Preview
1993 MRS Spring Meeting

San Francisco, California • April 12-16, 1993

Meeting Chairs:
Martin L. Green, AT&T Bell Laboratories
Merrilea J. Mayo, Pennsylvania State University
Stephen M. Shapiro, Brookhaven National Laboratory

Researchers at the 1993 MRS Spring Meeting will continue to add to the growing web of knowledge about materials. About 2,300 abstracts will be packed into 29 symposia on materials, processing, characterization, and theory of electronic and optical materials, polymers, biomaterials, superconductors, fullerenes, ferroelectric materials, magnetic materials, rocks and ceramics, and hosts of other materials.

A large portion of the meeting will consider materials issues in electronics and optoelectronics, ranging from surface cleaning to device performance. Fundamentals such as thermodynamics, kinetics, and mechanical properties will be covered, as well as applications-oriented topics such as amorphous silicon, II-VI photovoltaic materials, infrared and radiation detectors, and reliability issues.

Developments on light emission from porous silicon will join a new symposium covering silicon-based optoelectronic materials, which includes SiGe quantum wells, nanoparticles, and Er-doped silicon.

As traditional optical lithography reaches its resolution limits, x-ray lithography is a possible route to making finer features. Researchers will cover the latest developments on masks, resists, x-ray sources, and x-ray optics. X-rays are also featured in a symposium on synchrotron radiation techniques, used to probe almost every type of material.

Infrared detectors made from compound semiconductors, HgCdTe, Si, silicides, Pb salts, and novel materials fills one symposium. Another symposium covers materials used for room-temperature radiation detectors and applications of these materials in medicine, space, robotics and even in the verification of nuclear materials in international safeguards.

A panel discussion Tuesday evening will highlight late-breaking results on giant magnetoresistance in magnetic alloy thin films. Will these materials offer a simple route to magnetic devices?

The symposium on theory is taking a broad approach by having joint sessions with other symposia on magnetic multilayers, giant magnetoresistance, and mechanics of epitaxial layers. In addition, the symposium presenters are starting the week with an issues-oriented session, given by Praveen Chaudhari from IBM, who will look generally at MS&E policy, and then will specifically target opportunities in theory.

Polymers take their place in the meeting with a cluster of three symposia covering polymer/inorganic interfaces, high-performance polymers and polymer matrix composites, and organic materials for nonlinear optics.

A new symposium will look at the difficult problem of joining advanced inorganic materials, such as ceramic to ceramic, and metal to ceramic. Techniques to solve this problem include diffusion bonding, microwave and laser joining, soldering, and novel welding techniques. Fundamentals of adhesion, bonding, mechanical stress, and interfacial thermodynamics establish the foundation for a deeper understanding of this field.

Geologists and ceramists will seek common ground in a symposium on deformation and failure in rocks and ceramics, examining brittle fracture, superplasticity, and densification.

There will be ample opportunity to bone up on hydroxyapatite, the principal inorganic constituent in hard tissue. In addition to its role in osteoporosis and tooth decay, hydroxyapatite exhibits interesting properties for coatings, catalysis, and other applications.

For a complete list of technical symposia and session titles, see the matrix on the following pages.

Special Features

Plenary Presentation and Awards Ceremony. The Plenary speaker Tuesday evening will be Craig R. Barrett, the chief operating officer of Intel Corporation. Barrett joined Intel in 1974, and has held a variety of positions, from reliability and quality assurance to components technology. The Outstanding Young Investigator Award and the Graduate Student Awards will be given immediately before the plenary presentation. Following Barrett's presentation, a reception will be held at the Equipment Exhibit. The winner of the Outstanding Young Investigator Award will give a special talk on Tuesday at noon.

Materials Manufacturing Forum. A forum at noon on Thursday will examine the role materials research can play in manufacturing. Representatives from government, industry, and national laboratories will address the challenge of designing materials for ease of manufacturing, transferring technology from the lab to the factory, and converting defense-related materials and technologies to commercial enterprises.

Education Session. For people interested in contributing to K-12 science education, there will be a Grass Roots Education Session Monday, at noon. Speakers from the Science Carnival Project, Sandia National Laboratories in Livermore, and from the Lawrence Hall of Science in Berkeley will demonstrate hands-on activities that scientists or teachers can do with students. This session will be complemented on Monday by an evening poster session displaying science activities.

Authoritative Reviews. Symposium X, lunchtime authoritative reviews for nonspecialists, will cover topics represented by the technical symposia, plus two talks on Wednesday covering environmental concerns that relate to materials science. Deanna Richards from the National Academy of Engineering will talk about "Evolving Materials Use and the Environment." David Allen from the University of California–Los Angeles will discuss, "Wastes as Raw Materials."

