Preview: 1999 MRS Spring Meeting

San Francisco Marriott and Argent Hotels • San Francisco, California • April 5–9, 1999

Meeting Chairs:
Katayun Barmak
Carnegie Mellon University
Paul Calvert
University of Arizona
James S. Speck
University of California, Santa Barbara
Raymond T. Tung
Lucent Technologies

Technical Symposia

The 1999 MRS Spring Meeting offers 34 technical symposia, featuring the latest developments in display materials, magnetic materials, and biological materials. The meeting will be held in the San Francisco Marriott Hotel and expand this year into the Argent (formerly ANA) Hotel, in which the display symposia will be held. The technical meeting will run from Monday, April 5 through noon Friday, April 9, and it includes 2,300 poster and oral presentations. Some of the newer topics include sensors and flat-panel displays (Symposium B), luminescent materials (E), linking materials computation and experiment (G), hard and soft magnetic materials (H and I), patterned magnetic structures and magnetoelectronics (J), and hybrid structures (DD). While the content of the meeting is diverse, several clusters of symposia have common threads.

Display Materials

Symposia A–F are tied together by the theme of display materials. The largest components of this cluster are the symposia on Amorphous and Heterogeneous Silicon Thin Films—Fundamentals to Devices (Symposium A) and Luminescent Materials (Symposium E). Several joint sessions between Symposia A and Flat Panel Displays and Sensors—Principles, Materials, and Processes (Symposium B) cover thin film transistors. Symposium B also overlaps with Symposia C, E, and F, with joint sessions planned on field emission displays, phosphors, and organic luminescent materials, respectively. Symposium C, Materials Issues in Vacuum Microelectronics II, starts Monday afternoon with a series of invited talks in a joint session with Symposium B on the status of field emission display technology, packaging, processing, applications, and reliability. Symposium F, Organic Nonlinear Optical Materials and Devices, covers photorefractive polymers, electro-optics, and other nonlinear optical behavior. The symposium on Liquid Crystal Materials and Devices (D) starts by summarizing the effects of shape, structure, side chains and other aspects of liquid crystals and ends with new emerging technologies in areas of photofunctionality, color filters, and holography.

Magnetic Materials

The Meeting includes a group of symposia (H–L) that addresses hard and soft magnetic materials, patterned magnetic structures, magnetoelectronics, hybrid magnetic semiconductor structures, and issues related to magnetic storage media. Symposia H and I have several joint oral and in-room poster sessions on nanoscale hard magnetism. Symposium I (Amorphous and Nanocrystalline Materials for Hard and Soft Magnetic Applications) balances coverage of hard magnetism with ultrasoft materials. Joint sessions between I and L cover nanocrystalline magnetic thin films and thin film permanent magnets. Symposium J, Patterned Magnetic Structures and Magnetoelectronics, examines the behavior and capabilities of magnetic materials as they are shrunk to smaller dimensions. The symposium starts with a special presentation on "spintronics," which involves linking confined magnetic materials with conventional semiconductors to build exotic electronic devices. This sets the stage for subsequent sessions focused on spin and switching. The smallest symposium of the magnetism cluster, Symposium K, covers Hybrid Magnetic, Semiconductor, and Superconductor Structures, emphasizing behavior of spin and other quasiparticle degrees of freedom in confined geometries and at interfaces between dissimilar materials. Symposium K concludes Wednesday with an all-invited joint session with Symposia J and AA covering spin dynamics and transport.

Silicon Devices

Silicon-based ultralarge-scale integration (ULSI) forms the core of another cluster of symposia (M–T), addressing processing, reliability, and other aspects of microelectronic and optoelectronics research. There has been much progress recently in the reduction of defects during bulk crystal growth, the increase of the size of substrate wafers, and the improvement in wafer surface morphology for technologically important semiconducting and insulating materials. These developments as well as the latest developments in wafer bonding, silicon-on-insulator (SOI) structures, and compliant substrates form the basis of a new symposium, Advanced Semiconductor Wafer Engineering (T). Other symposia in this cluster cover a broad spectrum of the processes needed to make devices, such as front-end doping in silicon (S), ultraclean processing (Q), chemical-mechanical polishing (P), low- and high-dielectric constant materials (O and R) including ultrathin SiO_2 films, materials reliability (M), and advanced interconnects and contacts (N). Many joint sessions bring into focus the connections between these symposia.

