Materials Research Society meets in Boston

Highlights include 23 technical symposia, a forum on NRC's materials-science and engineering study, the Von Hippel Award and the society's largest equipment exhibit.

The Materials Research Society will hold its fall meeting in Boston on 1–4 December, at the Boston Marriott and Westin Hotels; both hotels are located near Copley Place. Registration will be held at the Marriott on Sunday, 30 November, from 4 pm to 9 pm, Monday from 7 am to 7 pm, Tuesday through Thursday from 7:30 am to 5 pm, and Friday from 7:30 to noon.

Twenty-three technical sessions have been organized:

- Beam–solid interactions and transient processes
- Photon-, beam- and plasma-stimulated chemical processes at surfaces
- Science and technology of microfabrication
- Interfaces, superlattices and thin films
- Advanced structural ceramics
- Scattering, deformation and fracture in polymers
- Science and technology of rapidly quenched alloys
- High-temperature ordered intermetallic alloys
- Characterization of defects in materials
- Physical and chemical properties of thin metal overlayers and alloy surfaces
- Graphite intercalation compounds
- Scientific basis for nuclear-waste management
- Microstructural development during hydration of cement
- Fly ash and coal conversion byproducts
- Materials processing in the reduced-gravity environment of space
- Optical-fiber materials and properties
- Diluted magnetic (semimagnetic) semiconductors
- Materials for infrared detectors and sources
- Superconducting materials
- Solitons in materials science
- Fractal aspects of materials
- Multicomponent ultrafine microstructures
- Frontiers of materials research.

Congressman George E. Brown Jr of California will speak on US science and technology policy for the 1990s at the plenary session Monday evening. Poster sessions are scheduled for Tuesday and Thursday. In addition, the society will hold a forum on the NRC materials-science and engineering study on Thursday and Friday.

Award ceremony

On Wednesday evening the society will present its Von Hippel Award to Minko Balkanski (Université Pierre et Marie Curie, Paris, France) "in recognition of his seminal contributions to the spectroscopies of semiconducting and other materials with consequent understanding of bulk and surface structure and excitations, of his extensive contributions to interdisciplinary, international materials-research collaborations and of his extraordinarily productive investment in the education and training of materials scientists."

Balkanski received his ENSIB (1951) and his doctorate (1954) from the University of Paris. He held research positions at the Fritz-Haber-Institut of the Max-Planck Gesellschaft, Berlin (1954–55), the Massachusetts Institute of Technology (1955–70) and the Laboratoire de Physique of the École Normale Supérieure (1955). At MIT Balkanski demonstrated that energy transport in photoexcited semiconductors occurs through exciton diffusion. Balkanski became Maître de Recherche at CNRS in 1958, an assistant professor on the science faculty of the University of Paris in 1960, and head of the faculty's department of solid-state physics in 1966. In addition, he served

