

Preview: 1996 MRS Spring Meeting

San Francisco, California • April 8-12, 1996

MEETING CHAIRS:

Thomas F. Kuech
University of Wisconsin-Madison

Clifford L. Renschler
Sandia National Laboratories

Chuang Chuang Tsai
Xerox Palo Alto Research Center

While device technologists carve bulk materials to make smaller and smaller devices, chemists build materials molecule by molecule, like molecular tinker toys. The 1996 MRS Spring Meeting, located at the San Francisco Marriott April 8-12, will show the merging of these and other diverse approaches to manipulating and understanding the materials that mold our lives.

This meeting's 2,500 oral and poster presentations in 30 symposia represent innovative technological developments that promote the interdisciplinary nature of materials science. Topics featured include electronic materials such as rare-earth doped and wide bandgap semiconductors, displays and photovoltaics, porous materials, high-temperature superconductors, materials for optoelectronics and sensors, ceramics, computation, polymers and macromolecules, mechanical and structural materials, rapid thermal and microwave processing, instrumentation, characterization, and the materials science of musical instruments.

We are in the midst of an explosion in new technologies for microscopy, spectroscopy, data analysis, and sample manipulation. Symposium AA, Innovations in Instrumentation for Materials Research, will concentrate on analytical characterization of materials, including imaging, elemental composition, chemical properties, and mechanical testing on a microscopic scale.

Instrumentation turns to "string theory" in Symposium BB, Materials in Musical Instruments II. This symposium will foster interaction among materials and acoustics researchers, instrument makers, manufacturers, and performers. Jointly sponsored by the Acoustical Society of America, this symposium will sound off about the materials of stringed and percussion instruments. An entertaining evening of musical demonstrations is scheduled for Thursday.

Computational Materials Science, Symposium W, represents a continuing growth area, with coverage of electronic structure and energy methods, atomistic modeling, mesoscopic systems, continuum methods, and industrial applications. Researchers will present modeling approaches for a broad scope of materials, length scales, and time intervals.

While computers can lead to a better understanding of materials behavior, research on materials contributes to next-generation computers through the development of reliable integrated circuits, information storage, and displays. Woven into a cluster of symposia on electronic and photonic materials are issues related to epitaxy, strain, and defects encountered in compound semiconductors, heterostructures, and semiconductor-on-insulator (SOI) structures. Control of growth, processing, and surface condition are important for device design. For instance, SOI-based compliant substrates for heteroepitaxy allow independent control of the strain state with very low threading dislocation densities, and rapid thermal chemical vapor deposition of heterostructures of C-Si-Ge alloys provides independent control of strain and bandgap.

GaN and SiC devices are being developed for high-temperature/high-power applications, and realistic device applications are emerging for diamond technology. Substrates for epitaxy, compensating defects, processing, and device performance of these materials will be examined in Symposium E. A related panel discussion is scheduled for Wednesday evening (5-7 p.m.).

Both digital and analog networks are proceeding toward an all-optical architecture incorporating optical switching and pulse shaping. Symposium R will provide a forum for optical fiber device materials issues frequently hidden or not emphasized at more device-oriented conferences.

Symposium L, Materials Reliability in

Microelectronics, will explore ways to improve reliability and to understand chip failure mechanisms. In addition to papers on electromigration in interconnects, mechanical stresses in thin films, and gate oxide integrity, six pioneers in electromigration will participate in a special session reviewing historical developments in the field.

Symposium M, Materials and Processes for Peripheral Microelectronic Devices, will address thin-film magnetic media and the technology roadmap, giant magnetoresistance, optical storage, head-disk-interface tribology and corrosion issues, rechargeable batteries for small portable electronic devices, and advanced printing technologies.

Flat-panel display technology has developed from a diverse array of materials angles, and in Symposium H, seemingly unrelated areas will be brought together to cover emissive and nonemissive flat-panel display technologies. Related symposia will cover liquid crystals and amorphous silicon technology. Si, as well as CIS, CdTe, chalcopyrite films, and III-V materials occupy a spot in Symposium J, Thin Films for Photovoltaic and Related Device Applications. Flexible substrates, transparent conductors, and novel deposition approaches are among topics to be covered.

Spanning the globe from Brazilian soils to Chinese bronze mirrors, Symposium S, Aqueous Chemistry and Geochemistry of Oxides, Oxyhydroxides, and Related Materials, will focus on solution chemistry, modeling, characterization, biomineralization, and applications where aqueous synthesis and processing routes provide an advantage over other methods and where the water/solid interface chemistry is exploited directly.