Biological Materials

A cluster of five symposia (DD–HH) have connections to medical, biological, and other organic materials. Symposium FF, Biomedical Materials, covers materials for soft and hard tissue implants and tissue engineering. Symposium EE deals with polymers produced by biotechnology, including fermentation, polymers for tissue culture and cell adhesion and for controlled drug release. Membranes, Symposium GG, will cover polymer, inorganic, and biological membranes with a considerable emphasis on lipid membranes. Soft Condensed Matter—Fundamentals and Applications (Symposium HH) addresses gels and concentrated particle suspensions, including virus and cell suspensions. Several sessions address electrorheological fluids. In addition Organic-Inorganic Hybrids, Symposium DD, will include self-assembled materials and hybrids with entrained proteins and cells.

Continuing Topics

Various aspects of semiconductors, particularly compound and more complex semiconductors can be found in Symposia U–BB.

On a fundamental level, Epitaxial Growth—Principles and Applications is covered in Symposium V. This symposium is dedicated to the memory of Mohan Krishnamurthy, who has made nominal contributions to the field and was one of the original organizers for this symposium.

Semiconductor Quantum Dots (Symposium W) continue to gain attention. Dots made of Si, Ge, compound semiconductors, and self-assembled organics will be considered, including how to grow and characterize them. This symposium also includes a presentation by Chad A. Mirkin (Northwestern University), the 1999 MRS Outstanding Young Investigator, on DNA-Based Methodology for Preparing

Nanocluster Circuits and Arrays.

Symposium Y, Wide-Bandgap Semiconductors for High-Power, High-Frequency, and High-Temperature Applications, includes a panel discussion 8:00 p.m. Wednesday evening on Wide-Bandgap Semiconductor Products featuring speakers from Cree Research, Northrop Grumman, Siemens, Honeywell, Rockwell, and HRL Laboratories.

An important issue in the use of compound semiconductors is surface passivation and finding processing methods that work for these somewhat complex materials. Symposium Z examines these issues.

Symposium BB explores Multicomponent Oxide Films for Electronics. Exceptional properties of multicomponent oxides, combined with the inability of simpler materials to meet the increasing demands of the electronics industry, have motivated tremendous interest and activity in using multicomponent oxides films for electronic applications. This symposium focuses on processing and characterization and their contributions to device applications. Epitaxial multicomponent oxide film growth is covered in a joint session with Symposium A.

Symposium AA examines the technique of Near-Field Scanning Optical Microscopy and Spectroscopy. The symposium addresses its application to semiconductors, organics, quantum structures. As such, several joint sessions are scheduled, for instance to cover near-field spectroscopy of quantum dots, wires, and metals.

Symposium U, *In-Situ* Process Diagnostic and Modeling, incorporates electron and ion beam analysis, ellipsometry and optical characterization, electron and probe microscopy, and other related techniques.

It has become increasingly possible to link materials computation and experiment, and Symposium G provides a forum for doing just that. By examining transport, defects, interfacial thermodynamics, and mechanical properties using both experimental and computational approaches, results can be validated or directions for further research can be more easily targeted.

Yet another area covered during this meeting is New Materials for Batteries and Fuel Cells (Symposium CC), covering cathodes, proton exchange membrane fuel cells, polymer electrolytes, supercapacitors, and solid oxide conductors.

