MRS NEWS

Preview: 2002 MRS Spring Meeting

San Francisco Marriott and Argent Hotels • San Francisco, California Meeting: April 1–5 • Exhibit: April 2–4

Meeting Chairs:

Zhenan Bao

Lucent Technologies

Eugene A. Fitzgerald

Massachusetts Institute of Technology

Ulrich M. Goesele

Max-Planck Institute of Microstructure Physics

Kenneth P. Rodbell

IBM T.J. Watson Research Center

The 2002 Materials Research Society Spring Meeting will be held Monday–Friday, April 1–5, 2002, in San Francisco, Calif., at the San Francisco Marriott and Argent Hotels. The meeting will include 23 technical symposia; a plenary session on Wednesday evening; an equipment exhibit, with a reception for meeting participants on Tuesday evening; and tutorials, most held on Monday (see page 143). Symposia proceedings will be published on the MRS Web site, available free to MRS members. Registration will open Monday morning, with most symposia beginning on Tuesday morning.

Symposium X, Frontiers of Materials Research, will feature three diverse topics ranging from entrepreneurship ("The Role of Venture Capital: Turning Science into Money" and "From Materials and Devices to Building and Selling a Company") to "Materials in the History of Wine." This year, the talks will be held Tuesday–Thursday at 4:30 p.m., instead of the lunch hour as in past years. Each talk will be followed by a networking session with light refreshments.

With rapid growth in the area of **Electronic and Optoelectronic Materials** (Symposia A–L), the technical sessions feature invited presentations from DuPont on the development of a roll-toroll manufacturing process for polymer light-emitting displays, and several invited talks on the applications of bariumstrontium-titanate films, including an update on DARPA's electronic project, "Will Fame Bring Fortune?" Photonic technologies have contributed to large economic expansions in which roadmaps predict that the growth rate for optical bandwidth exceeds that of electrical bandwidth. Symposium K focuses on III–V materials and devices for photonics and optoelectronics, with invited talks by S.G. Johnson (Lawrence Berkeley National Laboratory) on materials for solid-state lighting and J.S. Harris Jr. (Stanford University) on GaInNAs as a new material for communications lasers.

The meeting introduces Symposium J on texture and microstructure in electronic and magnetic films, addressing the fundamentals of crystallographic texture measurements in thin films. Symposium J will hold a joint session with Symposium E on magnetic materials for data storage, featuring an invited talk by M. Doerner from IBM's Storage Technology Division. Several silicon-based symposia will cover areas ranging from junction-formation technologies in Si-through gate oxides, dielectrics, interconnects, and reliabilityto a symposium on chemical-mechanical polishing. There will be a symposium on amorphous and heterogeneous Si-based films, as well as a symposium on defectand impurity-engineered semiconductors and devices.

In the cluster on Molecular and Biomaterials (Symposia M-Q), Symposium M on molecularly imprinted materials opens on Wednesday morning. Presentations in this symposium are longer than usual, allowing for more in-depth discussions. K.J. Shea (University of California—Irvine) opens the session on synthesis and characterization with an overview of the past, present, and future of molecular imprinting. Symposium N offers four full days of presentations, following biological and biomimetic materials from properties to functions. Invited speaker A.M. Belcher (University of Texas—Austin) opens the morning session on Friday, addressing "Peptide Semiconductor Nanocrystal Interactions and Organization of Hybrid Materials." The day ends with a session on tissue engineering. Chemical and biological sensors, organic and polymeric materials and devices, and hybrid organic-inorganic materials will also be well represented.

In the cluster on Nano-Microstructured Materials (Symposia R–U), a symposium on interfaces in nanostructures featuring electron microscopy will be held. Symposia will also be dedicated to materials modeling, nanostructured materials, polymer nanocomposites, microelectromechanical systems (MEMS), biomedical MEMS, and microfluidics. K. Kamena (Omni Tech Intl) talks about "Climbing the Nano-Ladder to Commercial Success" on Tuesday morning. Symposium S particularly addresses the ability to control order and shape in nanoscale systems, and Sympo-

sium T shows a special interest in nanocomposites based on nanofibers and other novel fillers. On Wednesday, Symposium T features a morning of invited talks on polymer-layered silicate nanocomposites.

Symposium V looks at research and development in photovoltaics (L.L. Kazmerski, National Renewable Energy Laboratory) among other topics in the area of energy. Symposium W offers a week of presentations on modeling and numerical simulation of materials behavior and evolution.

Special events and opportunities at this meeting include the Outstanding Young Investigator presentation by 2002 recipient Jan Hendrik Schön (Lucent Technologies) for his work on organic and molecular materials (see article on page 143). Schön's award will be presented at the plenary session on Wednesday evening, at which time the Gold and Silver Graduate Student Award recipients will be announced as well. Further opportunities are offered to graduate students through the student mixer and MRS University Chapter meeting, symposium assistant positions, and the employment center, which is open to all attendees.

