

APS MEETS IN CINCINNATI

The annual meeting is one of the central events on the calendar for the world's condensed matter, chemical, polymer, biological and materials physics communities.

The March meeting of The American Physical Society will be held during the week of 18–22 March at the Cincinnati Convention Center and the nearby Hyatt Regency Hotel. Though the number of invited papers that will be presented at the meeting, roughly 420, is not substantially different from last year's total, the number of contributed papers has risen by about 400 over the 3500 that were given last year.

As at past March meetings, the APS division of condensed matter physics will account for the largest number of papers. The second largest number will come from a new division, the division of materials physics, which was formed last fall from the materials physics topical group. In addition to these two divisions, those of biological physics, chemical physics, high-polymer physics, fluid dynamics, materials physics and the history of physics will sponsor symposia.

Two topics that account for much of the research to be reported at the Cincinnati meeting are semiconductor physics and high- T_c superconductivity. For instance, the increased interest in optical and electronic behavior in lower-dimensional compound semiconductors and the recent flurry of research exploring the fractional quantum Hall effect by optical means are evident in the schedule.

The dramatic surge in high- T_c research that began at the 1987 March meeting shortly after the discovery by Georg Bednorz and Alex Müller seems to have leveled off. However, as Paul Fleury, past chairman of the division of condensed matter physics, notes, it has "leveled off at a fairly high level." Many of this year's high- T_c papers will focus on vortices and vortex dynamics in type-II superconductors.

This year's schedule shows a marked increase in papers on such topics as chaos, amorphous materials and localization. One particular symposium will combine two of the decade's most sensational topics in condensed matter physics, high- T_c superconductivity and scanning tunneling microscopy. Speakers at that gathering will discuss the use of STM and other techniques to image magnetic flux lattices.

A special symposium at 7:30 Wednesday evening, "Materials and the National Agenda," will follow up on last year's special session at which the National Research Council report "Materials Science and Engineering for the 1990s" was discussed. Inspired by the growing concern with US economic and technological competitiveness, the materials science community has in the past year worked to formulate recommenda-

tions for legislation that would help strengthen materials science in the US. At the special symposium, Albert Narath, president of Sandia National Laboratories; Michael Schluter, chairman of the strategic planning committee for the division of condensed matter physics; William Appleton, associate director of Oak Ridge National Laboratory; and William Phillips, associate director for industrial technology in the White House Office of Science and Technology Policy, will discuss this yearlong effort to target national priorities in materials science.

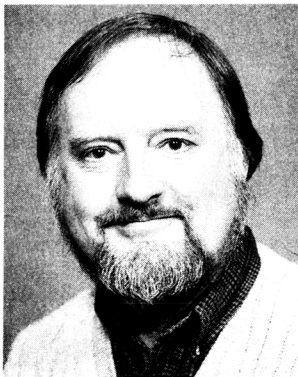
The division of materials physics, in conjunction with the divisions of condensed matter physics and chemical physics, will sponsor a postdeadline session on C_{60} and related structures, to be held Monday evening at 7:30. That session will feature papers by Richard Smalley, who was one of the first to recognize this novel, soccer-ball-shaped carbon molecule, and Donald R. Huffman, who in the past few months has figured out how to make C_{60} in quantities large enough that its properties can be studied.

The APS committee on applications of physics will offer eight half-day tutorials on the Sunday preceding the meeting. The tutorials will cover the ultrafast physics of semiconductors, the science and applications of poly-

Watt W. Webb



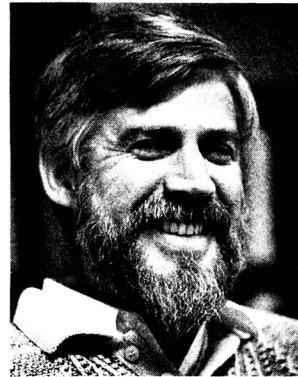
Neville V. Smith



Jürg Fröhlich



Thomas C. Spencer



mer-dispersed liquid crystals, electronic structure in transition-metal oxides, synchrotron radiation in the 1990s (resonant scattering, time-resolved scattering and imaging), computational advances in condensed matter physics, limits and challenges in electronics, methods and applications of nanofabrication, and the practical use of space groups for solid-state scientists. Admission to each tutorial will cost \$60. Also, on the weekend prior to the meeting, the division of high-polymer physics will give a two-day short course, "Polymer Surfaces and Interfaces," which will cost \$250 to attend.

Awards session

At 5:30 Monday evening, in the Buckeye Room of the Hyatt Regency, APS will present 11 of its annual awards for outstanding work.