Special Events

During the Monday evening awards ceremony, April 5, beginning at 6:00 p.m. in the Marriott, MRS will present the **Outstanding Young Investigator Award** to **Chad A. Mirkin**, Morrison Professor of Chemistry, Northwestern University, and the Gold and Silver **Graduate Student Awards** to graduate students who authored or co-authored symposium papers which exemplified significant and timely research. Graduate Student Award Finalists' Special Talk Sessions will be held that Monday beginning at noon. The **Plenary** address by **Paolo Gargini** (Intel) follows the awards ceremony.

Symposium X, *Frontiers of Materials Research*, presents a series of authoritative reviews for the nonspecialist at noontime, Monday through Thursday. Topics parallel those of the technical symposia. The latest developments in silicon crystal growth and key materials for the next generation of integrated devices will be presented, reflecting the theme of silicon ULSI. Ferroelectrics are covered in two talks, one on process sensitivity and materials design for ferroelectric memories and the other on adaptive-learning neurochips. In step with the biological emphasis of this meeting, a talk addresses the use of genes and proteins to control biological nanofabrication with silica. Another goes on wings of flies, and examines aerodynamics and neurobiology of fly flight. Another presentation looks at Cryogenic Microcalorimeters for Next Generation X-Ray Detectors for Microchemical Analysis.

Poster Sessions, held Tuesday and Wednesday evenings, include a competition for the best posters. Awards of $500 will be given to the presenting author of the most outstanding poster(s) as selected by the Meeting Chairs at each evening's session. Posters will be judged on their technical content, appearance, graphic excellence, and presentation quality.

A major **Exhibit** encompassing a full spectrum of equipment, instrumentation, products, software, publications, and services will be held Tuesday through Thursday in the Marriott. Meeting participants are invited to attend a reception on Tuesday evening from 5:00–6:30 p.m. in the exhibit area.

All graduate students and members of MRS University Chapters are invited to attend the **Student Mixer** reception (date, time, and location to be announced in the *Meeting Guide* on site). Also, University 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.

A **Job Center** for MRS meeting attendees will be open Tuesday through Thursday, 9:00 a.m–5:00 p.m., in the Marriott Hotel.

See the following pages for a matrix of symposia sessions, highlights of special events including five **tutorials** and a **National Science Foundation Seminar** on materials research support, profiles of exhibitors, and hotel and transportation arrangements. The 1999 Spring Meeting program is available on the MRS Website (www.mrs.org). For additional information regarding any of the meeting activities, contact MRS Member Services, 506 Keystone Drive, Warrendale, PA 15086-7573; e-mail: info@mrs.org; fax 724-779-8313; phone 724-779-3003. The deadline to preregister for the meeting is **Friday, March 19.** MRS

MRS 1999 Spring Meeting

Outstanding Young Investigator Award

Chad A. Mirkin
Morrison Professor of Chemistry, Northwestern University

DNA-Based Methodology for Preparing Nanocluster Circuits and Arrays

Award Presentation
Monday, April 5, 6:00 p.m. • Salon 7, Marriott Hotel

Talk Presentation
Symposium W
Tuesday, April 6, 4:15 p.m.
Golden Gate C2, Marriott Hotel

NSF Seminar

Materials Research Support at National Science Foundation

Tuesday, April 6, 6:00–7:30 pm • Golden Gate A2, Marriott Hotel

This is the fourth in a continuing series of user-friendly guides to NSF support for materials research and education, focusing primarily on the activities of the Division of Materials Research. Following outline presentations by NSF staff, there will be a question-and-answer period about NSF programs, proposal submission, FastLane, and proposal evaluation. NSF program directors will also be available for individual appointments at the MRS meeting to discuss your proposal ideas informally and to help with FastLane questions.

MRS 1999 Spring Meeting • Lodging & Travel

Hotel Reservations

A block of rooms has been reserved for MRS meeting attendees at the San Francisco Marriott and Argent (formerly ANA) Hotels, 30 minutes from the San Francisco International Airport. When making your reservation, mention the Materials Research Society to receive the special rate. A Hotel Reservation Form is available on the MRS Web site (www.mrs.org) and in the Program Book.

