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Shuttle service to the Boston Marriott and Westin Hotels from Logan International Airport departs every half-hour from the designated shuttle stop in front of each terminal. The cost is approximately \$6-\$8 one way. Cab fares range between \$15-\$17 per ride (up to four persons can share one cab).

There is a free shuttle from airport terminals to the airport subway station (The "T"). Copley Station is within one block of the Marriott, Westin, and alternative hotels on the "Green Line."

Parking

A parking garage is adjacent to both hotels at a daily cost of approximately \$21.

DEADLINE FOR HOTEL RESERVATIONS: NOVEMBER 1, 1993

Blocks of rooms have been reserved for MRS meeting attendees at the Boston Marriott and Westin Hotels (above) and at the alternative hotels (below) located within a one-block radius. *When making your reservations at any hotel, mention the Materials Research Society to receive the special rates.*

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Fax: (617) 424-1717
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The Lenox Hotel

Phone: (617) 536-5300
Fax: (617) 266-7905
Rate: \$100/Single
\$110/Double

Sheraton Boston Hotel & Towers

Phone: (617) 236-2000
Fax: (617) 236-1702
Rate: \$109/Single; \$119/Double



MRS Short Course/ Tutorial Program

Characterization of Materials

- C-01 Modern Materials Analysis Techniques**
Instructors: James A. Borders, Kenneth H. Eckelmeyer, and Michael R. Keenan
- C-03 Surface and Thin Film Analysis**
Instructors: James W. Mayer and Leonard C. Feldman
- C-14 Scanning Tunneling Microscopy and Atom Force Microscopy**
Instructor: Dawn A. Bonnell
- C-20 Optical Characterization of III-V Semiconductor Epitaxial Layers**
Instructor: Gary W. Wicks
- C-23 X-Ray Diffraction Characterization of Semiconductor Wafers**
Instructors: Mary Halliwell and Isabella Bassignana
- C-29 Practical Electron Diffraction**
Instructor: Ronald M. Anderson
- C-30 Characterization of the Morphology, Structure and Properties of Inorganic Thin Films**
Instructors: Alton D. Romig, Jr., and Donald M. Mattox
- C-31 Super-Resolution Imaging and Spectroscopy with Near-Field Scanning Optical Microscopy (NSOM)**
Instructors: Michael Paesler and Hans Hallen

Preparation and Fabrication of Materials

- F-02 Plasma Etching for Microelectronic Fabrication**
Instructor: G. Kenneth Herb
- F-10 Fundamentals and Applications of Ion Beam Assisted Deposition**
Instructor: James K. Hirvonen
- P-02 Molecular Beam Epitaxy**
Instructor: L. Ralph Dawson
- P-04 Film Formation, Adhesion, and Surface Preparation**
Instructor: Donald M. Mattox
- P-10 Metalorganic Chemical Vapor Deposition and Atomic Layer Epitaxy**
Instructor: Robert Biefeld
- P-25 Chemical Vapor Deposition for Metallization Applications**
Instructors: Mark J. Hampden-Smith and Toivo T. Kodas

P-26 Metallization for Devices, Circuits, and Packaging and in Multilayer Schemes for VLSI and ULSI

Instructor: Shyam P. Murarka

Advanced Materials

- M-15 Biological Processes for Materials Synthesis**
Instructor: Mark Alper
- M-16 Ferroelectric Thin Films**
Instructors: Angus I. Kingon and Seshu B. Desu
- M-19 Wide Bandgap II-VI Semiconductor Microstructures: Growth, Characterization, and Optical Devices**
Instructor: Leslie A. Kolodziejcki

Techniques

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

Tutorial Program

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

- TP-1 Transfer of Technology from R&D to Manufacturing**
Instructors: Donald M. Mattox and Alton D. Romig, Jr.
- TP-2 Fractals in Materials Science**
Instructor: James E. Martin
- TP-3 Fullerenes**
Instructors: Mildred S. Dresselhaus and Peter C. Eklund
- TP-5 Light-Emitting Porous Silicon: Fabrication, Properties, and Device Applications**
Instructor: Phillippe M. Fauchet
- TP-6 Challenges in Design and Processing of Materials by Biomimetics**
Instructors: Mehmet Sarikaya, David A. Tirrell, Eric Baer, and Ilhan A. Aksay

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There are special discounted tuition fees for specific course combinations. Facilities registering three or more persons at the same time in one MRS Short Course receive a 20% discount for the third and all additional persons.