Other Events. The meeting also will have short courses and tutorials related to symposium topics, an extensive equipment exhibit, a job placement bulletin board, three evenings of poster sessions, a student mixer, and other auxiliary events. For further details about the meeting, see the 1993 MRS Spring Meeting Program, which will be mailed to all MRS members. If you need a program or would like to register, call or fax the MRS Meetings Department.

Phone: (412) 367-3003
Fax: (412) 367-4373.

https://doi.org/10.1557/S0883769400043724 Published online by Cambridge University Press

1993 SPRING MEETING SESSION LOCATOR

Activity	Location	Monday, April 12			Tuesday, April 13		
		a.m.	p.m.	eve*	a.m.	p.m.	eve
A. Amorphous Silicon Technology - 1993	Marina D/E/F				A1: Defects: Charge States and Relaxation A2: Plasmas and Film Growth	A3: Solar Cells A4: Defects: Light- and Current-Induced	
B. Silicon-Based Optoelectronic Materials	Marina B/C	B1: SiGe I B2: SiGe II	B3: SiGe III B4: Nanoparticles	B5: Posters	B6: Porous Silicon: Chemistry/Fabrication I B7: Porous Silicon: Chemistry/Fabrication II	B8/E2: Rare Earth Doped Silicon	
C1. II-VI Compound Semiconductor Photovoltaic Technology	Pacific J	C1-1: $CuInSe_2$: Materials Growth	C1-2: $CuInSe_2$: Materials Characterization		C1-3: CdTe: Materials Growth and Characterization		
C2. Infrared Detectors - Materials, Processing and Devices	Check Schedule						
D1. III-V Electronic and Photonic Device Fabrication and Performance	Salon C1	D1-1: HbTs/HEMTs	D1-2: Dry Etching and Deposition	D1-3: Posters	D1-4: Contact Metallization and Passivation	D1-5: Lasers and Heterojunctions	
D2. Low-Temperature-Grown and Highly Non-Stoichiometric GaAs and Related Materials	Salon B3	D2-1: Growth Issues	D2-2: Processing and Characterization		D2-3: Optical and Optoelectronic Properties	D2-4: InP and Related Ternary Materials D2-5: Applications of Non-Stoichiometric Materials	
E. Rare-Earth Doped Semiconductors	Sunset B				E1: Rare Earth Incorporation	E2/B8: Rare Earth Doped Silicon Marina B/C	
F. Semiconductors for Room-Temperature Radiation Detector Applications	Sunset E/F	F1: Materials, Devices and Applications I	F2: Materials, Devices and Applications II		F3: Mercuric Iodide	F4: Cadmium Telluride	
G. Rapid Thermal and Integrated Processing	Salon B1	G1: Rapid Thermal CVD of Semiconductors and Dielectrics	G2: Silicides and Barriers		G3: Temperature Measurement for RTP G4: RTP Equipment Issues and Modeling	G4: RTP Equipment Issues and Modeling (cont.)	
H. Polymer/ Inorganic Interfaces	Marina A						
I. High-Performance Polymers and Polymer Matrix Composites	Sunset D					I1: High Temperature Polymers and Composites	
J. Organic Materials for Nonlinear Optical Applications	Sunset C						
K. Materials Aspects of X-Ray Lithography	Sunset C	K1: X-Ray Lithography	K2: X-Ray Masks I		K3: Multilayer X-Ray Optics	K4: X-Ray Technology	
L. Applications of Synchrotron Radiation Techniques to Materials Science	Salon A3	L1: Topography and Tomography	L2/Q1-1/Q2-2: Applications of Synchrotron Radiation Techniques to Magnetic Materials Nob/Russian/Petrero/Telegraph Hill	L3: Posters	L4: EXAFS-Fundamentals and Appliations	L5: Novel Materials	