An all-invited plenary session is planned for Tuesday morning in Symposium T, on advances and prospects in ferroelectric technologies for such applica-

tions as micromotors and computer memory. This symposium will cover relaxor ferroelectrics, functional ceramic films and coatings as device materials, MEMS structures, defects and transport in Bi-layer ferroelectrics, and government perspectives from ARPA and ONR.

Layered structures formed by a variety of methods can function as laminates, coatings for erosion and thermal barrier protection for jet engines, and functionally graded materials to connect dissimilar materials. Symposium U describes efforts to exploit the beneficial mechanical and physical properties afforded by such structures. Symposium CC, Thin Films: Stresses and Mechanical Properties VI, will provide a forum for discussion of macroscopic or microscopic phenomena from theoretical/experimental and technological/fundamental viewpoints, including fracture, adhesion, and indentation testing.

Symposium V, Better Ceramics Through Chemistry VII, narrows its usual broad scope to emphasize organic/inorganic hybrid materials. Cross-reacting organic and inorganic materials at the molecular level can be used to create covalently bonded hybrid materials with diverse mechanical, electrical, and optical properties.

Porous materials can be used in areas of adsorption, batteries, catalysis, ceramic precursors, nonlinear optical materials, electronic conductivity, and sensors. Symposium P, Microporous and Macroporous Materials, will emphasize novel approaches to the preparation and characterization of these materials and their pore structures. Polymers, semiconductors, clays, zeolites, molecular sieves, and aerogels are among topics considered.

Strategies for the design and construc-

tion of synthetic polymers that rival the molecular precision found in biological structures have emerged during the past decade. This new category of nanoscale materials is distinguished by the ability to control critical molecular design parameters such as size, shape, surface chemistry, flexibility, and topology. Symposium Y, Structure Controlled Macromolecules of Nanoscopic Dimensions, presents how to build dendritic macromolecules, hyperbranched polymers, self-organizing assemblies, and other complex molecules.

Discarding polymers in an environmentally acceptable way is the subject of Symposium Z. Environmentally degradable polymers are one of several solutions to the waste management of polymers, particularly those intended for one-time use, for example, fast-food wrappers and water-soluble polymers in detergents and cleaners. A major obstacle is the difficulty in establishing the extent of biodegradation and the fate and effects of fragments left in the environment if only incomplete or slow biodegradation occurs. MRS

Special Features

The plenary presentation Monday, April 8 at 6:00 p.m. will be given by Darrel R. Tenney, Chief of the Materials Division at the NASA Langley Research Center, followed by a reception. Tenney's talk will be, "Materials Research: Changing Times, Trends, and Opportunities." Tenney manages the overall operations of the Materials Division which is responsible for development of advanced materials for aircraft and spacecraft applications.

Before the plenary presentation, the Outstanding Young Investigator (OYI) Award and the Graduate Student Awards will be presented. The OYI Award recipient, Antonios G. Mikos from the Institute of Biosciences and Bioengineering at Rice University, will give a talk, "Biomaterials for Tissue Engineering," on Tuesday, April 9 at 5:00 p.m. during Symposium Y. His lecture will focus on the synthesis and fabrication of tissue-engineered polymers and constructs for bone regeneration and repair and for the targeted delivery of genes to injured arteries. (See related article on the OYI recipient in next month's *MRS Bulletin*.)

Symposium X, authoritative reviews for nonspecialists, takes a new approach by having a single theme for all of these lunchtime presentations; see below. The topic is challenges in information storage technology, which will cover magnetic storage, photographic imaging, optical recording, and holography.

The Spring Meeting also will offer tutorials (overview lectures by leading experts) related to symposia topics, an extensive exhibit with a complimentary reception on Tuesday, a career services center, evening poster sessions, a student mixer, a Women in MRS meeting, and other auxiliary events. For further details about the meeting see the 1996 MRS Spring Meeting Program, which has been mailed to all MRS members. If you need a program or would like to register, contact MRS at 412-367-3003; fax 412-367-4373; e-mail info@mrs.org, or see the MRS Homepage: <http://www.mrs.org/>.

1996 SPRING MEETING PROGRAM CORRECTION

The 1996 Spring Meeting program mailed in mid-January to all members has an incorrect program listing for Symposium X: Frontiers of Materials Research. See the correct listing here.

FRONTIERS OF MATERIALS RESEARCH

Authoritative Reviews for
Nonspecialists
April 8 - 11, 1996

SESSION X1:

Chairs: T.F. Kuech, C.L. Renschler and C.C. Tsai
Monday Afternoon, April 8
Presidio Ballroom

12:05 P.M. *X1.1

MATERIAL CHALLENGES IN THIN FILM SPUTTERED
MEDIA FOR HARD DISK DRIVE TECHNOLOGY,
Rajiv Ranjan, Komag, Inc., Milpitas, CA.