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1993 FALL MEETING SESSION LOCATOR

Activity	Location	Monday, November 29			Tuesday, November 30		
		a.m.	p.m.	eve*	a.m.	p.m.	eve
AA. Atomic Scale Imperfections	Salon C/D (M)	AA1: Point Defects	AA2: Diffusion		AA3: Grain Boundaries	AA4: Interfaces 1	
A. Ion Beams Synthesis & Processing	America South (W)	A1: Ion Beam Processing A2: Beam-Induced Damage & Recovery—Silicon	A3: Beam-Induced Damage & Recovery/Semiconductors A4: Other Materials	Posters A5	A6: Modification of Optical Properties A7: Materials Synthesis	A7: Materials Synthesis A8/D3: Ion Beam Synthesis of Silicides	Posters A9
B. Thin Film Evolution	America North (W)	B1: Atomistics	B2: Interface & Surface Structure		B3: Kinetic Roughening	B4: Islanding & Coarsening	Posters B5
Ca. Interface Control of Properties	Essex Center (W)	Ca1: Interface Properties	Ca2: Silicon Oxidation		Ca3: Metal/Semiconductor Contacts	Ca4: Heteroepitaxy	
Cb. Defect-Interface Interactions	Essex East (W)		Cb1: Heterostructures I		Cb2: Heterostructures II	Cb3: Interfaces & Point Defects	
D. Silicides, Germanides & Interfaces	St. George C/D (W)		D1: Applications, Contacts & Devices		D2: Fabrication & Properties of Iron Silicides America South (W)	D3/A8: Ion Beam Synthesis of Silicides	Posters D4
E. Amorphous Materials Crystallization	America Center (W)	E1: Structure of Glasses I	E2: Structure of Glasses II E3: Structural Relaxation of Glasses		E4: Crystal Nucleation E5: Solid State Amorphization	E6: Crystallization Kinetics	Posters E7, E8, E9, E10
F. High-Temperature Silicides/Refractory Alloys	Salon A/B (M)	F1: Silicide Microstructures	F2: Silicide Synthesis & Processing		F3: Silicide Mechanical Behavior	F4: Silicide Oxidation/Properties	Posters F5
G. Fullerenes	Salon F (M)	G1: Formation & Separation	G2: Physical & Structural Properties	Posters G3	G4: Superconductivity & Electronic Structure	G5: Superconductivity & Electronic Structure	Posters G6
H. Superconductivity	Salon G (M)	H1: Bulk Applications	H2: Bulk J_c	Posters H3	H4: Fundamental Mechanisms	H5: Flux Pinning & Dynamics	Posters H6
I. Materials Processes for Manufacturing	Essex West (W)						
J. Electronic Packaging	Theater	J1: Low-Cost High-Performance Packages	J2: Deposition & Durability		J3: Environmentally Sound Materials J4: New Materials	J5: Supercomputer Applications	Posters J6
K. Semiconductor Materials Processing	Essex West (W)	K1: Modulation Spectroscopy & Reflectivity	K2: Ellipsometry		K3: IR & Raman Spectroscopy	K4: Processing Diagnostics I	
L. Defects in Semiconductors	Essex North Center (W)	L1: Defects in Quantum Wells & Superlattices	L2: Defects & Impurities in InP, SiGe/Si		L3: Doping & Defects in III-V Semiconductors	L4/M5: Semiconductor Alloys & Superlattices Staffordshire (W)	Posters L5
M. Semiconductor Heterostructures	Staffordshire (W)	M1: Epitaxy I	M2: Epitaxy II	Posters M3	M4: Quantum Wires & Dots	M5/L4: Semiconductor Alloys & Superlattices	
N. Covalent Ceramics: Non-Oxides	Theatre	N1/Y1: MOCVD of Non-Oxide Electronic Ceramics	N2: Copper Indium Diselenide for Photovoltaics N3: Fundamental Properties	Posters N4	N5: Interfaces & Composites	N6: Metal Sulfides	
O. Complex Fluids	Salon J/K (M)	O1: Surfactant Phases	O2: Lamellar Phases		O3: Membranes: Micelles	O4: Strongly-Interacting Polymers	
P. Fractals, Scaling & Dynamics	Provincetown/Oriens (M)		P1: Patterns, Instabilities & Noise		P2: Granular Dynamics	P3: Pinning & Slow Relaxation	Posters P4
Q. Organic Solid State Materials	Essex South (W)	Q1: Plenary Session	Q2: Conducting Polymers		Q3: Molecular Engineering	Q4: Nonlinear Optical Polymers	Posters Q5
R. Materials for Solid State Lasers	Regis (M)	R1: Infrared Nonlinear Optical Materials R2: Bulk NLO Crystals	R3: Melt Growth of Laser Crystals R4: High Power Laser Materials	Posters R5	R6: Nonlinear Waveguide Materials R7: Up-Conversion & Visible Laser Materials	R8: MID-IR Laser Materials R9: Theoretical Modeling of Laser Materials	
S. Biomolecular Materials by Design	Yarmouth/Vineyard (M)	S1: Nanostructures	S2: Nanostructures—Silk/Other Fibers		S3: Nanostructures	S4: Crystallography	
T. Biomaterials for Drug & Cell Delivery	Cape Cod/Hyannis (M)	T1: Tissue Scaffolding & Regeneration	T2: Genetic Engineering		T3: Cell-Biomaterial Interactions	T4: Biomacromolecular Controlled Delivery	
U. Nanoscale Properties	Salon H/I (M)		U1: Local Spectroscopy & Imaging		U2: Dynamic Properties at Nanoscale	U3: Local Structures & Properties	Posters U4
V. Nuclear Waste Management	Salon E (M)	V1: High-Level Nuclear Waste Glass	V2: HLW Glass Characteristics		V3: Objectives & Limitations V4: Radiation Effects & Gas Generation	V5: Ceramic Materials V6: Cementitious Materials	
W. Gas-Phase Surface Chemistry in Electronic Materials	Theatre	W1: Silicon & Carbon Systems	W1: Silicon & Carbon Systems	Posters W2, W3, W4	W5: III-V Semiconductors	W5: III-V Semiconductors W6: II-VI Semiconductors	Posters W7, W8, W9
X. Frontiers of Materials Research	Salon E (M)		X1				
Y. MOCVD of Electronic Ceramics	Theatre	Y1/N1: MOCVD of Non-Oxide Electronic Ceramics	Y2: Ferroelectric Materials	Posters Y3	Y4: Modeling	Y5: Precursor Design & Delivery	