M1. Thin Films - Stresses and Mechanical Properties IV	Salon C2	M1-1: Stresses in Thin Films	M1-2: Measuring Stresses and Mechanical Properties-New Techniques and Developments	M1-3: Posters	M1-4/M2-4: Stress, Electromigration and Voiding in Fine Line Structures	M1-5/M2-5: Stress Relaxation Mechanisms and Thin Film Morphology	Group Discussion Salon C2
M2. Materials Reliability in Microelectronics III	Salon C3	M2-1: Dielectric Reliability, Oxides	M2-2: Microstructure Effects on Reliability; Electromigration in Fine Lines	M2-3: Posters	M2-4/M1-4: Stress, Electromigration and Voiding in Fine Line Structures Salon C2	M2-5/M1-5: Stress Relaxation Mechanisms and Thin Film Morphology Salon C2	
N. Ferroelectric Thin Films III	Nob Hill/ Russian Hill					N1: Novel Characterization N2: Device Materials Science	
O. Phase Transformations in Thin Films - Thermo-dynamics and Kinetics	Salon A2				O1: Stress Effects O2: Crystallization	O3: Silicides	
P. Common Themes and Mechanisms of Epitaxial Growth	Presidio					P1: Plenary P2: Roughening	
Q1. Magnetic Ultrathin Films, Multilayers and Surfaces	Petrero Hill/ Telegraph Hill		Q1-1/Q2-2/L2: Applications of Synchrotron Radiation Techniques to Magnetic Materials Nob/Russian/Petrero/Telegraph Hill		Q1-2/W3: Magnetic Multilayers: Theory	Q1-3/W4: Giant Magnetoresistance in Multilayers Role of Interface Structure	Q1-4: Giant Magnetoresistance in Alloys: A Simple Route to Magnetic Devices?
Q2. Magnetic Interfaces - Physics and Characterization	Check Schedule	Q2-1: Theories and Spin Polarized Spectroscopies Petrero Hill/Telegraph Hill	Q2-2/L2/Q1-1: Applications of Synchrotron Radiation Techniques to Magnetic Materials Nob/Russian/Petrero/Telegraph		Q2-3: Structural and Interfacial Characterization Nob Hill/Russian Hill	Q2-4: Nanostructural Characterization Sunset B	
R. Joining and Adhesion of Advanced Inorganic Materials	Marina A		R1: Mechanical Properties and Stress States in Joints		R2: Diffusion Bonding R3: Microwave and Laser Joining	R4: Advanced and Novel Joining Techniques	
S. Fullerenes and Related Materials	Pacific H		S1: Nanotubes I		S2: Nanotubes II	S3: Optics and Superconductivity	
T. Materials Issues in High-Temperature Superconductivity	Salon B2	T1: Flux Pinning and Critical Currents	T2: Wires and Tapes; Phase and Microstructure Evolution	T3: Posters	T4: Wires and Tapes; Electromagnetic and Mechanical Properties T5: Thick Films	T6: Conductor Development	
U. Mechanisms of Deformation and Failure in Rocks and Ceramics	Pacific I		U1: Fracture Processes in Rocks and Ceramics I	U2: Posters	U3: Fracture Processes in Rocks and Ceramics II	U4: Plasticity, Compaction and Stress-Induced Transformations in Rocks and Ceramics	
V. Hydroxyapatite and Related Compounds	Sunset A				V1: Crystal Chemistry of Apatites	V2: Innovative Processes to Form Apatites	
W. Theory of Materials Properties	Check Schedule	W1: Issues and Topics in Materials Theory Marina D/E/F	W2: Fracture Marina D/E/F		W3/Q1-2: Magnetic Multilayers: Theory Petrero/Telegraph Hill	W4/Q1-3: Giant Magnetoresistance in Multilayers Role of Interface Structure Petrero/Telegraph Hill	
X. Frontiers of Materials Research	Presidio		X-1			X-2	
Y. Surface Chemical Cleansing and Passivation for Semiconductor Processing	Salon A1				Y1: Silicon Water Cleaning and Particle Considerations Y2: Surface Chemical and Morphological Control and Gate-Oxidation	Y3: Deposition I: Silicon Epitaxy Y4: Deposition II: Non-Silicon Materials	