12:45 P.M. *X1.2

SENSORS FOR HIGH DENSITY MAGNETIC STORAGES,
Robert White, Carnegie Mellon University, Pittsburgh, PA.

SESSION X2:

Chairs: T.F. Kuech, C.L. Renschler and C.C. Tsai
Tuesday Afternoon, April 9
Presidio Ballroom

12:15 P.M. *X2.1

PHOTOGRAPHIC IMAGING TECHNOLOGIES, James
Rodgers, Eastman Kodak Company, Rochester, NY.

SESSION X3:

Chairs: T.F. Kuech, C.L. Renschler and C.C. Tsai
Wednesday Afternoon, April 10
Presidio Ballroom

12:15 P.M. *X3.1

OPTICAL RECORDING: TRENDS, TECHNOLOGY,
CHALLENGES, William Mitchell, 3M Corporation,
St. Paul, MN.

SESSION X4:

Chairs: T.F. Kuech, C.L. Renschler and C.C. Tsai
Thursday Afternoon, April 11
Presidio Ballroom

12:15 P.M. *X4.1

MATERIAL REQUIREMENTS FOR HOLOGRAPHIC
MEMORIES, Dimetri Psaltis, California Institute of
Technology, Pasadena, CA.

BOX LUNCHEAS AVAILABLE AT THE DOOR.