Wednesday, December 1			Thursday, December 2			Friday, December 3	
a.m.	p.m.	eve	a.m.	p.m.	eve	a.m.	p.m.
AA5: Interfaces 2	AA6: Mechanical Aspects of Interfaces						
A10: Panel Discussion	A11: Ion Implantation Doping of Silicon A12: Ion Implantation Doping of Materials	Posters A13	A14/E13: Beam Assisted Crystallization & Amorphization	A15: Ion Implantation A16: Thin-Film Growth	Posters A17	A18: Low-Energy Ion Technology A19: Low-Energy Ion Effects	
B6: Stress & Defects	B7: Adsorbates in Growth		B8: Zone Models/Grain Growth	B9: Texture in Polycrystalline Films	Posters B10	B11: CVD & Ion Assisted Growth	
Ca5: Surfaces	Ca6: Film Stability		Ca7: Interfaces in Composites	Ca8: Surface & Interfaces Analyses Ca9: Thin Films & Bilayers	Posters Ca10, Ca11, Ca12, Ca13	Ca14: Ferroelectrics Ca15: Stress & Adhesion	
Cb4: Boundary Migration, Transformation & Kinetics	Cb5: Boundary Migration, Transformation & Kinetics	Posters Cb6	Cb7: Grain Boundary/Dislocation Interactions I	Cb8: Grain Boundary/Dislocation Interactions II			
D5: Surfaces & Interfaces	D6: Metals on Ge & SiGe		D7: Kinetics of Silicide Formation	D8: Novel Silicide Growth Techniques D9: Properties & Silicides			
E11: Crystallization Microstructure: Polymers	E12: Crystallization Microstructure		E13/A14: Beam-Assisted Crystallization & Amorphization America South (W)	E14: Crystallization of Amorphous Silicon E15: Interfacial Phenomena	Posters E16, E17, E18		
F6: Refractory Alloys & Processing	F7: Refractory Alloys		F8: Refractory Alloys	F9: Applications of Refractory Alloys			
G7: Chemistry	G8: Thin Films & Photophysics		G9: Onions, Spheroids & Endofullerenes	G10: Tubes & Capsules			
H7: Vortex Dynamics	H8: Microstructure of Superconducting Materials H9: New Mercury Cuprates	Posters H10	H11: Device Applications	H12: Materials Issues in Devices	Posters H13	H14: Josephson Junctions	H15: Thin Films/Heterostructures
	I1: Performance Measures		I2: Process Development for Factories Salon C/D (M)	I3: Process Development for Factories Salon C/D (M)			
J7: Dielectrics	J8: Durability		J9: Mechanical Testing				
K5/M6: Characterization of Epitaxial Material Staffordshire (W)	K6/M7: Optical Characterization of Quantum Wells & Superlattices Staffordshire (W)	Posters K7	K8: Processing Diagnostics II				
L6: Oxygen, Hydrogen & Other Impurities	L7: Defects in Low Temperature Grown GaAs						
M6/K5: Epitaxial Material	M7/K6: Quantum Wells & Superlattices	Posters M8	M9: Characterization I	M10: Characterization II			
N7: Microstructural Evolution	N8: Chemical Synthesis		N9: Transition Metal Carbides & Nitrides/Thin Films N10: Bulk Material				
O5: Monolayers	O6: Monolayers: Liquid Crystals	Posters: O7	O8: Complex Fluids in Flows	O9: Colloids		O10: Wetting Phenomena	
P5: Flux Line Dynamics P6: Fractal Growth & Aggregation	P7: Porous Media	Posters P8	P9: Dynamics of Rough & Fractal Surfaces	P10: Phase Separation & Cellular Patterns			
Q6: Molecular Engineering Q7: Third Order Nonlinear Opt. Mats	Q8: Liquid Crystal Displays	Posters Q9	Q10: Light Emitting Diodes Q11: Organic Ferromagnets	Q12: Nonlinear Optical Materials		Q13: Nonlinear Optics—Measurements Salon F (M)	Q14: Conducting Polymers Salon F (M)
R10: Novel Laser & NLO Materials R11: Sol-Gel & Plastic Laser							
S5: Ceramics/Inorganics I	S6: Ceramics/Inorganics II		S7: Adhesives, Films, Enzymes	S8: Natural Materials and Biomimetics		S9: Bioelectronics	S10: Smart Materials
T5: Biomaterials Characterization							
U5: Composition Determination	U6: Elemental Imaging		U7: Molecular Imaging	U8: Surface Structures & Physical Properties	Posters U9	U10: 3D Imaging at Atomic Resolution	
V7: Actinides & Spent Fuel V8: Glass Processing & Properties	V9: Glass Leaching, Dissolution & Alteration	Posters V10	V11: Natural & Ancient Analogues V12: Tru Wastes & Special Topics	V13: Sorption Mechanisms V14: Repository Studies V15: Geochemistry & Hydrology		V16: Containers V17: Backfill Materials	
W10: Metallization	W11: Dielectrics		W12: Etching	W13: Special Topics			
	X2			X3			
Y6: High T_c Superconductors	Y7: Optoelectronic Materials: Oxide Ceramics						

