effects and defect engineering. Additional symposia cover surface preparation, reliability, metallization, heteroepitaxy, beam interactions, and electronic packaging.

Among other intriguing topics is one within the symposium on art and archaeology. Several sessions address the destruction of cultural property and historic monuments resulting from armed conflict and the conservation science required to preserve them. Examples draw from World War I and II, the Persian Gulf War, and recent conflicts surrounding Yugoslavia.

Other symposia cover microwave processing, clusters and colloids, aerosols, intermetallic matrix composites, submicron multiphase materials, defects in oxides, and macromolecular host-guest complexes. See the matrix on the following pages for a list of all the technical symposia and session titles.

Special Features

The plenary speaker on Monday night will be Bassam Z. Shakhashiri, professor of chemistry at the University of Wisconsin-Madison. Shakhashiri founded the University of Wisconsin's Institute for Chemical Education in 1983 and was Assistant Director of the National Science Foundation for Science and Engineering Education from 1984 to 1990. He is known for his effective teaching methods using demonstrations. He aims both to lure future generations to careers as researchers, entrepreneurs, and teachers and to promote scientific literacy for all citizens. The session also includes presentation of the Outstanding Young Investigator awards and graduate student awards.

Symposium X, a set of lunch-hour reviews designed for the nonspecialist, promises enlightening presentations on porous materials, ceramic membranes, art and archaeology, computer simulation of microstructure, mechanical properties of thin films, new optics for x-rays and neutrons with the Kumakhov lens, and presentations by the Outstanding Young Investigator awardees.

A special forum is planned in response to the Bush administration's Advanced Materials and Processing Program, an initiative proposed in the 1993 federal budget. Representatives from the major federal agencies affected will describe their involvement in the intiative. The session is tentatively scheduled for noon on Thursday, April 30.

The meeting is complemented by short courses related to symposium topics, an extensive equipment exhibit, a job placement bulletin board, three evenings of poster sessions, and more.

For further details about the meeting program and registration, see the 1992 MRS Spring 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. □

https://doi.org/10.1557/S0883769400040902 Published online by Cambridge University Press

Plenary Speaker
Bassam Z. Shakhashiri
Monday, April 27, 1992
San Francisco Marriott

An outspoken advocate of science and technology education and literacy, Bassam Z. Shakhashiri is a professor of chemistry at the University of Wisconsin-Madison and holds AB, MS, and PhD degrees in chemistry as well as several honorary doctorates. He founded the University of Wisconsin's Institute for Chemical Education in 1983 and is co-author of several texts and videotapes on chemistry. He was the National Science Foundation's assistant director for science and engineering education from 1984 to 1990 and claims credit for having set the NSF education budget on a $600 million trajectory for fiscal year 1993.

Shakhashiri is well-known for his development and use of demonstrations in teaching to prove that "science is fun." He has had an interactive chemistry exhibit on display since 1983 at the Chicago Museum of Science and Industry and annually puts on a Christmas science show that has been presented at various places, including the National Academy of Sciences and the Smithsonian's National Air and Space Museum.

Travel and Lodging

Meeting Hotel:
San Francisco Marriott Hotel
55 Fourth Street
San Francisco, CA 94103
(800) 228-9290 Nationwide
(415) 896-1600 Direct
FAX (415) 442-0141

A block of rooms has been reserved for MRS meeting attendees at the San Francisco Marriott Hotel. When reserving your room, mention the Materials Research Society to receive the special rates: $140 single; $165 double.

DEADLINE FOR HOTEL RESERVATIONS: March 30, 1992

Air Travel:
American Airlines is offering special rates for traveling to and from the San Francisco meeting from Friday, April 24, through Monday, May 4, 1992:

45% off full-day coach fare (U.S. only),

5% off all other fares with all tariff rules in effect.

To take advantage of these discounts — available only through American Airlines' toll- free number:

1. Call American Airlines today, or have your travel agent call: (800) 433-1790
2. Refer to Star Number: S02Z2VO

Preregistration Fees

Preregistration fees for the MRS meeting are $225 for MRS members; $260 for nonmembers; $60 for student members; $70 for student nonmembers; and $95 for MRS short course attendees registered for two or more short course days.

Preregister by **April 17, 1992,** to take advantage of pre-meeting fees. Registrations received after April 17, 1992, will be charged at-meeting rates. At-meeting registration fees will be $50 higher ($10 higher for students) than preregistration fees.

Preregistrations are accepted by mail, phone, or fax. If you need a form for mail or fax preregistration, call (412) 367-3003.

Telephone Preregistrations require credit card payment (VISA, MasterCard, or Diners Club only). Call (412) 367-3003 and ask for Meeting Registration, Monday through Friday between 8:00 a.m. and 5:00 p.m. EST.