MRS 1996 SPRING MEETING SESSION LOCATOR

SYMPOSIUM	LOCATION	MONDAY, APRIL 8			TUESDAY, APRIL 9		
		a.m.	p.m.	eve.*	a.m.	p.m.	eve.*
A: Amorphous Silicon Technology 1996	Golden Gate C2	Tutorial Session <i>Golden Gate C3</i>	A1/J3: Amorphous Films Tutorial Session <i>Golden Gate C3</i>		A2/H1: Thin Film Transistors I A3/H2: Thin Film Transistors II	A4: Growth I A5: Growth II	A6: Posters
B: Defects & Interfaces in Lattice-Mismatched Semicond. Heterostructures	Sunset E	B1: Interface Roughening and Interdiffusion in Heterostructures	B2: Properties of Dislocations & Effects of Substrate Mismatch		B3: Strain Relaxation in Heterostructures	B4/F2: Strain Relaxation/Dislocations in GeSi	B5: Posters
C: Compound Semiconductor Electronics and Photonics	Sunset C	C1: Growth and Characterization	C2: VCSELs and Passivation		C3: Reliability, Strain, and Nanostructures	C4: Processing and Properties of III-V's	C5: Posters
D: Rare-Earth Doped Semiconductors II	Sunset B	D1: Growth Mechanisms and Properties I D2: Excitation Mechanisms I	D3: Growth Mechanisms and Properties II - MBE D4: Growth Mechanisms and Properties III		D5: Structural, Electrical and Optical Properties I D6: Excitation Mechanisms II	D7: Excitation Mechanisms III D8: Structural, Electrical and Optical Properties II	
E: III-Nitride, SiC, and Diamond Materials for Electronic Devices	Presidio	E1: Device Technologies I	E2: Crystal and Film Growth I		E3: Defects, Dopants, and Characterization I	E4: Defects, Dopants, and Characterization II E5: Crystal and Film Growth II	E6: Posters
F: GeSi and Related Compounds	Sunset F				F1: Growth and Structure	F2/B4: Strain Relaxation/Dislocations in GeSi <i>Sunset E</i>	
G: Semiconductors on Insulators - Fund. & Tech.	Pacific J 4th Floor				G1: Bonding Techniques	G2: SIMOX	
H: Flat Panel Display Materials	Golden Gate C1		Tutorial Session <i>Golden Gate C1</i>		H1/A2: Thin Film Transistors I H2/A3: Thin Film Transistors II <i>Golden Gate C2</i>	H3: Liquid Crystal Displays H4: Transparent Conducting Oxides	
I: Liquid Crystals for Advanced Technologies	Potrero Hill		I1: Liquid Crystalline Materials-Synthesis/Characterization		I2: Polymer/LC Composite Systems	I3: Liq. Crystalline Materials-Synthesis/Characterization	
J: Thin Films for Photovoltaic & Related Device Applications	Golden Gate C3	J1: Thin-Film Spectrum J2: Window Layers I <i>Golden Gate C2</i>	J3/A1: Amorphous Films <i>Golden Gate C2</i>		J4: Novel Concepts I J5: Chalcopyrite Films I	J5: (Cont'd) J6: Polysilicon Films	J7: Posters
K: Advanced Metallization for Future ULSI <i>Sunday Eve. Tutorial</i>	Golden Gate A1	K1: Technology Road Maps for ULSI	K2: Metrology of Submicron Structures		K3: MLM-I - Cu Metallization	K4/L4: Reliability Issues for Cu Metallization	K5: Posters
L: Materials Reliability in Microelectronics VI	Golden Gate A2		L1: Electromigration in Advanced Interconnects L2: Texture and Barrier Effects on Reliability		L3: Electromigration - A Grand Masters' Perspective	L4/K4: Reliability Issues for Cu Metallization	
M: Materials and Processes for Peripheral Microelectronic Devices	Sunset A	M1: Materials Issues in Storage Technology	M2: Storage Technology/Printing Technology		M3: Materials and Process Issues in Portable Batteries		
N: Rapid Thermal and Integrated Processing V	Sunset A					N1: Evaluation, Modeling and Temperature Control	
O: Microwave Processing of Materials V	Pacific H 4th Floor	O1: Scale-Up and Commercialization I O2: Microwave Nondestructive Testing	O3: Microwave Processing I O4: Microwave System Design		O5: Dielectric Properties I O6: Modeling of Microwave Heating I	O7: Microwave Processing II O8: Microwave Interactions & Mechanisms I	
P: Microporous and Macroporous Materials	Marina C/D	P1: Zeolites, Clays and Microporous Materials	P2: Mesoporous Materials	P3, P4: Posters <i>South Grand Assembly</i>	P5: Methods for Studying Porosity	P6: Thin Films and Adsorption	P7, P8: Posters
Q: Materials Challenges for Applications of High T _c Superconductors	Golden Gate A3	Q1: Critical Current Densities	Q2: Single Crystal, Bi-Crystals and Processing		Q3: Bulk Processing	Q4: Fundamentals	
R: Fiber Materials for Electronics, Optoelectronics and Sensors	Russian Hill	R1: Photosensitivity & Refractive Index Modification in Optical Fiber	R2: Fiber Sensor Technology R3: Fiber Material Processing		R4: Novel Materials for Fiber Devices and Reliability Issues		
S: Aqueous Chemistry & Geochemistry of Oxides, Oxyhydroxides, & Related Mats.	Golden Gate B1	S1: Phase Stability and Bonding	S2: Surface Structures S3: Colloid Fundamentals		S4: Solubility and Speciation S5: Precipitation and Hydrothermal Synthesis	S5: (Cont'd)	
T: Ferroelectric Thin Films V <i>Sunday Tutorial</i>	Marina A/B	T1: High-Dielectric Constant Thin Films for Dram Applc.	T2: Layered Perovskites for Memories		T3: Plenary Session - Adv. & Prospects in Ferroelec. Tech.	T4: Electrode Systems	
U: Layered Materials for Structural Applications	Telegraph Hill	U1: Applications	U2: Processing		U3: Stability Issues	U4: Mechanical Behavior	
V: Better Ceramics Through Chemistry VII - Organic/Inorganic Hybrid Materials <i>Sunday Eve. Tutorial</i>	Marina E/F	V1: Organic/Inorganic Hybrids by Chemical Synthesis or Intercalation	V1: (Cont'd)		V2: Synthesis, Characterization and Processing of Organic/Inorganic Hybrid Materials	V2: (Cont'd)	
W: Computational Materials Science - Structural, Mechanical, & Transport Prop.	Golden Gate B3	W1: Electronic Structure - Methods and Force Fields	W2: Electronic Structure - Defects W3: Electronic Structure - Organic Materials		W4: Alloy & Thermodynam. - First-Principles Thermodynam., Alloy Theory & Struc. Stability	W5: Polymer & Organic Atomistic Simul. of Polymeric and Organic Materials	
X: Frontiers of Materials Research	Presidio		X1			X2	
Y: Structure-Controlled Macromolecules of Nanoscopic Dimensions	Pacific I 4th Floor					Y1	Y2: Posters
Z: Environmentally Degradable Polymers	Nob Hill	Z1: Introduction to Degradation and Testing	Z1: (Cont'd)		Z2: Natural Polymers - Renewable Resources	Z2: (Cont'd)	
AA: Innovations in Instrumentation for Materials Research	Russian Hill					AA1: Surface Analysis	AA2: Posters
BB: Materials in Musical Instruments II	Nob Hill						
CC: Thin Films - Stresses and Mechanical Properties VI <i>Sunday Eve. Tutorial</i>	Golden Gate B2	CC1: Mechanical Properties of Films and Multilayers	CC2: Fracture and Dehesion	CC1, CC2: Posters <i>South Grand Assembly</i>	CC3: Nano-Indentation of Films and Surfaces	CC4: Mechanical Property Methods and Modeling	CC3, CC4: Posters
DD: Applications of Synchrotron Radiation to Materials Science	Sunset D	DD1: Magnetic Materials	DD2: Photoelectron Diffraction & X-Ray Scattering		DD3: Films and Interfaces DD4: Posters - <i>South Grand Assembly</i>	DD5: Electronic Structure - PES and SXF	