Poster sessions will be held 8:00–11:00 p.m., Tuesday—Thursday, in Salons 1–7 at the Marriott Hotel, and on Tuesday and Thursday in the Metropolitan Ballroom at the Argent Hotel. The 2002 grant recipients of the MRS Undergraduate Materials Research Initiative will present their posters on Tuesday in the Marriott. The meeting chairs will sponsor a Best Poster Award competition at which a prize of \$500 will be awarded to the presenting author(s) of the winning paper(s).

The National Institute of Standards and Technology will present a seminar describing grant opportunities for materials research.

See the following pages for a matrix of symposia sessions, a list of tutorials, profiles of exhibitors, and information on hotel and transportation arrangements. For additional information on the meeting, contact MRS Member Services, Materials Research Society, 506 Keystone Drive, Warrendale, PA 15086-7573, USA; e-mail info@mrs.org, tel. 724-779-3003, and fax 724-779-8313. The deadline to preregister for the meeting is March 15. The MRS Web site can be accessed for updated information on confirmed talks and details of special events, and for preregistration: www.mrs.org.

MRS NEWS

Jan Hendrik Schön Named Outstanding Young Investigator for Work in Organic and Molecular Materials

Jan Hendrik Schön, a member of technical staff at Lucent Technologies, has been named the 2002 Materials Research Society Outstanding Young Investigator (OYI). Cited for "innovative and creative experimental investigations of organic and molecular materials, which have led both to new fundamental insights into charge transport in these systems and to the demonstration of new electronic and optoelectronic devices," Schön has revolutionized the field of organic molecular crystals, contributing new perspectives into other fields of condensed-matter sciences as well. The OYI award recognizes outstanding, interdisciplinary scientific work in materials research by a young scientist or engineer.

In just the past few years, Schön and his collaborators have demonstrated a series of groundbreaking results and devices on at least 10 new inorganic and organic materials. Central to his work is his demonstration of the continuous tunability of the charge-carrier concentration in the channel of a field-effect transistor (FET) up to unprecedentedly high levels of several charges per molecule. This led to Schön's discovery of the quantum Hall effect (QHE) in unconventional semicon-



Jan Hendrik Schön

ductors, including the fractional QHE in tetracene and pentacene. Using the FET method, Schön and his collaborators introduced hydrocarbon superconductors in which they converted highly insulating anthracene, tetracene, and pentacene into the metallic state, which then became superconducting at low temperatures. This work provides a strategy for finding new superconductors.

In the area of high-temperature superconductivity in a non-cuprate material, Schön and his group achieved a *T_c* of 117 K, which is higher than the $T_{\rm c}$ of most cuprates. He also achieved superconductivity in an organic polymer, opening new directions for polymeric superconductors and processing methods.

Highlights of Schön's device explorations include an electrically driven organic laser, a light-emitting field-effect transistor, ambipolar transistors, and fully tunable Josephson junctions. This work has a wide impact on electro-optic, electronic, and superconducting device technology.

Schön has held numerous positions at Lucent since 1997. He received his PhD degree in physics in 1997 from the University of Konstanz, Germany. Other honors include the Otto-Kung Prize in December 2001, the Braunschweig Prize in 2001 for his research in sustainable development, and a postdoctoral research scholarship from the German Research Foundation. Schön has over 100 publications and several patents filed in the fields of organic electronics and optoelectronics.

Schön will present his award talk in April at the 2002 MRS Spring Meeting in San Francisco. The MRS Web site can be accessed for updated information: www.mrs.org.

2002 MRS Spring Symposium Tutorials

(Descriptions available on the MRS Web site: www.mrs.org/meetings/spring2002/program)

Symposium A

Monday, April 1 8:30 a.m. - 4:30 p.m.

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

Salon 5/6, Marriott Hotel

Symposium B

Monday, April 1 8:00 a.m. - 12:00 p.m.

STB: Integrated Circuit Fabrication and Yield Control

Salon 11/12, Marriott Hotel

Symposium F

Monday, April 1 9:00 a.m. - 4:00 p.m.

STF: Semiconductor Defect Characterization by Deep Level Transient Spectroscopy Techniques

Salon 1/2, Marriott Hotel

Symposium J

Monday, April 1 8:30 a.m. - 4:30 p.m.

STJ: Texture and Microstructure in Thin Films

Salon 3/4, Marriott Hotel

Symposium K

Thursday, April 4 1:15 - 4:15 p.m.

STK: Optoelectronic Devices for Communications

Nob Hill C/D, Marriott Hotel

Symposium L

Monday, April 1 1:30 - 5:00 p.m.

STL: Introduction to Photonic Crystals

Nob Hill C/D. Marriott Hotel

Symposium N

Monday, April 1 1:00 - 5:00 p.m.

STN: *In-situ* and *Ex-situ* Characterization Techniques and Imaging of Biomaterials

Nob Hill A/B, Marriott Hotel

Symposium U

Monday, April 1 1:00 - 5:00 p.m.