Watt W. Webb of Cornell University will receive this year's Biological Physics Prize. Webb is cited for "his seminal work on the biophysics of cell membranes and cell motility, for his dedicated training of future generations of critical biophysicists, and for his longstanding contributions to the biophysics community."

Throughout his career Webb has developed physical concepts for instrumentation to study specific biological systems and has applied his methods to extract new information. He has made particularly significant advances in the fundamental biophysics of membranes and cells. He and his colleagues devised fluorescence correlation spectroscopy and developed a practical and quantitative method of fluorescence photobleaching recovery, which yields basic information about cell membranes. In a well-known set of experiments, he showed that the cytoskeleton and membrane matrix restrict protein diffusion in membranes. In addition to doing his research, Webb has served in many advisory and editorial positions in biophysics. Most recently

he was chairman of the APS division of biological physics. As the prize citation suggests, Webb's former students, postdocs and collaborators have become major contributors in many areas of biological physics.

Webb received his ScD in materials science in 1955 from MIT. He then returned to Union Carbide Research Laboratories in Niagara Falls, New York, where he had worked before going to graduate school. At Union Carbide he rose to become the assistant director of research. In 1961 Webb became an associate professor of applied and engineering physics at Cornell University. He became a professor of applied physics there in 1965, and was director of the school of applied and engineering physics from 1984 to 1989.

Neville V. Smith of AT&T Bell Laboratories has been named the winner of the 1991 Davisson-Germer Prize for his "key insights and initiatives in the development of momentum-resolved spectroscopies for crystals and their surfaces."

In 1974 Smith, with Francis J. DiSalvo Jr and the late Morton Traum, introduced the use of angle-resolved photoemission spectroscopy for band mapping. In subsequent experiments with Jack Rowe and Poul Larsen, Smith demonstrated the usefulness of this new method for studying surface states and adsorbate systems. Today, angle-resolved photoemission is one of the basic tools used to study electronic structure and atomic arrangement at surfaces. In recent work with Phillip Woodruff, Smith has developed momentum-resolved inverse photoemission and has carried out the first band mapping using that technique.

Smith got his PhD in solid-state physics from the University of Cambridge in 1967. In 1969 he joined the technical staff at Bell Labs, where from 1978 to 1981 he was head of the condensed-state physics research department.

Jürg Fröhlich of the Swiss Federal Institute of Technology (ETH) in Zurich and Thomas C. Spencer of the Institute for Advanced Study in Princeton, New Jersey, will share the 1991 Dannie Heineman Prize for Mathematical Physics, which is administered jointly by APS and the American Institute of Physics. Fröhlich and Spencer are cited for "their joint work in providing rigorous mathematical solutions to some outstanding problems in statistical mechanics and field theory."

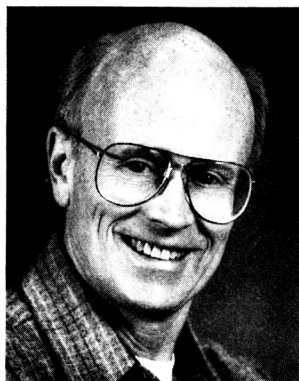
In an ongoing collaboration that started more than ten years ago, Fröhlich and Spencer have derived a number of important results in mathematical physics. They showed the existence of phase transitions in spin systems and field theories with continuous symmetry, and proved localization for disordered and quasi-periodic systems. They also gave a proof of the Kosterlitz-Thouless transition for Coulomb systems.

Fröhlich received his PhD in theoretical physics in 1972 from ETH. In 1974 he became an assistant professor of mathematics at Princeton University, where he remained until 1977. In 1978 he took the position of *professeur permanent* at the Institut des Hautes Etudes Scientifiques near Paris, and in 1982 he accepted a professorship of physics at ETH.

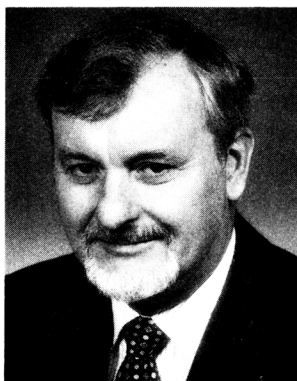
Spencer received his PhD in mathematics in 1972 from New York University. In 1975 he became an associate professor of mathematics at Rockefeller University, and in 1978 he was appointed professor of mathematics at Rutgers University. From 1980 to 1986 Spencer was a professor in NYU's Courant Institute of Mathematical Sciences. Since 1986 he has been a professor in the school of mathematics at the Institute for Advanced Study.