Deadline for hotel reservations: March 1, 1999
Rooms are limited—reserve yours early!

San Francisco Marriott Hotel

55 Fourth Street
San Francisco, CA 94103
Phone Reservations: 415-442-6755
Fax Reservations: 415-442-0141

Rate: • $135/Single
• $155/Double
(plus 14% City Tax)

Argent Hotel (formerly ANA)

50 Third Street
San Francisco, CA 94103
Phone Reservations: 415-974-6400
Fax Reservations: 415-974-8820

Rate: • $135/Single
• $155/Double
(plus 14% City Tax)

To contact hotel guests:

Marriott: Tel 415-896-1600; Fax 415-777-2799

Argent: Toll Free (US & Canada) 877-222-6699
Tel 415-974-6400; Fax 415-543-8268

Airline Transportation

Special, discounted air fares have been arranged as a service to MRS Spring Meeting attendees. Refer to the MRS Web site (www.mrs.org) or the Program Book for the Discount Air Fare Form.

Local Transportation

The San Francisco Airporter service is available between the airport and downtown San Francisco hotels.

Parking

Parking is available at the Marriott and Argent Hotels and nearby public facilities.

Child Care

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

Symposium Tutorials

(Details available on the MRS Web site and in the Program Book)

Sunday • April 4

Symposium B

STB: Flat Panel Display Technologies

2:00 pm – 5:00 pm
Salon 4-6 – Marriott

Monday • April 5

Symposium A

STA: Amorphous Silicon Materials and Devices for Large-Area Electronics

8:30 am – 4:30 pm
Metroplitan III – Argent

Symposium H

STH: Concepts and Experimental Methods in Micromagnetism

2:00 pm – 5:00 pm
Salon 6 – Marriott

Symposium O

STO: Low-Dielectric Constant Materials for B.E.O.L. High-Performance Integrated Circuits

1:30 pm – 5:00 pm
Golden Gate A1 – Marriott

Tuesday • April 6

Symposium BB

STb: Multicomponent Oxide Thin-Film Fabrication Techniques—PLD, Sputtering, MOCVD, and MBE Methods

8:30 am – 11:45 am
Salon 7 – Marriott

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MRS 1999 Spring Meeting • Session Locator