STU: Microsystems Technology— Biological and Medical Applications

Salon 14/15, Marriott Hotel

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2002 MRS Spring Meeting Symposium Session Locator

Г	SYMPOSIUM LOCATION MONDAY, APRIL 1 TUESDAY, APRIL 2								
	OTHII COIOM			a.m.					
Α:	Amorphous and Heterogeneous Silicon-Based Films-2002	Golden Gate B2 (Marriott)	Tutorial** Salon 5/6 Marriott)	Tutorial**		A1: Hydrogen A2: Electronic Structure and Transport	A3: Thin-Film Transistors A4: Sensor and Imaging Arrays	A5, A6, A7, A6 A9, A10: Posters	
В:	Silicon Materials—Processing, Characterization, and Reliability	Salon 10/12 (Marriott)	Tutorial** Salon 11/12	B1: Silicon Materials and Processing		B2: Gate Dielectrics and Devices	B3: High-k Dielectrics	B4: Posters	
C:	Si Front-End Junction Formation Technologies	Salon 14/15 (Marriott)				C1: Alternate Annealing Technologies	C2: Device Engineering Options		
D:	Perovskite Materials	Golden Gate A2 (Marriott)		D1: Composition— Structure-Properties Relations I		D2: Earth's Pervoskites I — Experiments	D3: Composition— Structure-Properties Relations II	D4: Posters	
E:	Nanostructural Magnetic Materials for Data Storage	Salon 13 (Marriott)				E1: Patterning and Properties of Nanomagnetic Structures	E2: Chemical and Biological Routes to Magnetic Nanoparticles		
F:	Defect- and Impurity- Engineered Semiconductors and Devices III	Salon 1/2 (Marriott)	Tutorial** Salon 1/2 (Marriott)	Tutorial**		F1: Defects and Impurities in Semiconductor Growth F2: Doping Issues I	F3: Doping Issues II F4: Gettering		
G:	Materials for Flexible Electronic Displays and Devices	Golden Gate C1 (Marriott)				G1: Flexible Electronic Devices and Components I	G2: Flexible Electronic Devices and Components II		
H:	Materials Issues for Tunable RF and Microwave Devices III	Salon 3/4 (Marriott)				H1: BST Films and Applications I	H2: BST Films and Applications II	H3: Posters	
l:	Chemical-Mechanical Planarization	Golden Gate B1 (Marriott)				I1: Advances in CMP Consumables I I2: STI Processing	I3: Advances in CMP Consumables II		
J:	Texture and Microstructure in Electronic and Magnetic Films	Nob Hill A/B (Marriott)	Tutorial** Salon 3/4 (Marriott)	Tutorial**		J1: Techniques and Applications J2: Metal Films	J3: Copper Films	J4: Posters	
K:	Materials and Devices for Optoelectronics and Photonics	Nob Hill C/D (Marriott)					K1: Nitrides—Epitaxy and Substrates		
L:	Photonic Crystals—From Materials to Devices	Golden Gate B3 (Marriott)		Tutorial** Nob Hill C/D (Marriott)		L1: Theory L2: Defect Engineering in 2D and 3D	L3: Switching and Sensing L4: Photonic Crystal Fibers	L5: Posters	
M:	Molecularly Imprinted Materials	Concordia (Argent)							
N:	Biological and Biomimetic Materials—Properties to Function	Metropolitan I (Argent)		Tutorial** Nob Hill A/B (Marriott)		N1: Materials in Natural Biological Tissues	N2: Imaging and Characterization Techniques		
0:	Chemical and Biological Sensors—Materials and Devices	City (Argent)				O1: Microfluidics and Sensing Systems	O2: Sensor Arrays and Devices		
P:	Organic and Polymeric Materials and Devices—Optical, Electrical, and Optoelectronic Properties	Franciscan II/III (Argent)		P1: Device Engineering and Physics		P2: Materials and Synthesis	P3: Patterning and Printing	P4: Posters	
Q:	Hybrid Organic-Inorganic Materials	Metropolitan II (Argent)		Q1: Well-Defined Nanobuilding Blocks— Precursors for Hybrids I Q2: Strategies to Functional Lamellar Hybrids Materials		Q3: Chemical Strategies for the Design of New Hybrids Q4: Well-Defined Nanobuilding Blocks Precursors for Hybrids II	Q5: Biomaterials, Biogels, Biomimetic Approaches of Materials	Q6: Posters	
R:	Nanostructured Interfaces	Salon 5/6 (Marriott)				R1: Characterization of Nanostructured Interfaces R2: Nanostructured Interfaces in Catalysts and Sensors	R3: Nanostructured Interfaces in Structural Materials	R4, R5, R6: Posters	
S:	Functional Nanostructured Materials through Multiscale Assembly and Novel Patterning Techniques	Metropolitan III (Argent)				S1: Surfactant and Polymer Templating	S2: Structural Control and Characterization	S3: Posters	
т:	Polymer Nanocomposites	Franciscan I (Argent)				T1: Innovations in Polymer Nanocomposites	T2: Carbon-Based Polymer Nanocomposites	T3: Posters	
U:	MEMS and BioMEMS	Olympic (Argent)		Tutorial** Salon 14/15 (Marriott)		U1: Microfluidics	U2: Materials and Processes	U3: Posters	
v:	Materials for Energy Storage, Generation, and Transport	Golden Gate A1 (Marriott)		(mattivity		V1: Lithium Batteries	V2: Hydrogen Fuel Cells and Hydrogen Storage		
w:	Modeling and Numerical Simulation of Materials Behavior and Evolution	Golden Gate C2/C3 (Marriott)				W1: Dislocations and Plasticity	W2: Modeling of Materials Response		
X:	Frontiers of Materials Research	Salon 7 (Marriott)					X1: The Role of Venture Capital —Turning Science into Money		