Kenneth M. Evenson of the National Institute for Standards and Technology will receive the 1991 Earle K. Plyler Prize. Evenson is

Kenneth M. Evenson



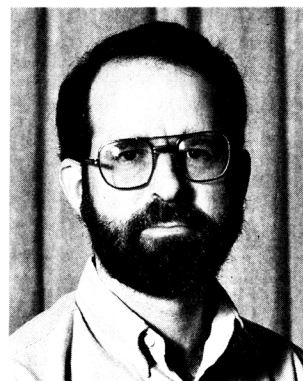
Albert Narath



Edwin L. Thomas



Francis J. DiSalvo Jr



cited for "the invention and development of important techniques now commonly employed in molecular spectroscopy, including microwave-optical double resonance, laser magnetic resonance and tunable far-infrared laser spectroscopy, and their employment for the study of important transient molecules."

Using microwave-optical double resonance, Evenson performed one of the first high-resolution (prelaser) experiments on the CN radical. He invented laser magnetic resonance, a method that enabled him to carry out the first high-resolution detections of many free radicals, and he helped develop methods for using the technique to measure accurately the rate constants of important atmospheric chemical reactions. Recently Evenson found a way to create tunable far-infrared radiation from the difference frequency between two CO₂ lasers. Evenson also has found methods for measuring the frequencies of continuous-wave lasers using metal-insulator-metal diodes; this work resulted in a hundred-fold improvement in the accuracy of the measurement of the speed of light, and brought about the redefinition of the meter, which fixed the speed of light at an exact value.

Evenson received his PhD in physics from Oregon State University in 1963. He joined the National Bureau of Standards (now NIST) as a physicist that year, and he retains that position.

Albert Narath is the winner of the 1991 George E. Pake Prize for his "effective leadership of research and development at Sandia National Laboratories in defense, energy and economic competitiveness, and for the use of innovative nmr techniques for the study of magnetic impurities in metals."

Much of Sandia's work on materials, solid-state science and engineering science was started under Narath's leadership. As vice president of research he helped establish Sandia's

prominent program in pulsed-power sciences and inertial confinement fusion. He also guided Sandia into areas of energy research such as photovoltaic generation, development of the solar thermal central receiver, geosciences and basic energy sciences. Recently Narath has emphasized issues of industrial competitiveness and has focused Sandia's resources on cooperative arrangements in areas that are Sandia's technical strengths. Early in his career, before he became a full-time research manager, Narath used nmr to advance fundamentally the understanding of magnetism and electronic structure in metals.

Narath got his PhD in physical chemistry from the University of California, Berkeley, in 1959. That same year he joined Sandia, where he became manager of the physical sciences research department in 1964. In 1968 he became director of solid-state sciences research, in 1973 he was named vice president of research, and in 1982 he became executive vice president. In 1984 Narath went to AT&T Bell Laboratories as vice president of government systems, and in 1989 he returned to Sandia as president of the laboratories. Narath will give his Pake Prize lecture as part of the special session on materials and the national agenda.

Edwin L. Thomas of MIT has been named winner of the 1991 High-Polymer Physics Prize for his "outstanding contributions to elucidation of microstructure in polymeric materials through development and application of innovative electron microscopic techniques."

Polymers, because they tend to be sensitive to electron beams, represent a challenge to electron microscopists. By developing new experimental and analytical approaches, Thomas has been able to extract valuable new information on several aspects of polymer structure. He has used high-resolution transmission electron microscopy to characterize defects in

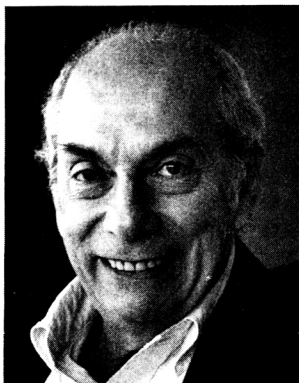
polymer crystals and has studied morphological changes that take place when a polymer is deformed. He has also used phase-contrast imaging to help settle controversial issues relating to order in amorphous polymers. In current work, Thomas and his collaborators are doing unique studies of star diblock copolymers, in which they have shown that the intermaterial dividing surface in block copolymers corresponds to certain surfaces of constant mean curvature.

Thomas received his PhD in materials science in 1973 from Cornell University. From 1973 to 1977 he was an assistant professor of chemical engineering and materials science at the University of Minnesota. In 1977 he joined the polymer science and engineering department at the University of Massachusetts, Amherst; he was appointed professor at Amherst in 1982. In 1989 Thomas became the Morris Cohen Professor of Materials Science and Engineering at MIT.