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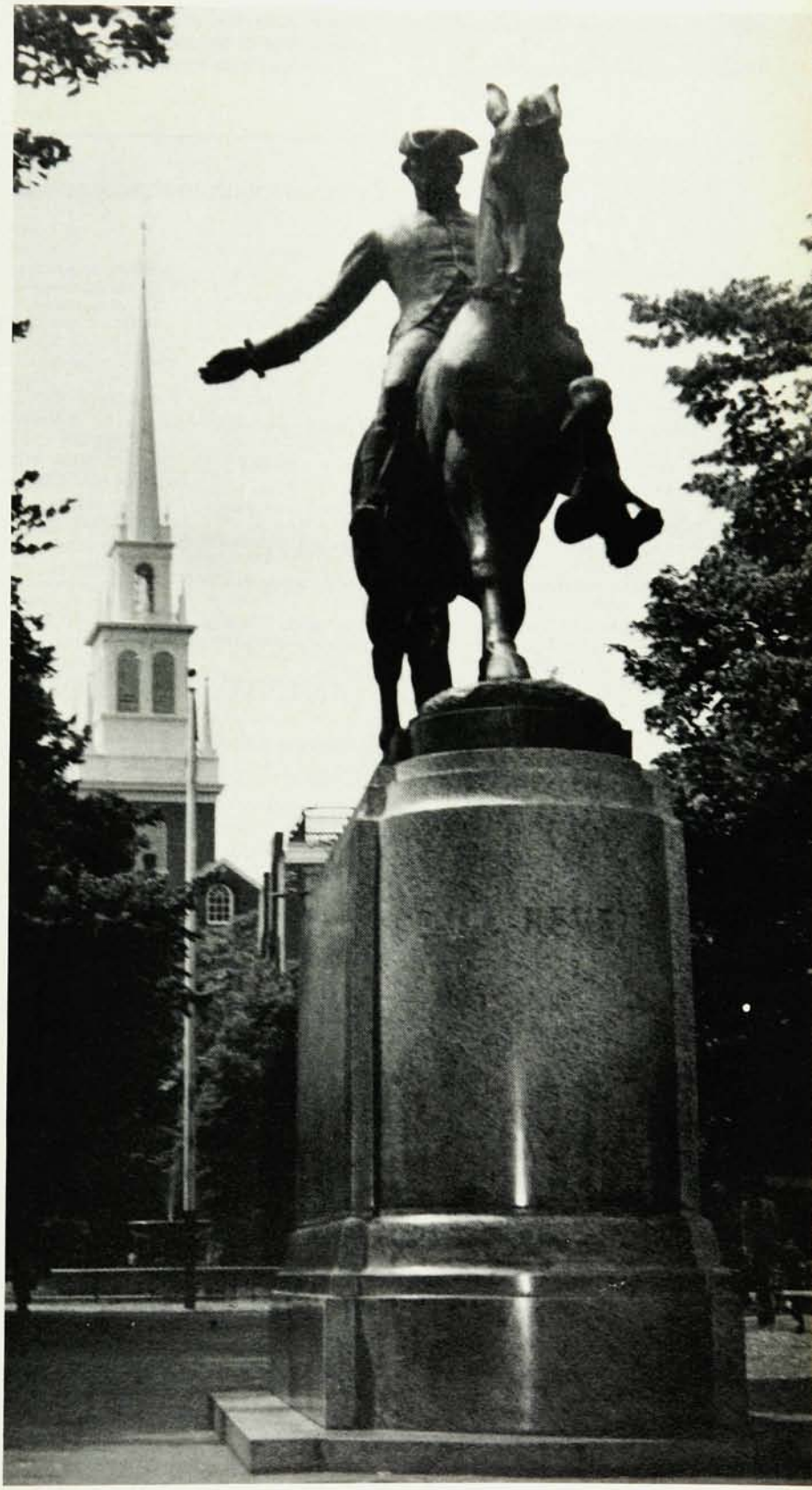

as director of the solid-state physics lab at the Université Pierre et Marie Curie from 1960 until 1985. In the early 1960s he made pioneering studies of surface phenomena with Pierre Aigrain and C. Sebenne, and began studies of optical pumping in semiconductors, phonon spectroscopy and band structure with other collaborators. Later Balkanski turned his attention to band structures of narrow-gap semiconductors, superlattices, ferroelectric semiconductors and electron–phonon interactions. He and R. F. Wallis wrote *Many-Body Aspects of Solid State Spectroscopy* (Knopf, 1986). More recently he and his group have studied properties of amorphous silicon and gallium arsenide, time-resolved spectroscopic techniques for studies of nonlinear optical effects, and atomic motion in solids. In addition to his research achievements, Balkanski, now a professor of physics at the Université Pierre et Marie Curie, is credited with training many of France's leading materials-science researchers.

Short courses, other services

The society will offer the following short courses at the meeting:

Liquid-phase epitaxy techniques
Molecular-beam epitaxy
Vapor-phase epitaxy
Film formation, adhesion and surface preparation
Properties of films and coatings
Films and coatings for science and technology
Plasma etching for microelectronic fabrication
Plasma-enhanced chemical vapor deposition of thin films for microelectronics
Safety considerations in semiconductor plasma processing
Modern materials-analysis techniques
Introduction to transmission and analytical electron microscopy
Surface and thin-film analysis
Application of reflection electron diffraction to epitaxial growth
Deep-level transient spectroscopy
Amorphous semiconductor materials and devices
Ion-beam processes for materials modification
Ion-implantation diffusion, defects and

Sessions with invited papers

Monday, 1 December

morning

Fundamentals of beam–solid interactions. *B. R. Appleton; J. E. Greene; H. Kurz; R. M. Osgood*

Transformation analysis in advanced structural ceramics. *B. C. Muddle*

Introduction to small-angle scattering techniques in polymers. *R. S. Stein; G. D. Wignall; D. W. Schaefer; R. J. Roe*