^{*} POSTER SESSIONS:

Argent Hotel-Metropolitan Ballroom San Francisco Marriott Hotel-Salons 1-7 Shaded Blocks: No Session

^{**} Check Tutorial Program for Details

2002 MRS Spring Meeting Symposium Session Locator

WED	NESDAY, APRIL 3		THU	RSDAY, APRIL 4		FRIDAY, APRI	L 5
a.m.	p.m.	eve.*	a.m.	p.m.	eve.*	a.m.	p.m.
A11: Metastability A12: Novel Devices	A13: Amorphous Silicon Solar Cells A14: Electronic and Network Structure		A15: Growth Processes A16: Microcrystalline Silicon	A17: Hot Wire CVD A18: Germanium Alloys	A19, A20, A21, A22, A23, A24: Posters	A25: Mixed Phase and Edge Material A26: Microcrystalline Solar Cells	
B5: Dielectric Characterization	B6: Gate Oxides and Interfaces	B7: Posters	B8: Metals and Interfaces	B9/C6: Characterization Using Surface Analysis Techniques B10: Oxides and Silicides	B11: Posters	B12: Low-k Dielectrics	B13: Reliability
C3: Doping Activation	C4: Epitaxial Techniques, Fluorine, Defect Fundamentals		C5: Defect and Diffusion Models	C6/B9: Characterization Using Surface Analysis Techniques SALON 10/12 (Marriott)			
D5: Magnetoresistive Pervoskites - I	D6: Earth's Perovskites II— Theory	D7: Posters	D8: Ferroelectric, Piezoelectric, and Ferroelastic	C7: Characterization Technologies D9: Magnetoresistive Perovskites II	D10: Posters	D11: Theory, Modeling, and Design of Perovskites	D12: Ferroelectric
			Properties I				Piezoelectric and Ferroelastic Properties III
E3: Ferromagnetic Semiconductors, Magnetic Nanowires, and Hyperfine Techniques	E4/J7: Microstructural and Processing Aspects of Magnetic Thin Films NOB HILL A/B (Marriott)	E5: Posters	E6: Materials for Magnetic Recording Heads	E7: Magnetic Recording Media			
F5: Defects in Devices F6: Defect Characterization	F7: Semiconductor Nano- cavities and Nanostructures	F8: Posters	F9: Hydrogen-Defect Interaction with Semiconductors F10: Ion Implantation I	F11: Ion Implantation II F12: Semiconductor Interfaces, Superlattices		F13: Point Defects, Impurities, Diffusion in Semiconductors	
G3/P5: Organic Displays and Devices FRANCISCAN II/III (Argent)	G4/P6: Organic Transistors FRANCISCAN II/III (Argent)		G5: Fabrication of Flexible Electronic Devices	G6: Displays, Power, and Components			
H4: BST Film Characterization H5: BST Bulk Materials and Applications	H6: New Materials and Applications						
I4: CMP Modelling	I5: CMP Pads and Defects						
J5: Electronic Thin Films I J6: Electronic Thin Films II	J7/E4: Microstructural and Processing Aspects of Magnetic Thin Films						
K2: Solid-State Lighting K3: Nitrides—Characterization and Processing	K4: Nitriding Traditional III-V Semiconductors		K5: Optical Waveguides K6: Optical Interconnects	Tutorial** Nob Hill C/D (Marriott)	K7, K8, K9: Posters	K10: Unique Materials, Processing, and Characterization	K11: Quantum Dots and Quantum Wells
L6: Metals and 1D/2D Photonic Crystals	L7: 3D Photonic Crystals and Optical Characterization						110.10
M1: Synthesis and Characterization	M2: Microfabrication and Silica Imprinting		M3: Membranes and Nanoparticles	M4: Nanostructure and Molecular Recognition	M5: Posters	M6: Covalent and Non- Covalent Imprinting	
N3: Organic Biomaterials— Proteins and Peptides	N4: Interface Engineering, Patterning and Biocompatibility		N5: Composite Biomaterials— Bones and Teeth I	N6: Composite Biomaterials—Bones and Teeth II	N7, N8: Posters	N9: Biomimetics, Sensors, and Nanotechnology N10: Materials for Drug and Gene Delivery	N11: Tissue Engineering
O3: Sensing with Nanoparticles	O4: Sensing with Monolayers and Bilayers		O5: Sensing with Bilayers, Cells, and Polymers	O6: Sensing with Silicon			
P5/G3: Organic Displays and Devices	P6/G4: Organic Transistors		P7: Photovoltaics	P8: Devices—Physics and Engineering	P9: Posters	P10: Organic-Based Transistors	P11: Spectrosco- py and Interfaces
Q7: Templated Growth to Nano/Meso/Macrostructured Hybrids Materials I	Q8: Templated Growth to Nano/Meso/Macrostructured Hybrids Materials II		Q9: Advanced Processing for Hybrid Materials	Q10: Advanced Processing for Hybrid Materials and Characterization Methods		Q11: Processing and Properties of Functional Hybrids (Optical, Electrical, Mechanical)	Q12: Properties of Hybrids (Optical, Electrical, Mechanical Catalysis)
R7: Nanostructured Interfaces in Structural and Magnetic Materials	R8: Nanostructured Interfaces in Oxides and Electro-Optical Materials	R9, R10: Posters	R11: Nanostructured Interfaces in Electronic Materials I	R12: Nanostructured Interfaces in Electronic Materials II			
S4: Surface Patterning	S5: Nanoscale Electronics		S6: Electronic, Optical and Magnetic Arrays	S7: Optical Patterning and Optical Materials	S8: Posters	S9: Photonic Materials	S10: Nanoscale Materials
T4: Polymer-Layered Silicate Nanocomposites	T5: Polymer Nanocomposites for Electronic and Magnetic Applications		T6: Fundamentals of Polymer Nanocomposites				
U4: BioMEMS	U5: Devices and Characterization						
V3: Materials for Solar Energy	V4: Solid-Oxide Fuel Cells	V5: Posters	V6: Materials for Power in Space V7: Disordered and Nanoscale Materials for Energy Applications V8: Thermoelectrics				
W3: Molecular Dynamics and Ab-Initio Models	W4: Multiscale and Multiphysics Simulations	W5: Posters	W6: Microstructural Evolution I	W7: Microstructural Evolution II	W8: Posters	W9: Defect Formation and Migration, Surfaces, Growth at Surfaces	W10: Modeling at the Nanoscale
	X2: From Materials and Devices to Building and Selling a Company			X3: Materials in the History of Wine			