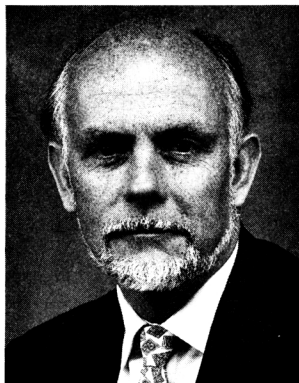
Francis J. DiSalvo Jr of Cornell University and Frederic Holtzberg of IBM's Thomas J. Watson Research Center will share the 1991 International Prize for New Materials. The two are cited for "the discovery and studies of new materials characterized by strong electron correlations and novel excitations." Although DiSalvo and Holtzberg have concentrated on different classes of materials, both employ methods that are at the frontier between chemistry and physics to synthesize materials with novel properties.

Early in his career, while studying layered and intercalated materials, DiSalvo discovered high-energy-density materials for battery cathodes based on lithium insertion and had a role in the discovery of charge-density waves. Since then he has discovered several novel materials, such as ionic conductors that conduct by anion motion, and he has found a number of unusual material properties, such as the dynamic high-spin to low-spin

Frederic Holtzberg



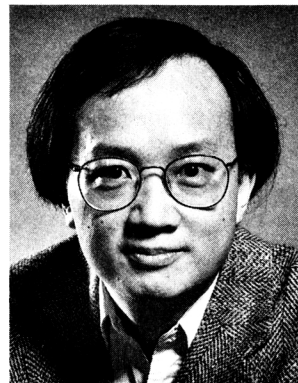
Richard E. Smalley



Kenneth S. Schweizer



Patrick A. Lee



transition of iron in Fe-Ta-S and the localization of electrons by impurities in materials that carry charge-density waves. In recent work DiSalvo has produced new Chevrel phases of solids that contain transition-metal clusters, and his group, using a purely

chemical technique, has produced the thinnest wires known, only 6 angstroms in diameter.

DiSalvo received his PhD in applied physics from Stanford University in 1971. Shortly thereafter he joined the technical staff at AT&T Bell

Laboratories, where he was a department head for eight years. DiSalvo left Bell Labs in 1986 to accept a position as a chemistry professor at Cornell University.

Holtzberg has focused his research mainly on rare earth compounds. In

Invited Sessions and Speakers

MONDAY 18 MARCH

morning

Novel Electro-Optical Devices and Applications. *Veldkamp, Valdmanis, Jerrell, Yokoyama.*

Flux Motion in Superconductors. *Worthington, Kwok, Houghton, Marchetti.*

Coherent Optical Spectroscopy of Condensed Media. *Shank, Siegner, Lee, Wiersma, Nelson.*

Condensed Matter Physics: Superlattices, Transport. *Ohno, Beltram, Brozak, Sibile.*

Antenna Function in Photosynthesis. *Knox, Fleming, Beck, Small, Pearlstein.*

Spin Glasses: Experiment. *Awschalom.*

High-Temperature Superconductors: Films I. *Lowndes.*

Theory of Materials I—Defects and Energy Functions. *Smith.*

Semiconductor Interfaces and Microstructure I. *Harrison, Powell.*

Phonons in High- T_c I—Mostly Theory. *Kresin.*

Conducting Polymers I—Photoemission and Absorption. *Friend.*

Phase Transitions I. *Grant.*

Two- and Three-Dimensional Nanocrystalline Solids I. *Anderson.*

High-Polymer Physics: Chain Dynamics. *English.*

Applications of Novel Materials. *Chadi, Doll, Banholzer, Zukoski.*

Phonons in High- T_c Superconductors. *Allen, Brorson, Newns, Crawford, Mook.*

Ultrafast Spectroscopy of Semiconductors. *Shah, Steel, Kash, Ryan, Lyon.*

Fractional Quantum Hall Effect. *Jain, Willett, Kotthaus, Simmons, Kivelson.*

Science and Technology of Thin Films. *Gambino, Tsunashima, Chien, Heinrich, Brookes.*

Complex Fluids: Colloids I. *Weitz.*

Semiconductor Interfaces and Microstructure II. *Venables.*

Conducting Polymers II—Polyaniline Applications. *Reiss.*

Phase Transitions II. *Singh.*

Two- and Three-Dimensional Non-Crystalline Solids II. *Johnson.*

High-Polymer Physics: Melts, Solutions. *Fuller.*

afternoon

Environmental Issues in the 90's. *McElroy, Tilford, Golden, Chang, Cess.*

Optical Properties of Cuprates. *Thomas, Tanner.*

Phase Transitions in Porous Media. *Liu, Chan, Reppy.*

Condensed Matter Physics: Rare Fluctuations. *Fisher, Bray, Berker.*

Molecular Communication in Biological Systems. *Webb, Denk, Parsegian, Greenbaum, Birge.*