New developments in the formation and processing of amorphous metal alloys. *L. Schultz; R. S. Henderson*

Atomic defects and aggregates in materials. *J. B. Cohen; P. Hautojärvi; T. Wichert*

Long-term projection of materials interactions in nuclear-waste management. *T. C. Johnson, K. Chang, T. L. Jungling, L. S. Person, C. H. Peterson, J. Vogelwede, E. Wick; A. Berusch, E. Gause; L. O. Werme, B. Grambow; J. T. Fong; N. E. Bibler, C. M. Jantzen; R. C. Ewing*

Environmental considerations for fly ash and coal conversion byproducts. *D. Rai, C. C. Ainsworth, J. M. Zachara, T. R. Garland*

Materials processing in the reduced-gravity environment of space. *T. Wang; M. E. Glicksman, E. R. Rubinstein, M. E. Selleck, T. A. Lograsso, R. C. Hahn, E. A. Winsa*

Magnetic properties of $A^{II}_{1-x}Mn_xB^{VI}$ DMS. *P. A. Wolff, L. R. Ram-Mohan; R. L. Aggarwal; T. M. Giebultowicz, T. M. Holden; S. von Molnar*

III–V-based infrared materials. *M. B. Panish*

Solitons in materials science. *D. K. Campbell; J. A. Krumhansl; G. B. Olson*

afternoon

Laser modification of materials. *E. E. Marinero*

Laser-assisted deposition of metals. *G. S. Higashi, G. E. Blonder, C. G. Fleming*

Laser-induced etching of Si and SiO_2. *M. Hirose, T. Ogura*

Transformation plasticity and toughness in advanced structural ceramics. *J. Lankford; P. E. R. Morel, I.-W. Chen; M. Rühle*

Scattering from multicomponent polymer systems. *E. W. Fischer; C. C. Han; T. P. Russell, H. Ito, G. D. Wignall; W.-L. Wu, B. J. Bauer; J. S. Lin, L. D. Hulett, J. M. Dale, T. M. Rosseel, D. Warner, B. Stoll, J. F. Fellers*

Structure and properties of microcrystalline alloys. *N. J. Grant; S. K. Das*

Line defects and arrays in materials. *J. C. H. Spence, R. Graham, H. Alexander, N. Yamamoto, D. Shindo; J. C. Bilello; J. Th. M. De Hosson, O. Kanert*

Nuclear-waste-form performance—spent fuel. *V. M. Oversby*

Materials processing in the reduced-gravity environment of space. *H. C. Gatos, J. Lagowski; J. L. Margrave*

Optical properties and spin–spin exchange interaction in DMS. *A. K. Ramdas, S. Rodriguez; D. D. Awschalom; A. V. Nurmikko, L. A. Kolodziejski, R. L. Gunshor; J. Kossut*

Materials requirements for infrared detectors, imagers and sources. *M. A. Kinch; J. L. Schmit; K. Zanio, K. Hay; D. L. Partin*

Solitons in materials science. *G. R. Barsch; L. E. Tanner*

Tuesday, 2 December

morning

Rapid solidification processes. *P. S. Peercy; M. Aziz; W. J. Boettinger; A. E. Berkowitz, J. L. Walter*

Etching of III–V compounds. *C. I. H. Ashby*

Surfaces and superlattices. *J. E. DeMuth; R. C. Jaklevic, W. J. Kaiser; M. Grimsditch; H. Fritsche; B. Vojak, F. Chambers*

Mechanical properties and microstructures of zirconia-toughened ceramics. *K. Tsukuma, T. Takahata, H. Yamamura; F. F. Lange, D. B. Marshall, J. R. Porter*

Scattering from block copolymers and model systems. *H. Benoit, G. Hadziioannou; R. J. Roe, S. Nojima; X. Quan, J. Owens, W.-L. Wu, J. T. Koberstein; F. S. Bates, W. C. Koehler, G. D. Wignall; G. Hadziioannou, G. ten Brinke; Y. S. Ding, R. A. Register, S. L. Cooper; K. P. McAlea, J. M. Schultz, G. D. Wignall, K. H. Gardner*

Ordering behavior and theory of high-temperature ordered intermetallic alloys. *D. P. Pope; G. M. Stocks, D. M. Nicholson, F. J. Pinski, D. D. Johnson, B. L. Gyorffy; R. W. Cahn*