Wednesday, April 14			Thursday, April 15			Friday, April 16
a.m.	p.m.	eve*	a.m.	p.m.	eve*	a.m.
A5: Hydrogen Dynamics A6: New Deposition Approaches	A7: Detectors, Sensors and Emitters A8: Narrow Bandgap Alloys	A9: Posters	A10: Wide Bandgap Alloys A11: Thin Film Transistors	A12: Electronic Characterization A13: New Materials and Devices	A14: Posters	A15: Electrical Transport A16: Mainly Metastability
B9: Porous Silicon: Optical Properties I B10: Porous Silicon: Optical Properties II	B11: Applications/Electroluminescence B12: Wrap-Up					
C2-1: IR Detectors Based on III-V Materials	C2-3: HgCdTe Materials and Devices		C2-4/F8: II-VI Detector Technology (A)	C2-5/F9: II-VI Detector Technology (B)	C2-6: Posters	C2-7: IR Detectors Based on Si, Silicides, Pb Salts, and Novel Materials
C2-1: IR Detectors Based on III-V Materials C2-2: IR Materials Charac. Pacific J	C2-3: HgCdTe Materials and Devices Pacific J		C2-4/F8: II-VI Detector Technology (A) Sunset E/F	C2-5/F9: II-VI Detector Technology (B) Sunset E/F	C2-6: Posters	C2-7: IR Detectors Based on Si, Silicides, Pb Salts and Novel Materials Sunset B
D1-6: Ion Implantation	D1-7/G7: RTA/RTP and Integrated Processing		D1-8: Point Defects and Diffusion			
E3: Optical, Electrical and Structural Properties	E4: Excitation Mechanisms	E5: Posters Sunset B	E6: Novel Structures and Devices	E7: Theory and Models		
F5: Diamond	F6: New Detector Materials	F7: Posters	F8/C2-4: II-VI Detector Technology (A)	F9/C2-5: II-VI Detector Technology (B)		F10: Silicon Technology
G5: Rapid Thermal Annealing G6: Rapid Thermal Oxidation and Nitridation	G7/D1-7: RTA/RTP and Integrated Processing Salon C1		G8: Novel Processes and Applications			
HI/I2: Sunset D	H2: Interface Properties and Durability Salon B1		H3: Metal/Polymer Interfaces	H4: Fundamentals of Polymer/Surface Interface H5: Surface Modification	H6: Posters	H5: Surface Modification (cont.) H7: Interface Characterization
I2/H1:	I3: Processing and Characterization		I4: Interfaces and Fibers	I5: Aging and Degradation		I6: Rigid Rod Polymers, Molecular Composites, IPNs, and Blends
J1: Crystals and Unusual Materials	J2: Molecular Materials		J3: Polymers	J4: Polymers and Calculations		J5: Structures and Devices
K5: X-Ray Masks II Salon B3						
L6: X-Ray Scattering L7: Electronic and Hi-T_c Materials	L8: X-Ray and VUV Methods		L9: Surfaces, Interfaces, Thin Films and Multilayers	L10: Microscopy/Microprobe and Photoabsorption L11: Microscopy/Microprobe and Photoabsorption		
M1-6/W5: Mechanics and Microstructure in Epitaxial Layers	M1-7: Mechanical Behavior of Polymer Coatings		M1-8: Mechanical Deformation of Thin Films	M1-9: Fracture, Adhesion and Wear of Thin Films	M-10: Posters	M1-11: The Mechanical Deformation of Multilayer Thin Films
M2-6: 1/f Noise, Resistance Drift, Microstructure and Electromigration Models	M2-7: Microstructure and Electromigration in Al, Cu and Al-Alloy Thin Films		M2-8:Corrosion and Diffusion Related Reliability Issues			
N3: Optoelectronic Devices and Properties N4: Process Integration	N5: Degradation/Modelling N6: Characterization of Ferroelectric Thin Film Electrode Interfaces		N7: Chemical Vapor Deposition N8: Spin Pyrolysis of Thin Films	N9: Niobium and Barium Based Ferroelectrics N10: Poster Preview N11: Poster Preview	N10: Posters N11: Posters	N12: Sputter Deposition N13: Pulsed Laser and Other Vapor Deposition Techniques
O4: Solid-State Amorphization O5: Film Growth	O6: Irradiation Effects	O7: Posters	O8: Interfacial Reactions			
P3: Composition and Strain Effects P4: Posters/Ballroom Lobby	P5: Surface Chemistry		P6: Coalescence and Step Flow P7: Posters Ballroom Lobby	P8: Surface Structure		
Q1-5: Interlayer Coupling I	Q1-6: Interlayer Coupling II Q1-7: Giant Magnetoresistance in Multilayers I		Q1-8: Structure and Magnetism I	Q1-9: Structure and Magnetism II Q1-10: GMR in Low Fields: Multilayers and Spin Valves I	Q1-11: Posters Q1-12: Posters Q1-13: Posters	Q1-14: Magnetic Bilayers, Trilayers and Multilayers Q1-15: Magnetic Anisotropy Magneto-Optics
R5: Joining and Adhesion in Electronic Materials R6: Novel Braze/Solder Materials	R7: Fundamentals of Adhesion and Bonding R8: Interfacial Thermodynamics and Microstructural Development					
S4: Superconductivity and Structure	S5: Chemistry, Physics, and Polymers	S6: Posters	S7: Synthesis and Surfaces	S8: Endohedrals and Complexes		S9: Endohedrals and Complexes II Sunset A
T7: Grain Boundary (Micro)Structures and Properties	T8: Grain-Boundary Junctions T9: Thin Films	T10: Posters	T11: YBCO Junctions with Artificial Barriers	T12: RF Properties T13: Device Processing		T14: Junctions Development
U5: Stress Corrosion, Surface Processes and Superplasticity in Rocks and Ceramics	U6: High Temperature Mechanisms of Deformation in Rocks and Ceramics					
V3: Crystallization Phenomena	V4: Coatings V5: Bone-Hydroxyapatite Interactions I		V6: Bone-Hydroxyapatite Interactions II V7: Hydroxapatite-Organic Interactions	V8: Advanced Characterization Methods		
W5/M1-6: Mechanics and Microstructure in Epitaxial Layers Salon C2	W6: Phase Stability I Salon B3		W7: Phase Stability II Salon B3			
	X-3					
Y5: Dry Processing Y6: III-V Compound Semiconductors	Y7: Metal Contamination I Y8: Metal Contamination II	Y9: Posters	Y10: Oxides/Interfaces/Surfaces Y11: $HF/NH_4F/H_2O$ Cleaning and Passivation I	Y12: $HF/NH_4F/H_2O$ Cleaning and Passivation II Y13: Future Substrate Cleaning Technologies		