Telephone preregistrations will close at 5:00 p.m., Friday, April 17, 1992.

MRS MATERIALS RESEARCH SOCIETY
April 25-May 2
Spring '92
San Francisco Marriott
San Francisco, CA

MRS Short Course Program

Five New Course Topics and Tutorial

Selected short courses and a tutorial covering the latest developments in materials science and technology will be offered in conjunction with the 1992 Spring Meeting of the Materials Research Society. These up-to-date presentations are at the forefront of science and technology and complement Spring Meeting symposium topics. **SPECIALITY, REVIEW, AND SURVEYCOURSES** and the **TUTORIAL** are designed to meet the needs of professional scientists, engineers, professional staff, and managers who want to know the latest techniques relating to materials science and technology.

For information regarding registration, student scholarships, and special meeting registration discounts, contact MRS Headquarters: **Telephone (412) 367-3003; Fax (412) 367-4373.**

Advanced Materials — Preregistration Tuition

Optoelectronic Materials, Processes, and Devices
Instructor: Mool C. Gupta
Friday-Saturday, May 1-2 ..... $595

Polymers for Electronic and Photonic Applications
Instructors: C.P. Wong, C. Grant Willson and Robert J. Twieg
Saturday-Monday morning, April 25-27 ..... $645

Characterization of Materials

Amorphous Silicon Technology
Instructors: Robert A. Street and Michael G. Hack
Monday, April 27 ..... $395

IC Failure Mechanisms and Analytical Techniques
Instructor: Giorgio Riga
Thursday-Friday, April 30-May 1 ..... $595

Scanning Electron Microscopy: Applications to Electronic Materials and Devices
New! Instructor: Alton D. Romig, Jr.
Tuesday-Wednesday, April 28-29 ..... $595

TEM Specimen Preparation in the Physical Sciences
Instructor: Ronald M. Anderson
Monday afternoon-Tuesday, April 27-28 ..... $450

Characterization of Diamond Films
Instructors: Jeffrey T. Glass and Robert J. Nemanich
Sunday, April 26 ..... $395

Materials Research and Analysis Using In Situ and Ex Situ Spectroscopic Ellipsometry
New! Instructor: John A. Woolam
Tuesday, April 28 ..... $395

Preparation and Fabrication of Materials

Film and Coating Deposition Techniques
Instructor: Donald M. Mattox
Tuesday-Wednesday, April 28-29 ..... $595

Plasma Etching for Microelectronic Fabrication
Instructor: G. Kenneth Herb
Monday, April 27 ..... $395

Materials and Processing Aspects of Advanced VLSI Assembly and Packaging
New! Instructor: Shankara K. Prasad
Thursday-Saturday, April 30-May 2 ..... $825

Microwave Interactions with Dielectric Materials
Instructors: Hal D. Kimrey and Magdy F. Iskander
Saturday-Sunday, April 25-26 ..... $595

Materials and Processes at the Leading Edge of Microlithography
New! Instructor: Gary N. Taylor
Friday, May 1 ..... $395

Film Formation, Adhesion, Surface Preparation, and Characterization of Thin Film Structures
Instructor: Donald M. Mattox
Saturday-Sunday, April 25-26 ..... $595

Vapor Phase Synthesis of Powders and Films
New! Instructors: Toivo Kodas and Sotiris E. Pratsinis
Monday, April 27 ..... $395

Fundamentals of Epitaxial Growth Techniques for Compound Semiconductors
Instructor: L. Ralph Dawson
Saturday-Sunday, April 25-26 ..... $595

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Tutorial Program

Introduction to Parallel Supercomputing in Material Science
New! Instructors: Jeffrey S. Nelson, Mark P. Sears and Steve J. Plimpton
Monday morning, April 27 ..... $145

Special Fee Discounts:
- P-14 and F-01 - $975 Total Fee; C-16 and C-12 - $975 Total Fee
- Facilities registering three or more persons at the same time in one MRS short course receive a 20% discount for the third and all additional persons.

https://doi.org/10.1557/S0883769400040902 Published online by Cambridge University Press