MRS EXHIBIT

Boston Marriott Hotel Tuesday-Thursday, November 30 – December 2, 1993

As part of the 1993 Fall Meeting, a major exhibit will be held to display analytical and processing equipment closely paralleling the nature of the technical symposia. The exhibit will be in the Boston Marriott Hotel and a table-top display on the fourth floor of the Westin Hotel. The technical program has been arranged to allow meeting participants ample opportunity to visit the exhibit.

Exhibit Hours

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

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

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

A MEETING PREREGISTRATION
Please check category and enter amount in payment section below.

- \$260 Member/Nonmember through November 19, 1993;
\$310 after November 19, 1993
- \$70 Student Member/Nonmember* through November 19, 1993;
\$80 after November 19, 1993
*Student must provide proof of full-time student status at time of submission of registration (class schedule with student's name or signed letter from the faculty advisor or registrar).
- \$100 Short Course attendee registered for at least two full course days

Meeting registration includes complimentary one-year MRS membership beginning January 1, 1994.

- Symposium interest (please check all that apply):
 AA B Cb E G I K M O Q S U W
 A Ca D F H J L N P R T V Y

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

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

B PROCEEDINGS (published after this meeting)
These rates apply only to meeting and short course attendees, and MRS members. Nonmembers must contact MRS headquarters for prices.