1993 MRS SPRING MEETING
General Meeting Information

Location/Lodging

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

DEADLINE FOR HOTEL RESERVATIONS
March 15, 1993

A block of rooms has been reserved for MRS meeting attendees at the San Francisco Marriott Hotel (30 minutes from the San Francisco International Airport). When making your reservations, mention the Materials Research Society to receive the special rates of $120/single and $140/double, plus California and local taxes.

Local Transportation

The San Francisco Airporter service between the airport and downtown San Francisco hotels is $8 one way, or $14 round trip. Cab fares are approximately $28.

Parking

Parking at the San Francisco Marriott is $24 per day (valet only). Public parking is available within easy walking distance of the hotel at an average cost of $10 for 24 hours.

Travel Arrangements

The official travel management company for the Materials Research Society's 1993 Spring Meeting is Giselle's Travel Bureau, formerly Travel Bureau of Sacramento. *They will guarantee the lowest fares on any airline at time of booking.*

Call and ask for MRS Group 001:
1-800-782-5545
Monday-Friday • 7:30 a.m.-5:30 p.m. PST
or
Fax: (916) 924-0474 or 1-800-TRVLFAX

For alternative housing information, you may contact Giselle's Travel Bureau by calling the above number.

MRS meeting attendees receive the following travel benefits and services:

• Lowest fares on any airline guaranteed • Free flight insurance of $500,000 • Computerized driving instructions from major U.S. airports • Car rental savings • Vouchers for discounts on vacation packages

ONE MRS 1993 SPRING MEETING ATTENDEE WILL WIN TWO (2) FREE AIRLINE TICKETS TO ANYWHERE IN THE 48 CONTIGUOUS STATES. To be eligible: You, your travel agent, or your in-house travel department must make your reservations through Giselle's Travel Bureau by calling the above phone number.

1973 to 1993 20 YEARS OF EXCELLENCE MRS MATERIALS RESEARCH SOCIETY SPRING 1993 San Francisco Marriott • San Francisco, CA April 12 - 16, 1993

Short Course and Tutorial Program

Characterization of Materials

C-07 Amorphous Silicon Materials and Devices for Large Area Electronics
Instructors: Robert A. Street and Michael G. Hack, *Xerox Palo Alto Research Center*

C-28 IC Failure Analysis: Failure Mechanisms and Characterization Techniques
New! Instructors: Giorgio Riga, *Riga Analytical Laboratory*, and Alton D. Romig, Jr., *Sandia National Laboratories* LAB DEMONSTRATIONS!

C-29 Practical Electron Diffraction
New! Instructor: Ronald M. Anderson, *IBM Corporation*

Preparation and Fabrication of Materials

P-02 Molecular Beam Epitaxy
Instructor: L. Ralph Dawson, *Sandia National Laboratories*

P-10 Metalorganic Chemical Vapor Deposition and Atomic Layer Epitaxy
Instructor: Robert Biefeld, *Sandia National Laboratories*

P-14 Film Formation, Adhesion, Surface Preparation and Characterization of Thin Film Structures
Instructor: Donald M. Mattox, *IP Industries*

P-23 Excimer Laser Ablation and Etching of Materials
Instructor: James Brannon, *IBM Almaden Research Center*

Techniques

T-05 Plasma Technology for Thin Film Deposition
Instructor: Donald M. Mattox, *IP Industries*

Advanced Materials

M-11 Magnetic Thin Films: Physics and Applications
Instructors: Ernesto E. Marinero and Virgil S. Speriosa, *IBM Almaden Research Center*

M-16 Ferroelectric Thin Films
Instructors: Angus I. Kingon, *North Carolina State University*, and Seshu Desu, *Virginia Polytechnique Institute and State University*

◆ ◆ ◆ ◆ ◆ ◆

Tutorial Program

MRS Tutorials are designed to inform individuals about subjects that are outside their immediate interest or to bring individuals "up to speed" in an area that they have recently entered.