WEDNESDAY, APRIL 10			THURSDAY, APRIL 11			FRIDAY, APRIL 12	
a.m.	p.m.	eve.*	a.m.	p.m.	eve.*	a.m.	p.m.
A7: Microcrystalline Silicon I A8: Solar Cells	A9: Microcrystalline Silicon II A10: Hydrogen		A11: Defects I A12: Defects II	A13: Interfaces A14: Growth and Defects	A15: Posters	A16: Electronic Transport A17: Defects and Relaxation	
B6: Defects in Quantum Structures	B7: Defects in ZnSe-Based Heterostructures						
C6: Implantation and Devices	C7: Photonics and Related Processing						
D9: Electroluminescence and Integration D10: Structural, Electrical and Optical Properties III	D11: Structural, Electrical and Optical Properties IV: Porous Si						
E7: Device Technologies II	E8: Crystal and Film Growth III	Panel Discussion <i>Marina A/B</i>	E10: Device Technologies III	E11: Device Technologies IV E12: Crystal and Film Growth IV		E13: Crystal and Film Growth V E14: Defects, Dopants, and Characterization III	
F3: Selective Deposition and Quantum Structures	F4: Processing	F5: Posters	F6: Properties and Devices	F7: Si/Ge/C F8: Late News <i>Sunset F Ballroom</i>			
G3: Polycrystalline Films	G4: Novel Approaches and Materials						
H5: Polysilicon Thin Film Transistors I H6: Polysilicon Thin Film Transistors II	H7: Amorphous Silicon Thin Film Transistors H8: New Polysilicon Processes		H9: Organic Electroluminescent Materials and Displays I H10: Organic Electroluminescent Materials and Displays II	H11: Field Emission Displays H12: Field Emission Phosphors	H13: Posters	H14: Electroluminescent Phosphor H15: Nanocrystalline Phosphor	
I4: Polymer/LC Composite Systems	I5: Display and Optical Applications	I6: Posters	I7: Modelling and Rheology	I8: Chiral Smectics and Thermsets/Processing			
J8: Chalcopyrite Films II	J9: Window Layers II		J10: II-IV Films/Devices	J11: III-V Films/Devices J12: Novel Concepts II	J13: Posters		
K6: Reliability Science	K7: MLM-II - Interconnect and VIA		K8: MLM-III - Barrier Metal and Low-K Dielectric	K9: Contact to Si			
L5: Gate Oxide Reliability I - Silicon Dioxide Films	L6: Gate Oxide Reliability II - Oxynitride Thin Films L7: Gate Oxide Reliability III - Noncontact Diagnostic Tools L8: Novel Electrical Measurements of Electromigration Damage	L9/CC8: Posters	L9/CC8: Stress Effects in Thin Films and Interconnects <i>Golden Gate B2</i>	L10: New X-Ray Techniques for Residual Stress Measurement L11: Electromigration Modelling	L12: Posters	L13: Microstructural Influences in Electromigration	
M							
N2: Rapid Thermal Annealing - Diffusion and Defects	N3: Metallization N4: Novel RT Processes		N5: Dielectrics	N6: Evaluation, Modeling and Temperature Control II		N7: RTCVD of Si and SiGe	
O9: Microwave Processing Using Variable Frequency Sources O10: Scale-Up and Commercialization II	O11: Alternative Microwave Sources O12: Remediation of Hazard. Waste O13: Temp. Modeling & Meas.		O14: Microwave Processing of Polymers O15: Microwave Processing III	O16: Modeling of Microwave Heating II O17: Microwave Measurements O18: Plasma Processing	O19: Posters	O20: Microwave Interactions and Mechanisms II O21: Dielectric Properties II	
P9: Sol-Gel Synthesis of Metal Oxides and Nitrides	P10: Applications of Porous Metal Oxides	P11, P12, P13, P14: Posters	P15: Porous Semiconductors	P16: Porous Polymers			
Q5: IBAD	Q6: Large-Area and General Film Deposition	Q7: Posters	Q8: Defects, Grain Boundaries, Doping, and Pinning	Q9: Josephson Junctions	Q10: Posters	Q11/T11: Applications and Ferroelectric Films	
R							
S6: Surface Complexes and Speciation	S7: Corrosion and Dissolution		S8: Colloidal Interactions - Applications	S9: Biomimetalization and Template Synthesis		S10: Organic Interactions	
T5: Process Integration, PZT	T6: Defects, Structure-Property Relationships	T7: Posters	T8: Theory, Domains and Size Effects	T9: Pyroelectric, Optical and Field Effect Devices	T10: Posters	T11/Q11: Applications and Ferroelectric Films <i>Golden Gate A3</i>	
U5: Mechanical Behavior (Cont'd)	U6: Mechanical Behavior (Cont'd)		U7: Mechanical Behavior (Cont'd)				
V3: Organic/Inorganic Hybrid Coatings V4: Mech. Properties of Selected Organic/Inorganic Hybrid Materials	V5: Organic/Inorganic Hybrids - A Route to Controlled Porosity Materials	V6: Posters	V7: Electrical & Optical Properties of Organic/Inorganic Hybrid Materials	V7: (Cont'd)		V8: Particulates and Layered Films	
W6: Microstructure Evolution	W7: Interfaces	W8: Posters	W9: Prediction of Mechanical Properties	W10: Industrial Applications			
X	X3			X4			
Y3	Y4						
Z3: Water Soluble Degradable Polymers	Z4: Natural/Synthetic Polymers						
AA3: Microanalysis Techniques	AA4: Scanned Probe Microscopies		AA5: Mechanical Properties Determinations AA6: Detector Technology	AA7: Electron Microscopy		AA8: Electron Microscopy AA9: Diffraction	
BB			BB1: Principally Strings	Tutorial Session	BB2: Musical Demonstration	BB3: Percussion	
CC5: Tribological Properties of Thin Films	CC6: Properties of Polymer Films	CC5, CC6, CC7, CC8/L9: Posters	CC6/L9: Stress Effects in Thin Films and Interconnects	CC9: Epitaxy and Strain Relief Mechanisms, Measurements			
DD6: Carbon and Nitride Films DD7: Topography and Novel Techniques	DD8: Medical and Environmental DD9: General Materials						