	No. Copies	Total
A: Ion Beam Synthesis & Processing	\$52 x	=
B: Thin Film Evolution	\$48 x	=
Ca: Interface Control of Properties	\$52 x	=
Cb: Defect-Interface Interactions	\$47 x	=
D: Silicides, Germanides & Interfaces	\$47 x	=
E: Amorphous Material Crystallization	\$50 x	=
F: High-Temp. Silicides/Refractory Alloys	\$48 x	=
J: Electronic Packaging	\$47 x	=
K: Semiconductor Materials Processing	\$47 x	=
L: Defects in Semiconductors	\$47 x	=
M: Semiconductor Heterostructures	\$49 x	=
N: Covalent Ceramics (Non-Oxides)	\$50 x	=
Q: Organic Solid State Materials	\$50 x	=
R: Materials for Solid State Lasers	\$49 x	=
S: Biomolecular Materials by Design	\$50 x	=
T: Biomaterials for Drug & Cell Delivery	\$50 x	=
U: Nanoscale Properties	\$49 x	=
V: Nuclear Waste Management	\$50 x	=
W: Gas-Phase/Surface Chem. in Elec. Mats.	\$49 x	=
Y: MOCVD of Electronic Ceramics	\$47 x	=

Sub-Total _____
6% Sales Tax (PA residents only) _____
TOTAL _____
Enter total here and in box at right

C JOURNAL OF MATERIALS RESEARCH 1994

Subscription at Member Rate (one per registrant)..... \$50 = **TOTAL \$** _____
Enter total here and in box below.

To preregister, check each short course/tutorial in which you wish to enroll. If you register for two or more short course days, you may attend the technical meeting for only \$100; just complete the Meeting Preregistration section at left. At-meeting short course and tutorial registrations will be \$25 higher. Cancellations received by November 19, 1993, will be refunded less a service charge of \$25. There is no charge for transferring from one short course to another or from one tutorial to another.

D SHORT COURSES

Facilities registering three or more persons at the same time in one MRS Short Course receive a 20% discount for the third and all additional persons.

- C-01 Modern Materials Analysis Techniques\$795
- C-03 Surface and Thin Film Analysis\$615
- C-14 STM and AFM\$395
- C-20 Optical Characterization of III-V SC Epitaxial Layers\$395
- C-23 X-Ray Diffraction Characterization of Semiconductor Wafers\$395
- C-29 Practical Electron Diffraction\$595
- C-30 Characterization and Properties of Inorganic Thin Films\$595
- C-31 Near-Field Scanning Optical Microscopy\$395
- F-02 Plasma Etching\$395
- F-10 Ion Beam Assisted Deposition\$395
- P-02 Molecular Beam Epitaxy\$395
- P-04 Film Formation, Adhesion, and Surface Preparation\$395
- P-10 MOCVD and ALE\$395
- P-25 CVD for Metallization Applications\$395
- P-26 Metallization for Devices, Circuits & Packaging/VLSI & ULSI\$395
- M-15 Biological Processes for Materials Synthesis\$395
- M-16 Ferroelectric Thin Films\$450
- M-19 Wide Bandgap II-VI SC Microstructures\$395
- T-05 Plasma Technology for Thin Film Deposition\$395

Combined Tuition Fees

Any combination of T-05, P-04, F-02, C-30, and F-10 that results in 2, 3, 4, and 5 course days: \$595, \$795, \$995, and 1,195, respectively. Any combination of C-23, P-10, P-02, and C-20 that results in 2, 3, and 4 course days: \$595, \$795, and \$995, respectively.

E TUTORIALS

- TP-1 Transfer of Technology from R&D to Manufacturing\$115
- TP-2 Fractals in Materials Science\$ 75
- TP-3 Fullerenes\$ 75
- TP-5 Light-Emitting Porous Silicon\$ 75
- TP-6 Design & Processing of Materials by Biomimetics\$ 75

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

PAYMENT OPTIONS

- Payment is enclosed. Make checks payable, in U.S. dollars, to Materials Research Society. Payment from outside the U.S. should be drawn on a correspondent U.S. bank.
- Credit card payment: Visa MasterCard Diners Club AmEx
- Card number _____ Exp. date _____
- Signature _____

Registrations received without payment **will not be processed.**

- A** Meeting Preregistration (from left) \$ _____
- B** Proceedings (from left) \$ _____
- C** Journal of Materials Research (from above) \$ _____
- D/E** Short Courses/Tutorials (from above) \$ _____
- TOTAL FEES PAID \$** _____

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

■ The Materials Research Society wishes to comply with the Americans with Disabilities Act by taking those steps necessary to ensure that no individual with a disability is excluded from participation in MRS meetings. If you have a disability requiring accommodation at the 1993 Fall Meeting, please attach a written description of your needs.

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