Local Moment Systems I. *Lander.*

Semiconductor Interfaces and Microstructure III. *Grossmann.*

Conducting Polymers III—Transport. *Iqbal.*

High-Polymer Physics: Theory, Simulation, Modeling. *Rubinstein.*

Circular Polarization Effects in Cuprate Superconductors. *Weber, Kapitulnik, Wen.*

Chiral Antiferromagnets. *Mason, Kawamura.*

Meeting the Need: The Perilous Future of Science Education. *Wilson, Bardeen.*

evening

New Physics for Metrology. *Miller, Clarke, Cage, Devoret.*

History of Physics: Discovery of High-Temperature Superconductors. *Bednorz, Chu, Maeda, Hermann.*

C₆₀—A New Form of Solid Carbon. *Smalley, Huffman.*

TUESDAY 19 MARCH

morning

Mesoscopic Persistent Currents. *Alt'shuler, Levy, Ambegaokar.*

Novel Microscopy. *Betzig, Williams, Terminello.*

Interfaces I: Monolayers. *Rice, Knobler, Mohwald, Klein.*

Surface Chemical Dynamics and Energetics. *Aspnes, Cardillo, Klitsner, Bringans.*

Neuromagnetism: From the Microscopic to Macroscopic. *Williamson, Barth, Wikswo, Lounasmaa, Kaufman.*

Low-Dimensional Magnetism: Theory I—Mostly 1D. *Deisz.*

Quantum Dots: Optical. *Merkt.*

Phonons in High- T_c II—E/P Mechanism. *Zasadzinski.*

Conducting Polymers IV—Spin Dynamics and Spectroscopy. *Nechtschein.*

Defects in Metallic Systems I. *Sabochick.*

1991 High-Polymer Prize Symposium. *Thomas, Muthukumar, Manley, Briber, Adams.*

Electronic Structure of Transition Metal Oxides. *Gunnarsson, Shen, Henrich.*

Superfluid ³He. *Gould, Pekola, McKenzie.*

Interfaces II: Molecules at Interfaces. *Pershan, Pratt, Eisenthal, De Gennes.*

Optical Probes of the Quantum Hall Effect. *Goldberg, Plaut, Turberfield, Sham, Fritze.*

Characterization Techniques for Nanoscale Fabrication Technology. *Reifenberger, Warmack, Collins, Knight.*

Self-Organized Criticality. *Dhar.*

Epitaxial Layers of High-Temperature Superconductors III—Layer by Layer. *Kawai.*

Conducting Polymers V—Other Conducting Polymers. *Garnier.*

afternoon

1991 New Materials Prize Winners' Session. *DiSalvo, Holtzberg.*

1991 Dannie Heineman Prize Symposium. *Frohlich, Spencer.*

Charge-Density Waves. *Thorne, Coppersmith, Brown.*

Interfaces III: Phase Transitions. *McConnell, Weeks, Israelachvili, Fisher.*

Stepped Silicon Surface Energetics. *Payne, Alerhand, Bennett, Mo, Phaneuf.*

Physical Techniques to Image Metabolism. *Krohn, Ackerman, Ter-Pogossian, Brown, Fowler.*

Integral Quantum Hall Effect. *Boebinger.*

Theory of Materials VI—Metallic Alloys. *Gyorffy.*

Epitaxial Layers of High-Temperature Superconductors IV—Superlattices and Multilayers. *Rogers, Gupta.*

Time-Resolved Structural Kinetics of Materials I. *Srolovitz.*

Dillon Medal Symposium. *Schweizer.*

Spectroscopy and Chemical Physics. *Smith, Evenson, Smalley.*

Issues in Education and Research. *Williams, Collins.*

evening

Technology Transfer. *Frosch, Sakaki, Schwartz, Yonas, Collins.*

State, Industrial and University Research Funding Partnerships. *Coburn, Harrison, McCurdy, Moss.*

WEDNESDAY 20 MARCH

morning

Remote Temperature Measurements. *Noel, Cates, Dowell, Root, Lunn.*

the 1960s, with Siegfried Methfessel, Holtzberg did some of the earliest studies of the europium chalcogenides and their alloys, producing the magnetic phase diagrams of doped binary solid solutions of Eu. The two grew some of the first single crystals of Eu

chalcogenides, showed that these materials became good conductors if they contained trivalent rare earth atoms, and concluded that the conduction electrons in Eu chalcogenides enhanced the magnetic exchange. Holtzberg also synthesized the first

single crystals of various rare earth thorium phosphide structures, found superconductivity in a defect alloy of lanthanum and discovered the configurational transition in intermediate-valence compounds with doping. Holtzberg grew some of the first