1992 Spring Meeting Session Locator

Activity	Location	Monday, April 27			Tuesday, April 28		
		a.m.	p.m.	eve	a.m.	p.m.	eve
A. Amorphous Silicon	Sunset A/B/C				A1: Growth A2: Defects	A3: Transport A4: Solar Cells	Posters
B. Chemical Surfaces in Semiconductor Growth	Marina E/F	B1: Surface Conditioning	B2: CVD and Oxidation		B3: UV- and Plasma-Enhanced Processes	B4: Compound Semiconductors	Posters
C. Metallization/ Processing for Semiconductors	Marina A/B	C1: Metallization - Plenary Session	C2: CVD and MOCVD of Metals		C3: Silicides I - Cobalt Silicides	C4: Silicides II - Commonn Systems	Posters
D. Space Charge Effects in Semiconductors	Telegraph Hill						
E. Defect Engineering in Semiconductors	Sunset D/E/F	E1: Defects in Bulk Crystals - I	E2: Defects in Bulk Crystals - II E3: Defects in Thin Films		E4: Defect Characterization	E5: Hydrogen Interaction/ Semiconductors	Posters
F. Heteroepitaxial Growth	Marina C/D		F1: Surface Structure and Reactions		F2: Nucleation and Thin Film Evolution	F3: Novel Synthesis	
G. Electronic Packaging	Potrero Hill	G1: System and Technology Overview G2: Materials Development	G3: Materials and Processing		G4: Thermal/Mechanical Properties	G5: Thermal Stress, Adhesion and Reliability	Posters
H. Materials Reliability	Pacific A						
Ia. Recycling of Wood-Based Materials	Pacific B	Ia1: General Ia2: Fiber to Composites	Ia2: Fiber to Composites		Ia2: Fiber to Composites	Ia3: Paper to Paper	
Ib. Materials for Energy Technologies	Pacific H					Ib1/Ic4: Membrane Catalysis	
Ic. Materials for Separation	Pacific H	Ic1: Polymeric Membranes	Ic2: Ceramic Membrane Prep and Characterization		Ic3: Ceramic Membranes for Gas Separations	Ic4/Ib1: Membrane Catalysis	
J. Art and Archaeology	Salon A1		J1: Treatment, Deterioration and Structure		J2: Technical Analysis: Structure and Composition	J3: Behavior of Materials	Posters
K. Materials Modif. by Energetic Atoms and Ions	Salon B3				K1: Reactive Ion Etching and Surface Damage	K2: Plenary Session/ Film Growth	
L. Microwave Processing	Salon C1	L1: Overview/Plenary	L2: Numerical Modeling Techniques L3: Microwave/Plasma Processing		L4: Microwave Processing System Design L5: Microwave NDE Techniques	L6: Dielectric Properties and Measurements	Posters
M. Novel Forms of Carbon	Salon A2	M1: Foams and Aerogels	M2: Surfaces, Alloys, and Mixed Phase Materials		M3/P1: Fullerenes Fullerrides and Fulleroids I	M4: Fullerenes, Fullerrides and Fulleroids II	Posters
N. Better Ceramics through Chemistry	Salon B2	N1: Molecular Routes to Ceramic Materials	N1: Molecular Routes to Ceramic Materials	N2: Hybrid Organic/ Inorganic Materials	N3: Metal Nitrides and and Calcogenides	N3: Metal Carbides, Borides and Nitrides	N4/P3: Oxide Ceramics
O. Metal and Semiconductor Clusters and Colloids	Salon A3	O1: Semiconductors Colloid/Cluster Synthesis	O2: Stability of Semiconductor Clusters		O3: Metal Cluster Synthesis and Characterization	O4: Molecular Metal Clusters	
P. Aerosol Precursors	Salon A2				P1/M3: Fullerenes Fullerrides and Fulleroids I	P2: Nanophase Particle Generation (Pacific I)	P3/N4: Oxide Ceramics (Salon B2)
Q. Intermetallic Matrix Composites	Salon B1	Q1: MoSi2 Matrix Composites	Q2: Modeling and Testing		Q3: In-Situ Composites	Q4: New Processies and Materials	
R. Submicron Multiphase Materials	Pacific J				R1: Polymer/Polymer Composites	R2: Polymer/Polymer Composites	
S. Layered Superconductors	Salon C2	S1: Fundamentals I	S2: Fundamentals II		S3: Layer-By-Layer Film Growth	S4: Thin Films: Deposition and Characterization	
T. Defects in Crystalline Electronic Oxides	Salon A3						
U/Y. "Smart" Materials/ Micro-Electro-Mechanical Systems	Salon C3				U1/Y1: Ferroelectrics I U2/Y2: Ferroelectrics - II	U3/Y3: Polycrystalline Silicon U4/Y4: Optical Sensors and Systems	
V. Macromolecular Host-Guest Complexes	Telegraph Hill	V1: Photoconductors and Optical Storage Materials	V2: Coordination Compounds		V3: Organic Photorefractive Materials	V4: Nonlinear Optical and Optoelectronic Properties	
W. Computational Methods	Nob Hill		W1: Modeling Techniques		W2: Polymers	W3: Ceramics and Semiconductors	
X. Frontiers of Materials Research	Sunset A/B/C		X1 12:05-1:25 p.m.			X2 12:05-1:25 p.m.	

All Poster Sessions will be held in the Presidio Room.