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2002 MRS Spring Meeting



REGISTRATION

Register via the MRS Web site, e-mail, fax, phone, or mail by **Friday, March 15**, to take advantage of preregistration savings: \$410 for MRS members; \$485 for non-members; \$85 for student members; \$105 for student nonmembers; and \$105 for retired attendees.

Registration confirmations will be mailed within 10 working days beginning late February.

Registration fees after March 15 will be \$510 for MRS members; \$585 for nonmembers; \$110 for student MRS members; \$130 for student nonmembers; and \$130 for retired attendees. **Payment must accompany registration.**

MRS Web Site

Take advantage of the speed and convenience of online preregistration via the MRS Web site: www.mrs.org/meetings/spring2002/program. Web registration requires credit card payment and must be submitted by 11:00 p.m. (EST), March 15, 2002, to be eligible for preregistration rates.

Telephone

Call 724-779-3003, Member Services, Monday through Friday between 8:00 a.m. and 5:00 p.m. EST. To expedite your registration, please have the preregistration form and your credit card available for easy reference (phone registration requires credit card payment—VISA, MasterCard, Diners Club, or AmEx). Phone preregistration will close at 5:00 p.m. EST on Friday, March 15.

ON-SITE REGISTRATION

Register at the San Francisco Marriott, Grand Assembly

Monday, April 1	10:00 a.m	8:00 p.m.
Tuesday through Thursday, April 2-4	. 7:30 a.m	5:00 p.m.
Friday, April 5	7:30 a.m	10:00 a.m.

Symposium Tutorials

Tutorial attendance is open to all meeting attendees at no extra charge. Tutorial notes are optional at \$30 (complete the Tutorial Notes section on the preregistration form). Cost for notes will increase to \$40 after the preregistration deadline of March 15. Preordered tutorial notes—and a limited supply for on-site purchase—will be available at the Tutorial Notes Desk on the Golden Gate level of the Marriott Hotel from 8:00 a.m.-3:00 p.m. on Monday, April 1. After that time, notes can be picked up or purchased in Publications Sales at the Marriott Hotel.

Cancellation

To cancel your registration, you must notify MRS in writing of your request for a refund. Refunds will be made, less a \$25 service charge, upon receipt of your written notice. If you apply a portion of this refund to member dues or any MRS publications, the service charge will be waived. MRS will not honor requests made more than one calendar month after the close of the meeting.

In case of cancellation, the fee for tutorial notes will not be refundable; notes will be forwarded after the meeting.

LODGING & TRAVEL

A block of rooms has been reserved for MRS meeting attendees at the San Francisco Marriott and Argent Hotels, 30 minutes from the San Francisco International Airport. When making your reservations, mention the Materials Research Society's meeting to receive the special rate.

Rooms are limited—reserve yours early!