SYMPOSIUM	LOCATION	MONDAY, APRIL 5 a.m.	MONDAY, APRIL 5 p.m.	MONDAY, APRIL 5 eve.	TUESDAY, APRIL 6 a.m.	TUESDAY, APRIL 6 p.m.	TUESDAY, APRIL 6 eve.
A: Amorphous and Heterogeneous Silicon Thin Films	Metropolitan III (A)	*Tutorial Session**	*Tutorial Session**		A1: Growth Mechanism A2: Metastability	A3/B5: Amorphous and Heterogeneous TFTs A4/B6: TFTs and Displays	A5-A11: Posters (A)
B: Flat Panel Displays & Sensors *Sunday Tutorial Session* SALON 4-6 (M)*	Metropolitan I (A)	B1/E1: Inorganic Low-Voltage Phosphors B2/E2: Thin Film Phosphors	B3/C1: Field Emission Displays		B4/C2: Field Emission Devices and Displays	B5/A3: Amorphous and Heterogeneous TFTs B6/A4: TFTs and Displays **METROPOLITAN III**	B7/C4, B8: Posters (A)
C: Materials Issues in Vacuum Microelectronics II	Franciscan III (A)		C1/B3: Field Emission Displays **METROPOLITAN I**		C2/B4: Field Emission Devices and Displays **METROPOLITAN I**	C3: Novel Fabrication and Materials for Field Emitters	C4/B7: Posters (A)
D: Liquid Crystal Materials and Devices	Concordia (A)	D1: New Materials and Effects	D2: Polymer/Liquid Crystal Composites	D3: New Matls. and Effects	D4: Liquid Crystalline Polymers and Applications	D5: Display Technologies and Modeling	D6: Posters (A)
E: Luminescent Materials	Franciscan I (A)	E1/B1: Inorganic Low-Voltage Phosphors E2/B2: Thin-Film Phosphors **METROPOLITAN I**	E3: Inorganic Phosphors		E4: Synthesis, Processing and Characterization	E5: Mechanisms and Defects	E6: Posters (A)
F: Organic Nonlinear Optical Materials and Devices	Franciscan II (A)				F1: Nonlinear Optical Materials	F2: Electro-Optics	F3: Posters (A)
G: Linking Materials Computation and Experiment	City (A)	G1: Methods/Transport Properties	G2: Process Modeling/Point and Line Defects		G3: Interfacial Structure and Thermodynamics	G4: Interfacial Dynamics	
H: Advanced Hard Magnets	Salon 6 (M)		*Tutorial Session**		H1: Permanent Magnet Processing	H2: Intrinsic Properties of Permanent Magnetic Materials	
I: Amorphous and Nanocrystalline Materials for Hard and Soft Magnetic Applications	Salon 5 (M)	I1: Fine Particle Magnets	I2: Nanocrystalline Antiferro- and Ferrimagnets		I3: Ultrasoft Nanocrystalline and Amorphous Materials I	I4: Ultrasoft Nanocrystalline and Amorphous Materials II	I5: Posters (M)
J: Patterned Magnetic Structures and Magnetoelectronics	Salon 3 (M)	J1: Spintronics J2: Spin Magnetoelectronics	J3: Novel Fabrication Methods I J4: Novel Fabrication Methods II		J5: Characterization and Magnetic Switching J6: Magnetic Switching	J7: Magnetic Switching Speed J8: Magnetic Nano-Elements and Domain Walls	J9: Posters (M)
K: Hybrid Magnetic, Semiconductor, and Superconductor Structures	Salon 2 (M)	K1: Hybrid Superconductor Structures	K2: Ferromagnet-Semiconductor Devices and Spin Transport		K3: Semiconductor/Magnetic Compound Heterostructures	K4: Magnetic Semiconductors	K5: Posters (M)
L: Polycrystalline Metal and Magnetic Thin Films	Salon 4 (M)		L1: Magnetic Thin Films		L2: Textured and Multilayered Thin Films	L3/N4: Copper Microstructure **GOLDEN GATE B2**	
M: Materials Reliability in Microelectronics IX	Salon 10 (M)				M1/R4: Reliability of Ultrathin Gate Dielectrics **NOB HILL B/C/D**	M2: Solder and Barrier Layer Reliability	
N: Advanced Interconnects and Contacts	Golden Gate B2 (M)	N1: Silicides—Titanium and Cobalt Silicide	N2: Cobalt and Nickel Silicide		N3: Copper Thin Films and Integration	N4/L3: Copper Microstructure	N5: Posters (M)
O: Low-Dielectric Constant Materials & Applications in Microelectronics	Golden Gate A1 (M)		*Tutorial Session**		O1: Porous Films—Organic and Inorganic	O2: Porous Films—Inorganic/Low-k Integration	