* Evening Poster Sessions: Presidio Room (unless otherwise noted)

MRS 1996 Spring Meeting

San Francisco, CA

Location/Lodging/Travel

San Francisco Marriott Hotel
55 Fourth Street
San Francisco, CA 94103
(800) 228-9290 Nationwide
(415) 896-1600 Main Desk
(415) 442-6755 Reservations
Reservation Fax (415) 442-0141

Deadline for Hotel Reservations: March 8, 1996

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.

Travel Arrangements

The official travel management company for the Materials Research Society's 1996 Spring Meeting is Giselle's Travel Bureau. They will guarantee the lowest fares on any airline at time of booking. **Call Giselle's, 800-523-0100**, and mention the Materials Research Society's meeting. **Monday through Friday, 7:30 a.m. - 5:30 p.m. PST; Fax (916) 565-0936.**

MRS meeting attendees receive the following travel benefits and services:

- Lowest fares on any airline guaranteed
- Free flight insurance of \$100,000
- Computerized driving instructions from major U.S. airports upon request
- Car rental savings

Local Transportation

The San Francisco Airporter service between the airport and downtown San Francisco hotels is \$9 one way, or \$15 round trip. Cab fares are approximately \$27-\$30 each way.

Parking

Parking at the San Francisco Marriott is \$24 per day (in/out privilege - valet only). Public parking is available within easy walking distance of the hotel at an average cost of \$12 for 24 hours.

Child Care

Check with the Concierge Desk for a comprehensive roster of licensed and bonded sitters.

Complimentary MRS Membership

All paid registrants for the MRS 1996 Spring Meeting will receive complimentary MRS membership through June 30, 1997.

Attention Nonmember Registrants: Your MRS benefits will commence July 1, 1996.



1996 Spring Meeting
April 8 - 12, 1996
San Francisco Marriott
San Francisco, CA

MRS Symposium Tutorial Program

Available Only To Meeting Participants

TO RECEIVE ANY TUTORIAL MATERIALS, YOU MUST BE PREREGISTERED

- All topics concentrate on new, rapidly breaking areas of research
- Format facilitates exchange of information by meeting attendees during the Symposium
- All tutorials are integrated into a related symposium program

Symposium A Monday, April 8, 8:30 a.m. - 4:30 p.m.
Golden Gate C3

Amorphous Silicon Materials and Devices for Large Area Electronics

Robert A. Street, Xerox Palo Alto Research Center.
Michael Hack, Xerox Palo Alto Research Center.