Metal-Insulator Transitions/Conducting Polymers. *Phillips, Wang, Park.*
Polymer Crystallization and Quantum Freezing. *Haymet, McCoy, McMullen, Ashcroft.*
Scanning Tunneling Microscopy as a Technological Tool. *Nagahara, Kirk, Mamin, Evans.*
The Biomechanics of Sensory Systems. *Koretz, Bell, Van Doren, Rabbitt, Holmes.*
Semiconductor Surfaces: Novel Techniques/Microscopies. *Takayanagi.*
Phonons in High- T_c III—Raman Spectroscopy. *Klein.*
Surface Magnetism I—Ultra-Thin Films. *Li.*
Highly Correlated Metals. *Schultz, Millis, Zimanyi, Randeria, Serene.*
Flux Lattice Imaging. *Hess, Dorsey, Tonomura, Dolan, Forgan.*
Recent Research on Rotons in Liquid Helium. *Glyde, Stirling, Wyatt, Samuels, Sanders.*
Localization of Classical Waves. *John, Chan, McCall, Maynard, Legendijk.*
Condensed Matter Physics: Foams. *Durian, Kraynik, Seul, Desai, Berge.*
Magnetism: General I. *Suhl.*
Theory of Materials VIII. *Thomson.*
Epitaxial Layers of High-Temperature Superconductors V—Superlattices, Theory and Flux Flow. *Norton.*
Time-Resolved Structural Kinetics of Materials II. *Ludwig.*

afternoon

Chaos and Scattering in Mesoscopic Systems. *Feng, Stockman, Geisel, Jalabert, Roukes.*
BEEM on Silicides. *Bell, Kubby, Buhrman, Hasegawa.*
Spin-Glass Dynamics. *Hammann, Lederman, Weissman, Sourlas.*
Physics of Adhesion. *Pashley, Smith, McClelland, Kim.*
Nonlinear Optical Properties of Conjugated Polymers. *Etemad, Soos, Kobayashi.*
Theory of Materials IX—Interfaces and Surfaces. *Lambrecht.*
Boron Compounds I. *Tallant.*

evening

Materials and the National Agenda. *Narath, Schluter, Appleton, Phillips.*

THURSDAY 21 MARCH

morning

Condensed Matter Physics: Coulomb Blockade I. *Likharev, Mooji, Fulton, Glazman.*
Thin Film Oxide Superconductors: Applications. *Wellstood, Gallagher, Fork, Rogalla.*
Frustrated Magnetic Order. *Broholm, Gaulin, Elser.*
Condensed Matter Physics: Nonequilibrium Phenomena. *Heinz, Cavanagh, Chabal, Ho.*
Nanotribology—Sliding Friction at the Atomic Level. *Krim, Tomanek, Landman.*
Organic Superconductors I. *Williams.*
High-Temperature Superconductors: Flux Flow/Creep. *Kirk.*
Theory of Materials X—*Ab Initio* Simulations. *Davenport.*
Quasicrystals I. *Ronchetti.*
Phonons in High- T_c IV—Spectroscopy. *Reichardt.*
Adhesion, Fractures and Interfaces I. *Fuller.*
Optical Materials I. *Miller.*
Polymer Thin Films. *Granick, Knoll, Williams, Yoon.*
Condensed Matter Physics: Coulomb Blockade II. *Meirav, Webb, Gregory.*
Dynamics of Superconducting Arrays. *Garland, Benz, Teitel.*
Proteins as Glassy Systems. *Wolynes, Karplus, Frauenfelder, Petsko.*
Nonlinear Optical Materials and Applications. *Mollenauer, Bierlein, Tang, Osterberg, Wong.*