Interfaces in materials. *K. L. Merkle, M. R. Fitzsimmons; S. L. Sass; J. L. Batstone, J. M. Gibson, A. E. White, K. T. Short, R. T. Tung, A. F. J. Levi*

Metal corrosion in nuclear-waste management. *M. B. McNeil*

Pore structure of hydrated cement. *L. Parrott*

Materials processing in the reduced-gravity environment of space. *C. A. Lundquist; R. J. Bayuzick*

Lead salts, Fe alloys and new DMS materials. *G. Bauer; A. Mycielski; A. Franciosi*

Issues in bulk crystal growth of infrared materials and structure–property relations. *K. J. Bachmann; N. Duy; A. Sher, M. A. Berding, S. Krishnamurthy, M. van Schilfgaarde, A.-B. Chen, W. Chen*

Solitons in materials science. *R. Bruinsma, A. Zangwill; P. F. Miceli, H. Zabel, J. E. Cunningham; J. P. Hirth*

Fractal aspects of materials. *T. A. Witten; G. Deutscher, Y. Lareah; H. E. Stanley*

afternoon

Thermodynamics and kinetics of laser–solid interactions. *J. J. P. Bruines, R. P. M. van Hal, B. H. Koek, M. P. A. Viegers, H. M. J. Boots*

Photon, ion and electron effects on surface chemistry. *J. T. Yates Jr, M. J. Bozack, L. Muehlhoff, W. J. Choyke*

Surfaces and superlattices. *G. A. Mourou; K. E. Newman; Y. Bruynseraede; C. M. Falco; E. M. Gyorgy; M. Schneider*

Mechanical behavior of reinforced ceramic composites. *D. B. Marshall, B. N. Cox, A. G. Evans*

Scattering and deformation in polymers. *H. G. Zachmann, S. Röber, R. Gehrke, J. Clemens; J. M. Schultz; W. W. Adams, S. J. Bai, H. H. Chuah, S. Kumar; R. Ullman; J. B. Hayter*

Magnetic properties of rapidly quenched metals. *R. C. O'Handley*

Microstructures in high-temperature ordered intermetallic alloys. *P. M. Hazzledine, P. Hirsch; D. D. Sieloff, S. S. Brenner, M. G. Burke*

Surfaces. *J. A. Golovchenko; D. J. Smith; K. S. Liang, G. J. Hughes, P. M. Eisenberger*

Modeling the development of microstructure during hydration of cement. *H. M. Jennings*

Utilization of fly ash and coal conversion byproducts. *R. M. Majko*

Materials processing in the reduced-gravity environment of space. *F. Jelinek; C. E. Bugg*

Theory, structure and transport of DMS. *H. Ehrenreich, K. C. Hass, N. F. Johnson, B. E. Larson; Y. Shapira; J. K. Furdyna*

Solitons in materials science. *A. J. Heeger*

Fractal aspects of materials. *M. F. Shlesinger, J. Klafter, B. J. West; G. Daccord, R. Lenormand, Z. I. Molina la Chazotte; J. S. Langer; M. E. Glicksman, S. P. Marsh; A. J. Hurd*

Wednesday, 3 December

morning

Phase transformations and diffusion processes in beam–solid interactions. *E. Nygren, J. S. Williams, R. G. Elliman, G. L. Olson, J. C. McCallum*

Etching mechanisms. *H. F. Winters, D. Haarer*

Fracture and deformation behavior in ceramic composites. *P. Angelini, P. F. Becher, W. Mader; A. G. Evans*

rapid thermal processing
Microelectronics packaging: materials, processing and reliability
Introduction to ceramic and metal matrix composites
Sol–gel processing of glass semiconductors
Fractals in materials science
Environmental degradation of materials
Experimental strategies for optimizing process variables.

More than 100 manufacturers, publishers and laboratories will participate in the annual equipment exhibit, making it the society's largest display of analytical and processing equipment. The show will be open for viewing on Tuesday and Wednesday from 9 am to 5 pm, and on Thursday from 9 am to 2 pm.

The society will offer a job placement service for MRS members and conference attendees from 9 am to 5 pm, Tuesday through Thursday, in the Marriott.