Symposium H Monday, April 8, 1:30 p.m. - 5:00 p.m.
Golden Gate C1

Flat Panel Display Materials

Jerzy Kanicki, University of Michigan
C. J. Summers, Georgia Institute of Technology

Symposium K Sunday, April 7, 7:30 p.m. - 11:00 p.m.
Golden Gate A1

Chemical Mechanical Planarization

Shyam Murarka, Rensselaer Polytechnic Institute

Symposium T Sunday, April 7, 8:30 a.m. - 4:30 p.m.
Marina A/B

Ferroelectric Thin Films

Angus I. Kingon, North Carolina State University
Seshu Desu, Virginia Polytechnic Institute

Symposium V Sunday, April 7, 7:30 p.m. - 11:00 p.m.
Marina E/F

Synthesis and Structure of Hybrid Organic-Inorganic Materials

Clément Sanchez, Université Pierre et Marie Curie
Dale W. Schaefer, Sandia National Laboratories

Symposium BB Thursday, April 11, 1:30 p.m. - 5:00 p.m.
Nob Hill

Materials in Musical Instruments II

Thomas D. Rossing, Northern Illinois University
Uwe J. Hansen, Indiana State University

Symposium CC Sunday, April 7, 7:30 p.m. - 11:00 p.m.
Golden Gate B2

Mechanical Properties of Thin Films

Shefford P. Baker, Max-Planck-Institut Für Metallforschung
Paul H. Townsend, Dow Chemical Company



MATERIALS RESEARCH SOCIETY
9800 McKnight Road, Pittsburgh, PA 15237
Telephone: 412/367-3003 • FAX: 412/367-4373
E-mail: geil@mrs.org • http://www.mrs.org/

960013

MRS 1996 Spring Meeting

San Francisco, CA

Meeting Activities

Technical Symposia

Twenty-nine (29) technical symposia are offered during the 1996 Spring Meeting featuring the latest technological developments in materials science. The program has been designed to include intriguing new topics, all of which promote the interdisciplinary nature of materials science.

Symposium Tutorial Program

Available only to meeting registrants, the tutorials will concentrate on new, rapidly breaking areas of research and are designed to encourage the exchange of information by meeting attendees during the symposium. Sessions precede the selected symposia.

Poster Sessions

Authors will be available Tuesday through Thursday for in-depth discussions. Complimentary snacks and beverages are available during these popular sessions.

Exhibit

A major exhibit encompassing the full spectrum of equipment, products, software, publications, and services will be held Tuesday afternoon through Thursday in the Buena Vista/Sea Cliff Ballrooms, San Francisco Marriott, adjacent to the technical meeting rooms. Meeting participants are invited to attend a reception on Tuesday evening from 5:00 p.m. - 7:00 p.m. in the Exhibit area.

Complimentary coffee will be available during morning and afternoon breaks in the Exhibit area, Tuesday afternoon through Thursday morning. Box lunches will be available Tuesday through Thursday during the noon break.

Proceedings

Many symposia from this meeting will publish proceedings. MRS members and meeting attendees may purchase copies of these proceedings at special prepublication prices and receive priority shipment upon publication. Prices will be higher following the meeting. To take advantage of these special prices, order your proceedings while registering for the meeting. For information on nonmember proceedings prices and ordering procedures, contact the MRS Publications Department.

Women in MRS

Women in MRS is committed to promoting women in the field of materials science. Persons of any gender are invited to attend (date, time, and location to be announced). A reservation is required by Friday, March 29. For more detailed information, contact: Amy Moll, E-mail: amy@dcssd.sj.hp.com.

Career Services Center

A Career Services Center for MRS meeting attendees will be open Tuesday through Thursday during the 1996 Spring Meeting (location to be determined). For information, check the MRS Homepage (<http://www.mrs.org/>) or contact: Member Services, Materials Research Society, 9800 McKnight Road, Pittsburgh, PA 15237-6006; (412) 367-3004, Ext. 402; Fax (412) 367-4373; E-mail: info@mrs.org.

Section Representatives

Officers of MRS regional sections are invited to attend a meeting to brainstorm new projects and issues of common concern. Anyone interested in starting a new section is also welcome (date, time, and location to be announced). For more information, contact David Sours, Director of MRS Membership Affairs (sours@mrs.org).