TP-3 Fullerenes
Instructors: Peter C. Eklund, *University of Kentucky*, and Gene Dresselhaus, *MIT*

TP-4 Organic and Polymeric Materials for Optoelectronics
New! Instructors: Robert J. Twieg, *IBM Almaden Research Center*, and Carl Dirk, *University of Texas at El Paso*

◆ ◆ ◆ ◆ ◆ ◆

On-Site Short Course Program

These courses are available on a contract basis for presentation at your facility, subject to instructor availability. For further details, contact Vivienne Harwood Mattox, MRS Short Course Manager.
Telephone (505) 294-9532; Fax (505) 298-7942

◆ ◆ ◆ ◆ ◆ ◆

Registration Information

To request details of the program, information about student scholarships, or special short course and meeting registration discounts, contact:
Materials Research Society, 9800 McKnight Road, Pittsburgh, PA 15237
Telephone (412) 367-3003; Fax (412) 367-4373

https://doi.org/10.1557/S0883769400043724 Published online by Cambridge University Press

PREREGISTRATION 1993 MRS SPRING MEETING

1. BY MAIL
Return this form with payment to:
Materials Research Society
Meeting Registration
9800 McKnight Road
Pittsburgh, PA 15237

2. TELEPHONE
Call the MRS Meeting Registration Desk (412) 367-3003 between 8:00 a.m. and 5:00 p.m. Eastern time. Telephone registration requires credit card payment; have your credit card and this form in front of you for easy reference.

3. FAX
Transmit this order form via Fax to the MRS Meeting Registration Desk (412) 367-4373, 24 hours a day. Fax registration requires credit card payment.

PREREGISTRATION DEADLINE: APRIL 2, 1993

NOTE: Please enter MRS code from mailing label (0...). If this is not your own copy, enter the code from the label and check here. ☐ If you do not have a mailing label code, draw a line through code box.

MRS _____
Enter mailing label code in box.

Please fill in form completely and legibly to assure proper processing.

Name_____ (Last) (First/Middle Initial)
Title_____
Department_____
Institution_____
Address_____
City_____
State/Province_____ Zip/Postal Code_____
Country_____
Telephone (Area Code)_____ Fax (Area Code)_____
E-Mail:_____ (Network & Address)

This address is: ☐ Business ☐ Home ☐ Address Change

☐ MRS selectively permits use of its membership list by advertisers of products which the Society deems to be of high interest to MRS members. Please check here if you **do not** wish to receive these mailings.

A MEETING PREREGISTRATION

Please check category and enter amount in payment section below.

☐ $240 Member
☐ $275 Nonmember
☐ $65 Student Member*
☐ $75 Student Nonmember*
☐ $95 Short Course attendee registered for at least two course days

Meeting registration includes complimentary half-year MRS membership beginning July 1, 1993.

*Student must provide proof of full-time student status at time of submission of registration, i.e. class schedule with your name or signed letter from your faculty advisor or registrar.

Symposium interest (please check all that apply):

☐ A ☐ B ☐ C1 ☐ C2 ☐ D1 ☐ D2 ☐ E ☐ F ☐ G ☐ H ☐ I ☐ J ☐ K ☐ L ☐ M1 ☐ M2 ☐ N ☐ O ☐ P ☐ Q1 ☐ Q2 ☐ R ☐ S ☐ T ☐ U ☐ V ☐ W ☐ Y

TOTAL $_____
Enter total here and in box below right.

B JOURNAL OF MATERIALS RESEARCH 1993

Subscription at Member Rate (one per registrant) . . . . . ☐ $45 = **TOTAL $_____**
Enter total here and in box at right.

C PROCEEDINGS (published after this meeting)

These rates apply only to meeting and short course attendees, and MRS members. Nonmembers must contact MRS headquarters for prices.

		No. Copies	Total
A.	Amorphous Si	$48 x _____ =	$_____
B.	Si-Based Optoelectronics	$45 x _____ =	_____
C2.	Infrared Detectors	$40 x _____ =	_____
D1.	III-V Electronic/Photonic Devices	$45 x _____ =	_____
E.	Rare-Earth Semiconductors	$45 x _____ =	_____
F.	Semiconductors for Radiation Detection	$47 x _____ =	_____
G.	Rapid Thermal/Integrated Processing	$45 x _____ =	_____
H.	Polymer/Inorganic Interfaces	$43 x _____ =	_____
I.	Polymers/Polymer Matrix Composites	$47 x _____ =	_____
K.	X-Ray Lithography	$48 x _____ =	_____
L.	Synchrotron Radiation	$48 x _____ =	_____
M1.	Thin Films	$48 x _____ =	_____
M2.	Materials Reliability	$48 x _____ =	_____
N.	Ferroelectric Thin Films	$48 x _____ =	_____
O.	Phase Transformations	$48 x _____ =	_____
P.	Epitaxial Growth	$48 x _____ =	_____
Q1/Q2.	Magnetic Materials	$55 x _____ =	_____
R.	Joining of Inorganic Materials	$43 x _____ =	_____
Y.	Cleaning/Passivation for Semiconductors	$48 x _____ =	_____
		Sub-Total	_____
		6% Sales Tax (PA residents only)	_____

Enter total here and in box at right. **TOTAL PROCEEDINGS $_____**

D SHORT COURSES

To preregister, check each course in which you wish to enroll. If you register for two or more course days, you may attend the technical meeting for only $95; just complete the Meeting Preregistration section at left.

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.