San Francisco Marriott Hotel

55 Fourth Street

San Francisco, CA 94103

Phone Reservations: 415-442-6755 or toll-free 1-800-228-9290

Fax Reservations: 415-442-0141 Rate: \$147/Single

\$167/Double (plus 14% City Tax)

Internet Reservations: www.marriotthotels.com/SFODT/

Click on Reserve

Use ONE of the following group codes: MRSMRSA - single or double occupancy

MRSMRSB - triple occupancy MRSMRSC - quad occupancy

Reservation Deadline: March 10

Argent Hotel

50 Third Street

San Francisco, CA 94103

Phone Reservations: 415-974-6400 or toll-free 1-877-222-6699

Fax Reservations: 415-348-8207 Rate: \$147/Single

\$167/Double (plus 14% City Tax)

Reservation Deadline: March 8

Log on to www.mrs.org/meetings/spring2002/ for Alternative and Overflow Accommodations

(Limited Availability)

Airline Transportation

Special, discounted airfares have been arranged as a service to MRS Spring Meeting attendees. A Discount Airfare Form is available on the MRS Web site (www.mrs.org/meetings/spring2002/program).

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 at nearby public facilities.

Child Care

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

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PRING MEETING



APRIL 1-5, 2002 SAN FRANCISCO, CA

2002 Spring Meeting

Symposium Proceedings

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R. Wentzcovitch
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F: Defect and Impurity Engineered Semiconductors and Devices III

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H: Materials Issues for Tunable RF and Microwave Devices III

Editors: S.C. Tidrow, J.S. Horwitz, J. Levy, X. Xi ISBN: 1-55899-656-7 Code: 720-B \$65.00 \$ 75.00 MRS Member \$75.00 \$ 86.00 U.S. List \$86.00 \$ 99.00 Non-U.S.

J/E: Magnetic and Electronic Films— Microstructure, Texture and Application to Data Storage

Editors: P.W. DeHaven, D.P. Field, S.D. Harkness IV, J.A. Sutliff, J.A. Szpunar, L. Tang, T. Thomson, M.D. Vaudin

ISBN: 1-55899-657-5 Code: 721-B \$68.00 \$ 78.00 MRS Member \$78.00 \$ 90.00 U.S. List \$90.00 \$103.00 Non-U.S.

K/L: Materials and Devices for Optoelectronics and Microphotonics

Editors: Ř.B. Wehrspohn, S. Noda, Č. Soukoulis, R. März ISBN: 1-55899-658-3 Code: 722-B

\$65.00 \$ 75.00 MRS Member \$75.00 \$ 86.00 U.S. List \$86.00 \$ 99.00 Non-U.S.

M/O: Molecularly Imprinted Materials— Sensors and Other Devices

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Complimentary reception will be held in the Exhibit Hall on Tuesday evening from 6:00 to 7:30 pm.

The MRS Exhibit, held in conjunction with the 2002 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.

Partial List of 2002 Spring Exhibitors (as of January 22, 2002)

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3880 Park Avenue Edison, NJ 08820 Tel: 732-494-8660 Toll Free: 800-533-5946 Fax: 732-549-2571 raman@jyhoriba.com thinfilmgroup@jyhoriba.com www.jyhoriba.com

Real-time in situ process control instrumentation (the Sofie line of instruments) for endpoint detection, plasma diagnosis and thickness monitoring. State-of-the-art in- and ex situ spectroscopic ellipsometers. Raman systems for stress measurement, sample temperature monitoring, and defect/contaminant identification. High performance optical emission systems for materials characterization, including glow discharge and ICP systems.

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Johnsen Ultravac manufactures a complete line of vacuum products for R&D, production and light sources including: six axis manipulators featuring maximum ±4.00 inch XY motion; heating/cooling stages with 10 K to 1500 K temperature range; ultra-long stroke linear motion translators; UHV XYZ translators with 500 lbs. payload capacity; XYZ stages for *in situ* analysis; 5x10-11 Torr UHV chambers; beam line components; monochromators; and a wide range of vacuum systems for surface analysis, semiconductor, optoelectronics and coating. We specialize in unique, one-of-a-kind projects.

♦ k-Space Associates, Inc.

3626 W. Liberty Road Ann Arbor, MI 48103 Tel: 734-668-4644 Fax: 734-668-4663 info@k-space.com www.k-space.com

k-Space specializes in advanced thin-film characterization products. Our kSA MOS (Multibeam Optical Sensor) system provides *in situ* or benchtop, 2-dimensional thin-film curvature, stress, deposition rate, and optical constant determination. The kSA 400 is the most powerful analytical RHEED system available. From growth rate determination to lattice spacing evolution to phase-locked epitaxy, put the power of RHEED at your fingertips.

♦ Keithley Instruments, Inc.