P: Chemical-Mechanical Polishing	Nob Hill A (M)	P1: Overview and Oxide Polishing	P2: Pads and Related Issues		P3: Metal Polishing—W and AL	P4: Copper Polishing and Related Issues	
Q: Ultraclean Processing of Semiconductor Structures and Devices	Nob Hill B (M)						
R: Ultrathin SiO_2 and High-k Materials for ULSI Gate Dielectrics	Nob Hill B/C/D (M)	R1: Advances in Ultrathin Oxides and Oxynitrides I R2: Silicon Nitride I	R3: Atomic Scale Control of the Dielectric/Silicon Interface		R4/M1: Reliability of Ultrathin Gate Dielectrics	R5: Electrical Properties of Ultrathin Gate Dielectrics	R6: Posters (M)
S: Si Front-End Processing	Golden Gate C1 (M)				S1: Ultra-Shallow Junctions I	S2: Ultra-Shallow Junctions II S3/T5: Mechanisms of Point-Defect Interaction & Diffusion	
T: Advanced Semiconductor Wafer Engineering	Golden Gate C3 (M)	T1: Silicon Defect Engineering	T2: Silicon Gettering/GaAs		T3: Silicon Carbide and Simox	T4: Wafer Bonding I T5/S3: Mechanisms of Point-Defect Interaction & Diffusion **GOLDEN GATE C1**	
U: *In-Situ* Process Diagnostic and Modeling	Golden Gate A3 (M)				U1: *In Situ* Ion- and Electron-Beam Analysis	U2: *In Situ* Spectroscopic Ellipsometry and Other Optical Characterization	U3: Posters (M)
V: Epitaxial Growth— Principles and Applications	Golden Gate B3 (M)	V1: Submonolayer and Multilayer Growth	V2: Characterization		V3: Strained Systems I	V4: Strained Systems II	
W: Semiconductor Quantum Dots	Golden Gate C2 (M)	W1: Si and Ge Dots	W2: II-VI and Other Free-Standing (Colloidal) Dots		W3/AA3: Near-Field Spectroscopy of Quantum Dots, Wires and Metals	W4: Organiz.Dots/Dot Arrays W5: Biological & Molec. Syst. **4:15 Outstanding Young Investigator's Talk**	
X: Frontiers of Materials Research	Salon 7 (M)		X1			X2	
Y: Wide-Bandgap Semiconductors for High-Power, High-Frequency, and High-Temperature Applications	Golden Gate A2 (M)	Y1: SiC Devices and Processing I	Y2: SiC Epitaxial Growth and Characterization		Y3: SiC Bulk Growth and Characterization	Y4: SiC Devices and Processing II	Y5: Posters (M)
Z: Compound Semiconductor Surface Passivation & Novel Device Processing	Golden Gate B1 (M)		Z1: Fundamentals of Surfaces and Their Passivation		Z2: Novel Approaches for Surface Passivation and Device Processing	Z3: Oxides—Structural, Transport, and Optical Properties	Z4: Posters (M)
AA: Near-Field Scanning Optical Microscopy & Spectroscopy	Salon 1 (M)	AA1: Semiconductor Heterostructures	AA2: Thin Films, Polymers, and Molecules		AA3/W3: Near-Field Spectroscopy of Quantum Dots, Wires & Metals **GOLDEN GATE C2**	AA4: Proteins and Polymers	
BB: Multicomponent Oxide Films for Electronics	Salon 7 (M)				*Tutorial Session**	BB1: Properties of Multicomponent Oxides	BB2, BB3: Posters (M)
CC: New Materials for Batteries and Fuel Cells	Metropolitan II (A)	CC1: Cathodes I	CC2: Cathodes II		CC3: PEM Fuel Cells	CC4: PEM Fuel Cells/ Polymer Electrolytes	CC5: Posters (A)
DD: Organic-Inorganic Hybrid Materials	Salon 11/12 (M)	DD1: Synthesis and Processing I	DD2: Synthesis and Processing II		DD3: Novel Ordered Hybrid Structures DD4: Structure and Properties of Organic Monolayers	DD5: Nonsilicate Hybrid Materials	
EE: Polymers in Biotechnology	Salon 15 (M)	EE1: Hydrogel Systems EE2: Tissue Engineering Applications	EE3: Biopolymers & Biological Production of Polymers EE4: Polymers at Surfaces		EE5: Drug Delivery Applications EE6: Stimuli-Responsive and Bioactive Systems		
FF: Biomedical Materials	Salon 15 (M)						
GG: Membranes	Salon 14 (M)				GG1: Inorganic Membranes	GG2: Polymer Membranes	
HH: Soft Condensed Matter	Salon 13 (M)	HH1: Gels	HH2: Gels and Spherical Colloids		HH3: Magnetorheological Fluids/Electrorheological Fluids	HH4: Electrorheological Fluids/Suspensions of Rods	