—MARGARET MARYNOWSKI □

Scattering, orientation, crazing and fatigue. *K. Saijo, T. Hashimoto; R. J. Lo, A. Hill, R. S. Porter, R. S. Stein; D. T. Grubb; L. L. Berger, A. C.-M. Yang, E. J. Kramer; H. R. Brown, E. J. Kramer, R. A. Bubeck*

Magnetic properties of rapidly quenched metals. *J. J. Croat; A. M. Kadin, R. W. McCallum, J. E. Keem, G. B. Clemente; F. E. Luborsky*

Mechanical behavior of high-temperature ordered intermetallic alloys. *O. Izumi, T. Takasugi; J. K. Tien, H. Krumb; E. M. Schulson, I. Baker, H. J. Frost*

Structure and electronic properties of alloy surfaces. *H. L. Davis, J. R. Noonan*

Electronic structure of graphite intercalation compounds. *D. P. DiVincenzo; S.-I. Tanuma, Y. Yosida*

Structure and phase transitions of graphite intercalation compounds. *F. Rousseaux, G. Besson, C. Tchoubar, D. Guerard; S. C. Moss, G. Reiter*

Reactions and microstructure in cement hydration and fly ash and coal conversion byproducts. *F. P. Glasser, S. Diamond, D. M. Roy; M. Regourd*

Optical polymer fibers and coatings. *L. L. Blyler Jr, K. A. Cogan, J. A. Ferrara; P. C. Schultz*

Frontiers of materials science in infrared DMS materials. *R. L. Gunshor, L. A. Kolodziejski, N. Otsuka, S. Datta, A. V. Nurmikko; T. C. McGill, T. J. Watson Sr; J. F. Schetzina; M. Pessa; S. J. C. Irvine, J. B. Mullin; J. T. Cheung*

Barriers for superconducting materials—fabrication, physics and diagnostics. *T. M. Klapwijk; M. R. Beasley; J. G. Adler; J. Halbritter*

Fractal aspects of materials. *S. R. Nagel; K. D. Keefer; D. R. Nelson*

afternoon

Ion mixing and implantation processes. *R. S. Averback, S.-J. Kim, T. Diaz de la Rubia*

Applications of selective-area photochemistry. *T. W. Sigmon*

Interfaces, superlattices and thin films. *D. J. Wolford; B. A. Bunker; J. L. Erskine; W. G. Lagally; S. A. Lyon; J. H. van der Merwe*

Deformation in polymers. *R. W. Rendell, K. L. Ngai, A. F. Yee; S. Matsuoka; S. L. Hsu; A. F. Yee; G. B. McKenna, J. M. Crissman*

Mechanical behavior of high-temperature ordered intermetallic alloys. *N. S. Stoloff, S. J. Choe, G. E. Fuchs, A. K. Kuruvilla; I. Jung, M. Rudy, G. Sauthoff; M. Yamaguchi, Y. Umakoshi, T. Yamane*

Structure and electronic properties of thin metal overlayers. *M. W. Ruckman, M. Strongin, X. Pan; J. E. Houston; H. Metiu, R. M. Martin; F. M. Hoffman, J. Paul*

Magnetic structure of graphite intercalation compounds. *M. Matsuura, T. Yonezawa, Y. Murakami*

Domains and kinetics of graphite intercalation compounds. *H. Miyazaki; D. M. Hwang*

Nuclear-waste performance—glass. *B. C. Bunker*

Relationships between microstructure and engineering properties in cement hydration. *E. R. Fuller Jr, P. L. Swanson; P. L. Pratt*

Oxide glasses—processing and characterization. *D. A. Thompson*

Tunneling in epitaxial NbN structures. *K. Hamasaki, T. Komata, T. Yamashita, S. Nagaoka; F. Shinoki; J. Talvacchio*

Superconducting materials and devices—Nb, Ta and NbN. *S. Morohashi*

Fractal aspects of materials. *R. J. Birgeneau; A. P. Malozemoff; P. Bro*

Synthesis of multicomponent ultrafine microstructures. *H. Gleiter*

Thursday, 4 December

morning

Fundamentals of rapid thermal annealing. *J. F. Gibbons*

Photon-, beam- and plasma-stimulated chemical processes at surfaces, and science and technology of microfabrication. *D. J. Ehrlich; Y. Horiike, R. Yoshikawa, M. Nakase, H. Okano, H. Komano, T. Takigawa; A. F. Bernhardt, B. M. McWilliams, F. Mitlitsky, J. C. Whitehead; A. Wagner*