28775 Aurora Road Solon, OH 44139 Tel: 440-248-0400 Fax: 440-248-6168 product_info@keithley.com www.keithley.com

Keithley will display its line of instrumentation designed for materials research applications. Keithley has added to its family of instruments the Model 6485 Picoammeter. It is capable of measuring currents from 20 fA to 20 mA, with the economy and ease-of-use of a DMM. Also featured will be the Model 4200 Semiconductor Characterization System which can be configured with up to 8 SMU channels, with high-power capability and/or sub-femtoamp sensitivity. Also highlighted will be Keithley's line of stand-alone SourceMeters. These instruments source and measure currents and voltages over wide ranges-from femtoamps and microvolts to kWs of operation enabling an extremely wide range of I-V characterization testing. The 6430 SourceMeter has a sensitivity to $400 \text{ aA} (4x10^{-16} \text{ A})$, even lower than electrometers. Keithley will also display equipment for measuring low resistance samples to below 1x10-9 ohms.

♦ Kluwer Academic Publishers

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Manufacturer of computer-controlled OLED/PLED and GMR thin film deposition tools for materials research and small scale production. Manufacturers of custom chambers and components. Manufacturer and distributor of a comprehensive range of vacuum components including pumps, valves, flanges, electrical and motion feedthroughs, sample manipulation, and surface science components. Manufacturer of the patented Torus[®] circular and linear magnetron sputter sources, e-beam and thermal sources, plus pure targets and materials.

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- Microholes/Pinholes/Slits as follows: Material—platinum, molybdenum, stainless steel, tungsten, etc.
 Applications—x-ray, ion beams, e-beams, gas flow, electron microscopes, optics, etc.
- Sputter Coaters with turbo option. Chamber sizes 4", 6", 8."
- Conductive Paints/Epoxies/Tapes, including:
 Conductive Silver Epoxy Kit
 Conductive Silver Pens
 Graphite Paints
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 Tapes—Copper, Silver Aluminum
- Electron Microscope Supplies

◆ Lake Shore Cryotronics, Inc.

575 McCorkle Blvd. Westerville, OH 43082-8888 Tel: 614-891-2244 Fax: 614-818-1600 sales@lakeshore.com www.lakeshore.com

Lake Shore manufactures equipment for magnetic and electronic transport materials characterization. Hall Effect systems characterize transport properties of all manner of semiconducting materials as a function of temperature and magnetic field. Quantitative Mobility Spectrum Analysis (QMSA) software analyzes variable field data and determines the resultant mobility spectrum for multicarrier materials. Other products include VSMs, electromagnets, power supplies, gaussmeters, fluxmeters, as well as temperature sensors, monitors, and controllers.

MarkeTech International, Inc.

4750 Magnolia Street Port Townsend, WA 98368 Tel: 360-379-6707 Fax: 360-379-6907 mkt@olympus.net www.mkt-intl.com

Electronic and opto-electronic advanced materials are available from MarkeTech including: silicon, SOI and compound semiconductors; a complete range of single crystal, optics, electro optics, ferroelectrics, scintillation and photoreactive materials; wafers, windows and optics; over 150 crystals such as sapphire, oxides and mixed oxides, fluorides and metals. Also available are special materials such as nanophase powders, carbon nanotubes, aerogels, sputtering targets, evaporation materials and ultra high purity compounds and precursors. MarkeTech offers custom and mixed oxides for fuel cells, batteries and other electrochemical applications.

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◆ MDC Vacuum Products Corporation/ Insulator Seal, a Div. of MDC

Vacuum Products
23842 Cabot Blvd.
Hayward, CA 94545
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Toll Free: 800-443-8817

Fax: 510-887-0626

sales@mdcvacuum.com www.mdcvacuum.com

MDC, the primary supplier to national laboratories, R&D and industrial manufacturers worldwide, carries an extensive line of high and ultrahigh vacuum components which are highlighted on our new technically-based website, as well as in our extensive 544-page catalog. New products for 2002 include: e-Plas Ion Source, e-Vap XY Sweep Controller, softstart angle valve, 300 mm rectangular gate valve, pendulum gate valve, precision magnetic transporter, hot/cold experimental station, transferable experimental station, Re-Vap Miniature Evaporation System, and the hidden filament emitter assembly. Insulator Seal, a leader in ceramic-to-metal joining, serves the vacuum science and industrial communities. New for 2002: fiber optic feedthroughs, EUV-grade viewports, high-current powerboot-fitted feedthroughs, and 50-pin D-type subminiature connectors.

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Minus K Technology is the leader in high-performance vibration isolation. We guarantee 1/2 Hz natural frequencies vertical and horizontal. Our isolators perform 10 times better than top-performance air tables. They are also superior to higher priced active or electronic cancellation systems. By utilizing negative stiffness mechanisms, the need for an air supply is eliminated. The isolators are very compact and portable.

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MKS is a global leader in the supply of vacuum and gas-based instrumentation, components, and subsystems for advanced thin film processes. Products include: Baratron® capacitance manometers and pressure transducers; pressure control valves and controllers; HPS® vacuum flanges, fittings, valves, gauges, heaters, and traps; Spectra™ residual gas analyzers; On-LineTM wafer metrology tools and gas analyzers; Mass-Flo® meters and controllers; ASTeX® microwave/RF/ plasma power supplies; D.I.P.™ digital network connectivity products; pressure and gas flow calibration systems; and vacuum training services.

♦ MMR Technologies, Inc.