At-meeting short course registrations will be $25 higher for each course. Cancellations received by April 2, 1993, will be refunded less a service charge of $25. There is no charge if you wish to transfer to another course.

☐	C-07	Amorphous Silicon Materials and Devices	$395
☐	C-28	IC Failure Analysis	$795
☐	C-29	Practical Electron Diffraction	$595
☐	P-02	Molecular Beam Epitaxy	$395
☐	P-10	MOCVD and Atomic Layer Epitaxy	$395
☐	P-14	Film Formation, Adhesion, Surface Preparation	$595
☐	P-23	Excimer Laser Ablation and Etching of Materials	$195
☐	M-11	Magnetic Thin Films	$595
☐	M-16	Ferroelectric Thin Films	$450
☐	T-05	Plasma Technology for Thin Film Deposition	$395
☐	TP-3	Fullerenes	$ 75
☐	TP-4	Organic/Polymeric Materials for Optoelectronics	$ 75

Combined Course Tuition
☐ **P-10 and P-02: total fee is $595**

Any combination of P-14, P-23, and T-05 that results in 1.5, 2.5, 3, and 3.5 course days: $495, $695, $795, and $895, respectively.

TOTAL SHORT COURSE TUITION $_____
Enter total here and in box below.

PAYMENT OPTIONS

☐ Payment is enclosed. Make checks payable, in U.S. dollars, to Materials Research Society. Payment from outside the U.S. should be drawn on a correspondent U.S. bank.

Credit card payment: ☐ Visa ☐ MasterCard ☐ Diners Club ☐ AmEx

Card number_____

Expiration date_____

Signature_____

Registrations received without payment or credit card authorization will be invoiced the at-meeting rates.

A. Meeting preregistration fee (from left)	$_____
B. ***Journal of Materials Research*** (from left)	$_____
C. Proceedings (from left)	$_____
D. Short courses (from above)	$_____
TOTAL FEES PAID	$_____

If you are unemployed or retired and are a current or former member of MRS, or a recent graduate not yet employed, reduced registration rates are available. To learn if you are eligble, contact the MRS Meetings Department via mail, phone, or fax (numbers are listed at the top of this form).

If you have already registered and paid and find that you are unable to attend, you must notify MRS in writing of your request for a refund. Refunds will be made upon receipt of this written notice, less a $25 service charge. This service charge will be waived if you apply $25 or more of this refund to any other MRS product or service. MRS will not honor requests made more than one calendar month after the close of the meeting.

Register early to take advantage of pre-meeting fees. Registrations received after April 2, 1993, will be charged at-meeting rates ($50 higher for regular and $10 higher for students).

For Accounting Use Only
Check #_____
Date_____
Batch#_____
Total_____
Type_____

930023

This form may be photocopied.

https://doi.org/10.1557/S0883769400043724 Published online by Cambridge University Press

- **New Materials Development**
- **New Characterization Methods**
- **New Process Technology**

SYMPOSIUM AIDE OPPORTUNITIES

Graduate students who plan to attend the MRS Spring Meeting and are willing to assist in the symposium presentations can earn a waiver of the student registration fee and MRS student half-year membership by applying for Symposium Aide positions.

EQUIPMENT EXHIBIT

A major exhibit of the latest analytical and processing equipment which closely parallels the nature of the technical symposia will be located in the Yerba Buena Ballroom, San Francisco Marriott Hotel, convenient to the technical session rooms. For show booth information, contact: Bob Finnegan, MRS Show Manager, American Institute of Physics, 335 East 45th Street, New York, NY 10017; Telephone (212) 661-9404; FAX (212) 661-2036

TECHNICAL PROGRAM

A: Amorphous Silicon Technology - 1993
B: Silicon-Based Optoelectronic Materials
C1: II-VI Compound Semiconductor Photovoltaic Technology
C2: Infrared Detectors - Materials, Processing and Devices
D1: III-V Electronic and Photonic Device Fabrication and Performance
D2: Low-Temperature-Grown and Highly Non-Stoichiometric GaAs and Related Materials
E: Rare-Earth Doped Semiconductors
F: Semiconductors for Room-Temperature Radiation Detector Applications
G: Rapid Thermal and Integrated Processing
H: Polymer/Inorganic Interfaces
I: High-Performance Polymers and Polymer Matrix Composites
J: Organic Materials for Nonlinear Optical Applications
K: Materials Aspects of X-Ray Lithography
L: Applications of Synchrotron Radiation Techniques to Materials Science
M1: Thin Films - Stresses and Mechanical Properties IV
M2: Materials Reliability in Microelectronics III
N: Ferroelectric Thin Films III
O: Phase Transformations in Thin Films - Thermodynamics and Kinetics
P: Common Themes and Mechanisms of Epitaxial Growth
Q1: Magnetic Ultrathin Films, Multilayers and Surfaces
Q2: Magnetic Interfaces - Physics and Characterization
R: Joining and Adhesion of Advanced Inorganic Materials
S: Fullerenes and Related Materials
T: Materials Issues in High-Temperature Superconductivity
U: Mechanisms of Deformation and Failure in Rocks and Ceramics
V: Hydroxyapatite and Related Compounds
W: Theory of Materials Properties
X: Frontiers of Materials Research
Y: Surface Chemical Cleaning and Passivation for Semiconductor Processing