Fracture and fatigue in polymers. *K. Friedrich; A. S. Argon, R. E. Cohen, O. S. Gebizlioglu, E. Piorkowska-Galeska; A. Moet; W. L. Bradley, R. Jones Jr; M. T. Takemori*

Design and microstructural control of high-temperature ordered intermetallic alloys. *A. J. Taub, C. L. Briant; C. T. Liu; C. C. Koch; K. Vedula; M. G. Mendiratta, S. K. Ehlers*

Structure and chemistry of thin metal films. *J. M. White; B. E. Koel, D. L. Neiman*

Characterization of infrared materials. *W. J. Takei; F. A. Ponce*

Potassium hydride ternaries and molecular diffusion. *T. Enoki, K. Imaeda, H. Inokuchi, S. Miyajima, T. Chiba, M. Sano; A. Magerl*

Microstructure of hydrated cement. *G. W. Groves*

Heavy-metal halide glasses. *M. G. Drexhage*

Superconducting materials for novel devices. *M. Igarashi; S. I. Raider; A. W. Kleinsasser*

Fractal aspects of materials. *J. M. Drake, P. Levitz; D. J. Wilkinson; J. Fripiat, H. Van Damme; A. Nur; D. Avnir*

Multicomponent ultrafine microstructures and properties. *H. Fujimori*

afternoon

Growth and characterization of silicon-on-insulators materials. *L. N. Pfeiffer*

Nanophysics. *W. J. Skocpol*

Micromechanics. *K. Peterson; G. Kaminsky*

Molecular aspects of deformation and fracture in polymers. *H. H. Kausch; R. P. Wool; D. N. Theodorou, P. L. Ludovice, U. W. Suter; Y. Termonia, P. Smith; B. Christ, B. A. Hess, J. Perram, J. R. Sabin*

Metallurgical properties of high-temperature ordered intermetallic alloys. *C. L. White, A. Choudhury; G. H. Meier*

Structure and properties of thin metal overlayers and alloy surfaces. *P. J. Feibelman; D. M. Zehner, G. R. Gruzalski*

Charge transfer in graphite intercalation compounds. *P. C. Eklund*

Graphite fibers. *L. S. Singer*

Influence of chemical admixtures on the microstructure of hydrated cement. *M. Regourd; J. D. Birchall*

Nonsilicate lightguide materials. *J. W. Fleming*

Multilayers and interfaces in superconducting materials. *I. K. Schuller; L. H. Greene; J. E. Tkaczyk, P. M. Tedrow*

Low-carrier-density superconductors. *K. Kitazawa; M. Gurvitch; T. H. Geballe; C. W. Chu, P. H. Hor, R. L. Meng, D. S. Tang, C. Z. Wu, Z. X. Zhao, T. Overfeld, R. Bayuzick*

Epitaxy of Nb and its properties. *G. Oya; S. A. Wolf*

Fractal aspects of materials. *J. E. Martin; D. S. Cannell; L. Leibler; P. Meakin*

Multicomponent ultrafine microstructures and properties. *C. L. Chien; P. Sheng*

Friday, 5 December

morning

Nanofabrication. *M. Issacson*

Reactions at thin metal interfaces. *J. H. Weaver; J. C. Hamilton, R. J. Anderson, G. W. Foltz*

Transport in and optical properties of graphite intercalation compounds. *E. McRae, J.-F. Mareche, A. Herold*

Ternary graphite intercalation compounds and phonons. *P. Lagrange*

Defects in optical fibers. *H. Kawazoe*

Epitaxial growth. *T. Tung, M. H. Kalisher, A. P. Stevens, P. E. Herning; E. R. Gertner; J. B. Mullin, J. Giess, S. J. C. Irvine*

Superconducting-materials synthesis problems. *R. H. Hammond; J. R. Gavaler; D. O. Welch, M. Suenaga*

Unusual T_c and resistivity results. *D. J. Scalapino*

afternoon

Microfabrication of VLSI materials. *A. K. Sinha*

Electronic structure of graphite intercalation compounds. *R. S. Markiewicz; D. Davidov, D. Vaknin, I. Bleish, H. Selig*

Epitaxial growth of materials for infrared detectors and sources. *J.-P. Faurie; J. W. Cook Jr; S. R. Jost, V. S. Meikelham; B. W. Ludington*