1400 N. Shoreline Blvd., Suite A-5 Mountain View, CA 94043-1346 Tel: 650-962-9620 Fax: 650-962-9647 mmr@mmr.com

MMR Technologies manufactures temperature controlled systems—cryogenic cooling systems and wide temperature range thermal stages—which find application in materials research in electrical engineering, physics, biology and chemistry applications over the temperature range of 10 K to 730 K. They are also used in the cooling of computer chips, electronic devices, laser diodes, and thermal imaging devices, and in the characterization of the performance and properties of such devices as a function of temperature.

MTI Corporation

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Our primary products are high quality single crystals of oxides, compound semi-conductors and advanced optical materials as well as nanopowders that are produced by an innovative process of laser decomposition. We also market ultrapure rare earth oxides and high purity alumina ceramics. Tailoring to customer's special requirements and very competitive pricing are our strengths.

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MTS Systems Corporation designs, engineers and manufactures testing systems that characterize the mechanical properties of materials and structures. With the acquisition of Nano Instruments, Inc.—renamed the MTS Nano Instruments Innovation Center—MTS provides nanometer and microNewton capabilities through Nano Indenter[®] systems, in addition to microforce capabilities through the Tytron™ 250 system, and low-force capabilities through electromechanical and servohydraulic systems.

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Neocera, Inc. is a leading-edge technology company with extensive materials expertise in thin film development and production. Neocera products include pulsed energy deposition systems, metal oxide thin films and thin film devices, cryogenic temperature controllers, and HTS SQUID

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New Wave Research, Inc. is a manufacturer of compact, high performance Nd:YAG laser micromachining products. The AccuLaze is a table-top micro-electronic machining system and comes in three modules with six different wavelengths. The J model operates at repetition rates up to 10 kHz; the P module operates at repetition rates up to 30 Hz, and the T module at 213 nm operates at repetition rates up to 30 Hz. The QuickLaze operates at repetition rates up to 50 Hz with multiple wavelengths easily selectable from infrared to ultraviolet. Other products include excimer laser micromachining systems and solid-sampling laser ablation systems for ICP-AES, ICP-MS, multi-collector ICP-MS, TOF-ICP-MS and other forms of mass spectroscopy and optical emission spectroscopy. Major applications include material marking and etching, micro hole drilling, laser writing, laser cutting, LCD and flat panel display repair, capacitor and resistor trimming, failure analysis, material processing and particle image velocimetry (PIV).

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Manufacturer of growth, processing and characterization equipment for semiconductor or thin film research. Core instruments include RF atom sources for high-quality oxide/nitride growth, e-beam evaporators, atomic hydrogen sources, nanocluster deposition sources for nanoparticle deposition, broad-beam RF and DC ion sources for sputter deposition or IBAD and a family of ion and electron guns for thin film analysis.

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www.analytical.philips.com Philips Analytical is the world's leading supplier of instrumentation and software for analytical x-ray diffraction and x-ray fluorescence applications. Our diffraction product line includes the new and versatile X'Pert PRO research x-ray diffractometer, and the DCD PRO and the RD-100 x-ray diffraction systems, designed for semiconductor process control. The CubiX PRO is the industrial standard for x-ray powder diffraction process control. The full line of x-ray fluorescence spectrometers includes the MagiX PRO, Venus 200 Minilab and benchtop energy-dispersive systems. Our software provides a true Windows 32-bit environment for data collection, data processing and graphic display.

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Quesant Instrument Corporation

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South Bay Technology, Inc., a leading manufacturer of sample preparation equipment, has acquired the assets of VCR Group, Inc. VCR Group pioneered the development of the DIMPLER® for TEM sample preparation and has remained a dominant force in the EM products industry. South Bay Technology will continue the production of the DIMPLER® D500i as well as the new XLA/2000 computer-controlled ion milling system and the IBS/e for ion beam sputter deposition and etching. The acquisition of the VCR Group's products complements South Bay's current line of sample preparation products which include an extensive offering of products for lapping, polishing, cutting, and crystal orientation.

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STAIB designs and manufactures innovative, high-performance, reliable electronoptical equipment for *in situ* surface analysis, including: RHEED systems, analyzer, and data acquisition to study structure and quality of thin films; Photo-Electron Emission Microscopes (PEEM), for dynamic studies of chemical distributions at video speeds; energy spectrometers for Auger, XPS, & UPS; and electron guns for analytical surface studies.

◆ SVT Associates, Inc.

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Thermo NORAN provides innovative solutions for materials analysis and characterization. For micro applications, Thermo NORAN offers a complete range of digital x-ray microanalysis systems (VANTAGE and Quest), EDS x-ray detectors (LN and No-LN), WDS spectrometers (MAXray, MAXray ER, and IbeX), and Electron Backscattered Diffraction (EBSD) pattern analysis systems (Phase ID, ORKID). For macro applications, Thermo NORAN manufactures EDXRF systems in both small-spot and conventional configurations (MicronX and QuanX).

Thermo Vacuum Generators, Inc.

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(see Veeco Instruments Inc.)

Transfer Engineering & Manufacturing, Inc.

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