SHORT COURSE PROGRAM

Courses on advanced materials characterization, preparation, and processing/diagnostic techniques have been designed for scientists, engineers, managers, and technical staff who wish to update their knowledge and skills in the research, development and processing of materials. These up-to-date courses are at the forefront of science and technology and complement Spring Meeting symposia. Class sizes are limited. Early preregistration is encouraged.

PROCEEDINGS

Many of the MRS symposia will be publishing proceedings. For a complete list of MRS publications and prices, contact Materials Research Society, Publications Department, 9800 McKnight Road, Pittsburgh, PA 15237; Telephone (412) 367-3012; FAX (412) 367-4373

PREREGISTRATION

Preregister by telephone, (412) 367-3003, or FAX (412) 367-4373, with your VISA, MasterCard, Diners Club, or AmEx card. Ask for Meeting Registration and your preregistration will be completed for you. Telephone preregistrations are accepted between 8:00 a.m. and 5:00 p.m. EST, Monday through Friday. Confirmations will be mailed within 10 working days.

MRS

Materials Research Society
9800 McKnight Road, Pittsburgh, PA 15237
Telephone (412) 367-3003; FAX (412) 367-4373

The 1993 MRS Spring Meeting will serve as a key forum for discussion of interdisciplinary leading-edge materials research from around the world. Various meeting formats - oral, poster, roundtable, forum and workshop sessions - are offered to maximize participation.

920138

EQUIPMENT EXHIBIT

San Francisco Marriott Hotel
Yerba Buena Room
Tuesday-Thursday ▪ April 13-15, 1993

As part of the 1993 Spring Meeting, a major equipment exhibit will be held to display analytical and processing equipment closely paralleling the nature of the technical symposia. The technical program has been arranged to allow meeting participants ample opportunity to visit the exhibit.

Exhibit Hours

Tuesday . . . . . noon - 5:30 p.m.
Reception . . . . . 7:30 p.m. - 9:00 p.m.
Wednesday . . . . . 9:30 a.m. - 5:00 p.m.
Thursday . . . . . 9:30 a.m. - 2:00 p.m.

Coffee will be available during morning and afternoon breaks in the Equipment Exhibit area, Tuesday afternoon through Thursday morning.

Partial List of 1993 Spring Equipment Exhibitors

Academic Press, Inc.
Advanced Technology Materials, Inc.
Aixtron, Inc.
American Institute of Physics
Anatech, Ltd.
APD Cryogenics Inc.
Applied Science & Technology, Inc.
Biosym Technologies
Blake Industries, Inc.
Butterworth-Heinemann
Denton Vacuum, Inc.
Duniway Stockroom Corp.
Elsevier Science Publishing Company, Inc.
Emcore Corporation
EPI
Charles Evans & Associates
FEI Company
E.A. Fischione Instruments, Inc.
Fisons Instruments
Gatan, Inc.
Granville-Phillips Company
IBM Analytical Services
Intevac MBE
Ion Tech, Inc.
IOP Publishing
JEOL U.S.A., Inc.
Keithley Instruments
Kluwer Academic Publishers
Lake Shore Cryotronics
Kurt J. Lesker Company
MDC Vacuum Products Corp.
Molecular Simulations Inc.
Nano Instruments, Inc.
National Electrostatics Corporation
North Eastern Analytical Corporation
Omicron Associates
Peabody Scientific Instruments
Pergamon Press, Inc.
Perkin-Elmer Corporation
Plasma-Therm I.P., Inc.
Pure Tech Inc.
Quantum Design, Inc.
Radiant Technologies, Inc.
Research and PVD Materials Corp.
South Bay Technology, Inc.
STAIB Instrumente GmbH
Structure Probe/SPI Supplies
Superior Vacuum Technology
Surface/Interface Inc.
Technical Instrument Company
Tencor Instruments
TopoMetrix
VAT, Inc.
VCR Group, Inc.
Virginia Semiconductor, Inc.
Voltaix, Inc.

Companies interested in exhibiting may contact:
Bob Finnegan, MRS Equipment Exhibit Manager
American Institute of Physics
335 East 45th Street, New York, NY 10017
Telephone (212) 661-9404 • Fax (212) 661-2036

See ad in this issue.

https://doi.org/10.1557/S0883769400043724 Published online by Cambridge University Press

https://doi.org/10.1557/S0883769400043724 Published online by Cambridge University Press