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Wednesday, April 29			Thursday, April 30			Friday, May 1	
a.m.	p.m.	eve	a.m.	p.m.	eve	a.m.	p.m.
A6: Thin Film Transistors A7: Structure	A8: Stability I A9: Stability II		A10: Alloys and Multilayers A11: Radiation Detectors	A12: Electronic Properties A13: Novel Devices	Posters	A15: Image Sensors A16: Metastability	
B6: HF Cleaning	B7: Epitaxial Growth						
C6: Schottky and Ohmic Contacts to GaAs	C7: Contacts to InP and Related Materials	Posters	C9/H3: Metallization Schemes	C10: Metallization Schemes C11: Contacts to Multilayers		C12: Contacts to Insulators and Dielectric Layers	
	D1: Electro-Optics		D2: Silicon and Interfaces	D3: Photoconductivity	Posters	D5: Defects	D6: Optical Materials and Applications
E7: Defect Properties and Reactions	E8: Defects Induced by Processing		E9: Defects in Devices	E10: Quantum Wells, Superlattices and Interfaces	Posters	E12: Gettering and Related Phenomena	E13: Ion Implantation
F4: Internal Surfaces	F5: Electrical, Optical and Magnetic Properties	Posters	F7: Strain Relief - I	F8: Strain Relief - II			
G7: Low-End Packaging	G8: Optical Interconnects: Systems and Applications		G9: Optical Interconnects	G10: Optical Interconnects: Manufacturing Issues			
H1: Stress and Electromigration/Modeling	H2: Microstructure and Electronics		H3/C9: Interconnects, Wiring, and Packaging (Marina A/B)	H4: Oxide and Device Reliability (Marina E/F)		H5: Analytical Techniques (Marina E/F)	
Ia3: Paper to Paper	Ia4: Roundtable Discussion						
Ib2: Catalysis and Separations	Ib3: Composite and Alloy Materials		Ib4: Electronic Applications				
J5: Cultural Heritage in Conflicts	J5: Cultural Heritage in Conflicts		J6: Technical Analysis of Materials	J7: Metallurgy		J8: Glass and Ceramics	J8: Glass and Ceramics
K3: Film Growth	K4: Heteroepitaxy	Posters	K6: Ion Implanation of Semiconductors K7: Ion Beam Processing	K8: Ion Beam Modification			
L6: Dielectric Properties and Measurements L8: Microwave/Materials Interactions	L9: Microwave Processing of Ceramics		L9: Microwave Processing of Ceramics L10: Microwave Processing of Hazardous Wastes	L11: Microwave Processing of Polymers and Composites		L12: Millimeter Wave Processing	
M6: Fullerenes, Fullerides and Fulleroids III	M7: Fullerenes, Fullerides and Fulleriods IV		M8: Diamond I	M9: Diamond II		M10: Diamond-Like Carbon	
N5: Particulate and Polymeric Sols	N6: Aging, Drying and Consolidation of Gels	Posters	N10: Ceramic Thin Films	N10: Ceramic Thin Films	Posters	N15: Dense and Porous Coatings	N16: Composite Ceramics
O5: Theoretical Aspects	O6: Metal Colloids and Nanophase Materials						
P4: Powder Synthesis by Aerosol Processes (Pacific I)	P5: Novel Techniques and Materials (Pacific I)		P6/W6: Deposition and Clusters (Nob Hill)				
Q5: Nickle Aluminide Matrix Composites	Q6: Titanium Aluminide Composites I		Q7: Titanium Aluminide Composites II				
R3: Ceramic (Inorganic)/Polymer Composites	R4: Ceramic (Inorganic)/Polymer (Organic) Composites R5: Ceramic (Inorganic) Composites		R6: Ceramic (Inorganic) Composites				
S5: Vortex Dynamics and Flux Pinning	S6: Microstructures, Growth Kinetics and Critical Currents	Posters	S8: Applications and Related Topics	S9: Bulk Processing and Properties I	Posters	S11: Bulk Processing and Properties II	
			T1: Oxide Defects	T2: ZnO and Others		T3: Perovskites	T4: HTC Superconductors
U5/Y5: Thin Film Shape Memory Effect NiTi U6/Y6: Bulk "Smart" Structures - I	U7/Y7: Biological and Chemical Sensing Applications U8/Y8: Bulk "Smart" Materials - II		U9/Y9: Thermomechanical Applications U10/Y10: Materials Characterization - I	U11/Y11: Materials Characterization - II U12/Y12: Alternative Materials and Process Modeling			
W4: Mechancial Properties	W5: Structure of Surfaces and Interfaces		W6/P6: Deposition and Clusters	W7: Materials Processing and Dynamics		W8: Structure and Properties I	W9: Structure and Properties II
	X3 12:05-1:25 p.m.			X4: Advanced Materials Initiative Forum			X5 12:05-1:25p.m.

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https://doi.org/10.1557/S0883769400040902 Published online by Cambridge University Press