* Check Tutorial Matrix in this *MRS BULLETIN* issue (A) = Argent Hotel (M) = Marriott Hotel Shaded Blocks = No Session

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WEDNESDAY, APRIL 7			THURSDAY, APRIL 8			FRIDAY, APRIL 9	
a.m.	p.m.	eve.	a.m.	p.m.	eve.	a.m.	p.m.
A12: Heterogeneous Materials I A13: Hydrogen	A14: Hot-Wire Deposition A15: Solar Cells	A16-A20: Posters (A)	A21: Detectors & Novel Devices A22: Defects, Bandtails & Transport	A23: Heterogeneous Matls. II A24: Ordering & Protocrystallinity		A25: Hydrogen In Metastability A26: High Deposition Rate	
B9: AMLCD I B10: AMLCD II	B11: Large-Area Processes B12: Sensors B13/E8/F6: Organic Lum. Matls. **FRANCISCAN I**	B14: Posters (A)	B15/F8: OLEDs	B16/F9: Electroluminescent Materials		B17/F10: Organic EL I	
C5: Carbon and Diamond Field Emitters	C6: Theory and Modeling of Electron Field Emission						
D7: New Emerging Technologies							
E7: Novel Materials	E8/B13/F6: Organic Luminescent Materials		E9: Theory and Luminescence Sensors				
F4: Photorefractive Polymers	F5: Electronic & Optical Proc. F6/B13/E8: Organic Lum. Matls. **FRANCISCAN I**	F7: Posters (A)	F8/B15: OLEDs **METROPOLITAN I**	F9/B16: Electroluminescent Materials **METROPOLITAN I**		F10/B17: Organic EL I **METROPOLITAN I**	
G5: Mechanical Properties	G6: Atomistic-Level Simulations	G7: Posters (A)					
H3/I6: Nanoscale Hard Magnetism I **SALON 5/6**	H4/I7: Nanoscale Hard Magnetism II H5/I8: Posters **SALON 5/6**		H6: Permanent Magnet Applications H7: Microstructure and Micromagnetics	H8: Microstruc./ Micromagnet. H9/I10/L8: Thin-Film Permanent Magnets **SALON 1-3**			
I6/H3: Nanoscale Hard Magnetism I **SALON 5/6**	I7/H4: Nanoscale Hard Magnetism II I8/H5: Posters **SALON 5/6**		I9/L7: Nanocrystalline Magnetic Thin Films **SALON 4/5**	I10/H9/L8: Thin-Film Permanent Magnets **SALON 1-3**			
J10/K6/AA5: Spin Dynamics and Transport **SALON 1-3** J11: Nanomagnet Arrays/ Assemblies	J12: Spin-Depend. Tunneling I J13: Spin Filtering **SALON 1-3**		J14: Spin-Depend. Tunneling I I J15: Spin-Valve Devices **SALON 1-3**				
K6/J10/AA5: Spin Dynamics and Transport **SALON 1-3**							
L4: Thin-Film Growth—Surface Roughness, Texture	L5: Film Microstructure and Stress	L6: Posters (M)	L7/I9: Nanocrystalline Magnetic Thin Films **SALON 4/5**	L8/H9/I10: Thin-Film Permanent Magnets **SALON 1-3**			
M3: Electromigration Mechanisms and Modeling	M4: Electromigration Measurements in Advanced Interconnects	M5-M7: Posters (M)	M8: Mechanical Behavior of Back-End Materials	M9: Adhesion and Fracture			
N6: Aluminum	N7/O4: Low-k/Advanced Interconnect						
O3: Low-k Integration	O4/N7: Low-k/Advanced Interconnect **GOLDEN GATE B2**	O5: Posters (M)	O6: Low-k Film Property/ Integration				
P5: CMP Modeling and Fluid Flow	P6: Particle Adhesion and Post-Polish Cleaning						
Q1: Surface Conditioning and Analysis	Q2: Organic and Particulate Removal Processes		Q3: Pre-Gate and Chemical-Mechanical Polishing Applications	Q4: Novel Processes and Applications			
R7: Advances in Ultrathin Oxides and Oxynitrides II R8: Silicon Nitride II **NOB HILL C/D**	R9: High-k Alternate Gate Dielectrics I **NOB HILL C/D**	R10: Posters (M)	R11: Characterization of Gate Dielectrics **NOB HILL C/D**	R12: High-k Alternate Gate Dielectrics II R13: Integrated Processing **NOB HILL C/D**			