Student Opportunities

Symposium Aide Positions

Graduate students who plan to attend the 1996 Spring Meeting and are willing to assist in the symposium presentations by operating audio-visual equipment are encouraged to apply for a Symposium Aide position. By assisting in a minimum of four half-day sessions, aides will earn a waiver of the student registration fee, a full-year MRS student membership commencing July 1, 1996, and a small stipend to help defray expenses. Symposium preferences are assigned on a first-come, first-serve basis. To request an application form and/or information, contact MRS Headquarters (E-mail: info@mrs.org; Fax: 412-367-4373; Phone: 412-367-3003).

Student Mixer

All graduate students and members of MRS University Chapters are invited to attend a reception (date, time, and location to be announced) in the San Francisco Marriott. Student chapters are a vital part of MRS, providing discussion between students and faculty and promoting student interest in materials science. Don't miss this opportunity to meet with others involved in MRS student activities. Consult the MRS Homepage for more information.

University Chapter Representatives

Chapter officers and faculty advisors are invited to attend a meeting of MRS University Chapter representatives to compare notes on recent activities and brainstorm on new projects and issues of common concern. Anyone interested in starting a new chapter is also welcome (date, time, and location to be announced). For more information, contact David Sours, Director of MRS Membership Affairs (sours@mrs.org).

Graduate Student Special Talk Sessions

Check the Meeting Guide available at the meeting for the Graduate Student Special Talk Session schedule.

Student Tip Sheet

Consult the Student Tip Sheet on the MRS Homepage for the latest information about student events at the meeting (<http://www.mrs.org/>).

MAIL Return this form with payment to:
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MRS Exhibit

San Francisco Marriott Hotel • Buena Vista & Sea Cliff Ballrooms
Tuesday-Thursday, April 9-11, 1996

Exhibit Hours:

Tuesday, noon-7:00 p.m.

Complimentary Reception 5:00 - 7:00 p.m.

Wednesday, 9:30 a.m. - 5:00 p.m.

Thursday, 9:30 a.m. - 2:00 p.m.

The MRS Exhibit, to be held in conjunction with the 1996 MRS Spring Meeting, will encompass the full spectrum of equipment, products, software, publications and services for materials research. The technical program has been arranged to allow meeting participants ample opportunity to visit the exhibit, and MRS encourages attendees to visit the exhibit by scheduling coffee breaks, deli-style lunches, and a meeting-wide reception in the exhibit hall.

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Hysitron, Inc. #320

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Contact: Thomas Wyrobek
Telephone: (612) 379-4179
Fax: (612) 379-0678
E-Mail:

nanowyrobek@attmail.com
Hysitron, Inc. is an engineering firm specializing in the design and manufacture of force and displacement transducers. Patents are pending on its transducer technology and several creative applications. The current successful commercialization is for the nano-mechanical community with a Nano/Pico-Indenter that stands alone or retrofits to atomic force microscopes. Features include *in situ* imaging of ultrashallow nano-indentation and nano-scratch.

IBM Analytical Services #606

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Hopewell Junction, NY 12533-6531
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Fax: (914) 892-2003
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Mountain View, CA 94043
Contact: Sung Park
Telephone: (415) 961-6435
Fax: (415) 961-6359

E-mail: cluiat@aol.com

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Telephone: (970) 221-1807
Fax: (970) 493-1439

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Isoflux, Inc. Entrepreneur

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Rush NY 14543
Contact: David Glocker
Telephone: (716) 334-2100
Fax: (716) 334-2100

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11 Dearborn Road
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or Charlier Nielsen (SEM)
Telephone: (508) 535-5900
Fax: (508) 536-2205
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Fax: (216) 248-6168

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Fax: (408) 438-5892

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E-mail: kluwer@wkap.com

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E-mail: JPMILMANIS@AOL.COM
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MVSystems, Inc. #419

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MVSystems, Inc. provides state-of-the-art, ultrahigh vacuum multi-chamber PECVD/ sputtering systems, arranged in a cluster tool configuration, specifically designed for thin-film semiconductor/ superconductor materials and devices. As part of the system sale, MVS specifically guarantees, contractually, the opto-electronic properties of thin-film semiconductors, dielectrics, and state-of-the-art electronic device performance for solar cells, thin-film transistor (for displays), and image sensors, etc.

▼ **n&k Technology #611**

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Contact: Lillyan Dylla

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110 Pioneer Way, Suite D

Mountain View, CA 94041

Contact: Charles E. Bryson III

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#507, #509

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