Advanced Lithography and Processing. *Smith, Hu, Melngailis, Freeman, Gibson.*
Chemisorption on Metal Surfaces: Experiment. *Strongin.*
Heterostructure: Growth and Characterization. *Pfeiffer, Lowe.*
Hydrogenated Amorphous Silicon I. *Biswas.*
Quasicrystals II. *Robertson.*
Adhesion, Fractures, and Interfaces II. *Galuska.*
Optical Materials II—Ions in Solids. *Powell.*
Surface Magnetism V—Optical Properties and Theory. *Zak.*
Liquid Crystalline and Rigid-Rod Polymers. *Stupp.*

afternoon

Condensed Matter Physics: Edge States. *Azbel, McEuen.*
Condensed Matter Physics: Vortex Dynamics. *Hagen, Kadin.*
Condensed Matter Physics: Normal State Theory. *Reyzer, Ioffe, Anderson, Ogata, Tsvetlik.*
Materials: Oxide Superconductors. *Cava, Veal.*
New Materials and Quantum Structures I: New Approaches for Quantum Confinement. *Wang, Steigerwald, Bogomolov, Ozin, Stucky.*
Surface Disorder and Reconstruction. *Nijs, Hess, Conrad, Villain, Robinson.*
Hamiltonian Chaos in Fluid Transport. *Aref, Tabor, Pierrehumbert, Solomon.*
Boron Compounds II. *Williams.*
Adhesion, Fractures, and Interfaces III. *Hoagland.*
Hydrogen in Crystalline Semiconductors I. *Marwick.*
High-Polymer Physics: Phase Transitions. *Wiltzius.*
Electronic Structure of Cuprates. *Sette, List, Zaanen.*

FRIDAY 22 MARCH

morning

Alkali-Metal Surface Interactions. *Whitman, DiNardo, Batra, Riffe.*
Condensed Matter Physics: Vesicles. *Murthy, Helfrich, Mackintosh.*
Growth of Diamond at Metastable Conditions. *Moustakas, Spear, Harris, Clausing.*
Thermal Transport in Amorphous Materials. *Cahill, Jagannathan, Kjems.*
New Materials and Quantum Structures II: Synthesis and Properties of Quantum Confined Structures. *Alivisatos, Weller, Katayama, Gossard.*
Layered Systems I. *Falco.*
Chemical Physics: Surface Dynamics. *Orlando.*
Quasicrystals IV. *Qui.*
Adhesion, Fractures, and Interfaces IV. *Mittal.*
Optical Materials IV. *Yen.*
Hydrogen in Crystalline Semiconductors II. *DeLeo.*
Semi-Superconducting Heterostructures. *Kastalsky, Kleinsasser.*
Advanced Electronic Devices. *Stork, Nottenburg, Weaver, Okuto, Randall.*
Condensed Matter Physics: Spatial and Temporal Dynamics. *Grannan, Held, Lucke, Surko, Teitsworth.*
Covalent Bonded Glasses: Connectivity and Correlation. *Love, Lindsay, Bellessa, Zwanziger, Taylor.*
Defects and Metastabilities in Semiconductors. *Mooney, Zhang, Baraff.*
Semiconductor Heterostructures: Semiconductor Schottky Barriers. *Ludeke.*
Quasicrystals. *Goldman.*
Hydrogen in Crystalline Semiconductors III. *Kiefe.*

afternoon

Photon Drag Effect in Two-Dimensional Systems. *Solomon, Grinberg, Wieck.*
Resonant Tunneling in Magnetic Fields. *Levi, Eaves.*
Advances in High- T_c Superconductor Applications. *Clarke, Ralston, Maeda.*
Solid-Liquid Interfaces. *Majkrzak, Sanyal, Kramer, Binder, Sivia.*
High-Temperature Superconductors: Magnetic Resonance Measurements II. *Takigawa.*

single crystals of the Chevrel phases.

Holtzberg received his PhD in chemistry from the Polytechnic Institute of Brooklyn in 1952. That year he joined IBM, where he has been a group manager and a department manager for materials science. He is currently a member of the research staff at IBM.

The 1991 Irving Langmuir Prize in Chemical Physics will go to Richard E. Smalley of Rice University. According to the citation, the prize recognizes Smalley's "seminal discoveries revealing the nature of isolated clusters of refractive materials, especially the discovery that vaporized carbon can condense in the form of spheroidal shell molecules as typified by the very stable truncated icosahedron molecule, C_{60} ."

In his work on clusters, which represent a state of matter intermediate between the gas and condensed phases, Smalley has found a surprising variation in chemical reaction rates with cluster size. In 1981 he and his students announced a technique using a laser that enabled them to produce supersonic beams of clusters of even the most refractory elements, a development that was seminal to cluster experimentation. To avoid photofragmentation in photoionization probing, Smalley has produced cold molecular beams of both positive and negative cluster ions. He has also found that cluster ions of a given mass often consist of a single isomer; this has turned out to be a crucial property of clusters. Smalley observed that the unique properties of carbon clusters arise from carbon's tendency to form multiple bonds, and based on this observation he deduced the structure of a new class of cage aromatic carbon molecules called the fullerenes. The most stable fullerene, Smalley and his coworkers found, consists of 60 carbon atoms in a truncated icosahedron (a "soccer ball").