S4: Physics of Dopants and Defects	S5: Modeling		S6: TED	S7: Surface and Interface Effects S8: 2D Profiling		S9: SiGe and Nitrogen	
T6: Wafer Bonding II and SOS	T7: Compliant Substrates and SOS						
U4: *In Situ* X-Ray, TEM, STM/AFM Characterization and Processing Control	U5; *In Situ* Emission and Optical Spectroscopies, and Other Characterization Techniques						
V5: Growth Mechanisms	V6/BB5: Epitaxial Multicomponent Oxide Film Growth **SALON 7**	V7: Posters (M)	V8: Novel Epitaxy	V9/W11: Structural Characterization & Growth II **GOLDEN GATE C2**			
W6: Self-Assembled, Embedded SK Dots	W7: Phonons in Dots W8: Transport, Coulomb, Biocade and Metallic Dots	W9: Posters (M)	W10: Structural Characterization and Growth I	W11/V9: Structural Characterization & Growth II			
X	X3			X4			
Y6: GaN Growth and Characterization	Y7: III-N Growth and Characterization	Y8: Panel Discussion	Y9: GaN Devices and Processing				
Z5: Electron Devices and Processing I	Z6: Electron Devices and Processing II						
AA5/J9/K6: Spin Dynamics and Transport **SALON 1-3**							
BB4: Multicomponent Oxide Devices I	BB5/V6: Epitaxial Multicomponent Oxide Film Growth	BB6, BB7: Posters (M)	BB8: Multicomponent Oxide Devices II	BB9: Properties, Characterization, and Modeling			
CC6: Anodes and NiMH	CC7: Supercapacitors		CC8: Solid Oxide Conductors and SOFCs	C9: Solid Oxide Fuel Cells			
DD6: Meso-, Micro-, and Macro-Porous Hybrids	DD7: Hybrid Electrochemistry, Photochemistry, Passivation, and Sensing	DD8, DD9: Posters (M)	DD10: Biomedical Applications of Hybrid Materials DD11: Electronic Properties and Applications	DD12: Mechanical Properties and Applications		DD13: Optical Properties and Applications	
FF1: Biodegradable Polymers	FF2: *In Vitro* and *In Vivo* Evaluations of Biomaterials	FF3: Posters (M)					
GG3: Biomembranes	GG4: Hybrid Membranes GG5: Bilayer/Multilayer Membranes and Sensors	GG6: Posters (M)					
HH5: Paper, Fiber, Polymers		HH6: Posters (M)					

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1999 Spring Meeting Symposium Proceedings

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A: Amorphous and Heterogeneous Silicon Thin Films: Fundamentals to Devices—1999
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San Francisco Marriott Hotel
Salons 8 and 9
April 6-8, 1999

Exhibit Hours:

Tuesday, April 6	11:30 am - 6:30 pm
Wednesday, April 7	9:30 am - 6:00 pm
Thursday, April 8	9:30 am - 1:30 pm

Complimentary reception will be held in the exhibit hall on Tuesday evening from 5:00 pm to 6:30 pm.

The MRS Exhibit, held in conjunction with the 1999 MRS Spring Meeting, will encompass the full spectrum of equipment, instrumentation, products, software, publications and services for materials research. As always, the exhibit will closely parallel the nature of the technical symposia, and the program has been arranged to allow meeting participants ample opportunity to visit the exhibit. 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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