Smalley received his PhD in chemistry from Princeton University in 1973. He joined the chemistry department of Rice University in 1976. In 1982 he became the Gene and Norman Hackerman Professor of Chemistry there, and last year he was given an additional appointment in the physics department.

The 1991 John H. Dillon Medal of the APS division of high-polymer physics will go to Kenneth S. Schweizer of the University of Illinois at Urbana-Champaign for his "novel theoretical advances in macromolecular physics, particularly in the areas of thermodynamics, melt dynamics and conjugated polymers."

By applying to polymers the "reference interaction site method" developed by David Chandler and his coworkers for small molecules, Schweizer, with John Curro, contributed to the first off-lattice theory for dense polymer liquids that includes the effects of density and concentration correlations. This work combined the ideas of Paul Flory with insights gained in recent neutron scattering studies. Using the techniques associated with the generalized Langevin equation and the ideas of mode-mode coupling, Schweizer has formed a new theory of polymer-melt dynamics. In limiting cases Schweizer's theory echoes the predictions of the simpler "reptation model" of Pierre-Gilles de Gennes, but in crossover regimes the theory predicts previously unexplained observations. Finally, Schweizer has developed the only microscopic theory that describes the observed order-disorder phenomena of conjugated polymers both in solution and in the solid state.

Schweizer received his PhD in physics in 1981 from the University of Illinois at Urbana-Champaign. In 1983 he joined the staff at Sandia National Laboratories, where he worked until the beginning of this year. As of 1 February he is a professor of materials science and engineering and of chemistry at Illinois.

Patrick A. Lee of MIT will receive the 1991 Oliver E. Buckley Condensed Matter Physics Prize. The prize citation highlights Lee's "innovative contributions to the theory of electronic properties of solids, especially of strongly interacting and disordered materials."

In collaborations with T. Maurice Rice and Philip Anderson, and in a joint effort with Hidetoshi Fukuyama, Lee developed the fundamental theoretical framework for understanding charge-density waves. Lee's calculation of extended x-ray absorption fine-structure spectra starting with atomic phase shifts has facilitated the determination of local lattice structure using EXAFS data. His work with Boris Altshuler and Arkady Aronov demonstrated the possibility of separating electron-electron interaction corrections from localization corrections in calculating the conductivity of disordered two-dimensional metals. In a recent collaboration with A. Douglas Stone, Lee showed that the observed noise-like conductance fluctuations in disordered materials result from impurity scattering and take on the universal value of e^2/h . Lee is currently working on the theory of high- T_c supercon-

ductivity, focusing on a gauge theoretical description of the normal-state properties.

Lee received his PhD in physics in 1970 from MIT. He joined the technical staff at AT&T Bell Laboratories in 1972, went to the University of Washington for a year as an assistant professor of physics, and then returned to Bell Labs, where he worked until 1982. That year he left his position as head of the Bell Labs theoretical physics department and became a professor of physics at MIT.

John R. Smith will receive this year's David Adler Lectureship Award. Smith was chosen for his "pioneering surface and interface calculations, for development of the universal energy relation, and for exceptional clarity in his lectures and writings on materials properties at the atomic level."

In recent work, Smith and his collaborators discovered a single relation between total energy and interparticle separation that applies to adhesion, chemisorption, cohesion, and molecular and nuclear energetics. This "universal energy relation" has already been used, by Smith and others, as an essential part of new methods for computing the microscopic energies of materials phenomena.

Smith received his PhD in physics from Ohio State University in 1968. In 1972 he accepted a position as a senior research scientist at General Motors Research Laboratories in Warren, Michigan. His current title there is Principal Research Scientist. Smith will give his Adler Lecture, "Equivalent Crystal Theory of Metal and Semiconductor Defects," at 8 o'clock Monday morning.

Special services

The American Institute of Physics, on behalf of APS, will run an equipment exhibit, a job placement center and a press room at the meeting. The equipment exhibit, which will be set up in the ballroom of the convention center, will be open Tuesday the 19th from noon to 6 pm, Wednesday from 10 am to 5 pm and Thursday from 10 am to 3 pm. The job placement center, located in room 208 of the convention center, will be open Monday, Tuesday and Wednesday from 9 am to 5 pm and Thursday from 9 am until noon. Prospective job applicants should submit their resumes to the placement center staff, who will arrange on-site interviews with interested employers. The press room hours will be 8 am to 5 pm on Monday, Tuesday and Wednesday and 8 am to noon on Thursday. ■