THE CAMILLE AND HENRY DREYFUS FOUNDATION

Teacher-Scholars 1970–1996

A Retrospective

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About the Foundation

The Camille and Henry Dreyfus Foundation, Inc., was established in 1946 by chemist, inventor and businessman Camille Dreyfus as a memorial to his brother Henry, also a chemist and his partner in developing the first commercially successful system of cellulose acetate fiber production.

Born and educated in Switzerland in the latter part of the nineteenth century, the Dreyfus brothers were pioneers whose efforts contributed significantly to the evolution of the modern chemical industry. Throughout their lives they directed the operations of the Celanese companies they founded in the United States, Great Britain, and Canada.

In creating the Foundation, Camille Dreyfus determined that its purpose would be "to advance the science of chemistry, chemical engineering, and related sciences as a means of improving human relations and circumstances around the world." Since its first years of activity, the Foundation has sought to take the lead in identifying and addressing needs and opportunities in the chemical sciences.

The Foundation makes awards to academic and other eligible institutions through several award programs. Information on these programs and their criteria is available from the Foundation office or on the Foundation's Web site at www.dreyfus.org.

Dreyfus Teacher-Scholars, 1970-1996: Leaders in the Chemical Sciences

With the introduction of the Teacher-Scholar Awards Program in 1969, the Camille and Henry Dreyfus Foundation launched an initiative to provide talented young faculty with significant, flexible support during the early stages of their careers. From the program's inception, Dreyfus Teacher-Scholars have been selected for their research and teaching accomplishments, their commitment to education, and the promise they show of continuing strength as independent investigators.

The Foundation named the first Teacher-Scholars in 1970, and by 1996—fifty years after Camille Dreyfus had established the Foundation—416 of the country's most promising young scholars had been chosen to receive the award, selected each year from a large group of outstanding nominees.

This directory seeks to highlight the backgrounds and achievements of these leaders in the chemical sciences from the first year of program awards through the Foundation's fiftieth anniversary year. To prepare biographical sketches, the Foundation asked Teacher-Scholars for current information on their research and career accomplishments as well as appointments and honors received. More than 95 percent responded. Their names and summaries of their professional achievements are organized by award year, beginning with 1970. An index of names begins on page 213.

Of the chemists, biochemists, and chemical engineers whose careers are outlined on these pages, all but 19 have remained members of academic faculties. Six Dreyfus Teacher-Scholars are or have been university presidents or chancellors; 54 serve or have served as department chairs, deans, or provosts. Several have won awards from their own institutions for excellence in teaching, as well as prestigious awards from foundations such as the Guggenheim Fellowship and the Alfred P. Sloan Research Fellowship.

Honored as well by the national and international scientific community, 28 Teacher-Scholars have been elected to the National Academy of Sciences, and two have been awarded the Nobel Prize in Chemistry.

Dreyfus Teacher-Scholars have brought exceptional dedication and imagination to their areas of interest. For the Foundation, their achievements confirm Camille Dreyfus' view that supporting talented individuals is a highly effective means of advancing knowledge in the chemical sciences.

Detailed information on the Camille and Henry Dreyfus Teacher-Scholar Awards Program, guidelines for application, and a list of scholars and their institutions recently selected to receive the award is available on the Foundation's Web site at www.dreyfus.org. Literature on the program is also available from the Foundation office.

Dreyfus Teacher-Scholars

1970–1996

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Robert G. Bergman

Robert G. Bergman has made a wide range of contributions to exploratory and mechanistic organic and inorganic chemistry.

He is well known for his discovery of the first soluble organometallic complexes that undergo intermolecular insertion of transition metals into the carbon-hydrogen bonds of alkanes, and the use of liquefied noble gas solvents in the study of these reactions.

Bergman is a professor of chemistry and assistant dean of the College of Chemistry at the University of California, Berkeley. He is the second recipient of the American Chemical Society Award in Organometallic Chemistry (1986). His other awards include an Alfred P. Sloan Research Fellowship (1969), the American Chemical Society Arthur C. Cope Scholar Award (1987), the Edgar Fahs Smith Award of the American Chemical Society Philadelphia Section (1990), the Ira Remsen Award of the American Chemical Society Baltimore Section (1990), and the Ernest Orlando Lawrence Award (1994).

While at the California Institute of Technology, he received the Student Government Award for Excellence in Teaching (1978). He was also awarded an honorary Ph.D. (1995) from Carleton College.

Born May 23, 1942, in Chicago, Illinois, Bergman received his B.A. (1963) from Carleton College and Ph.D. (1966) from the University of Wisconsin, and was a NATO postdoctoral fellow (1966-67) at Columbia University.

Bruce A. Cunningham

Bruce A. Cunningham is a biochemist/molecular biologist who has characterized a variety of important protein molecules.

Cunningham was involved in the first descriptions of the complete structures of the antibody molecule, β2-microglobulin (the light chain of transplantation antigens), and a number of plant lectins. More recently, he has studied molecules involved in cell-cell adhesion during embryonic development, characterizing them in terms of their structure and function.

Cunningham is a member of The Scripps Research Institute. He has served on the editorial boards of the *Journal of Biological Chemistry* and the *Journal*

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of Cell Biology.

Cunningham received the Irma T. Hirschl Career Scientific Award (1975) and is an honorary Fellow of the American Gynecological and Obstetrical Society.

Born January 18, 1940, in Winnebago, Illinois, Cunningham received his B.S. (1962) from the University of Dubuque and Ph.D. (1966) from Yale University, and was a postdoctoral fellow (1966) at The Rockefeller University.

Richard D. Fink

Richard D. Fink is a physical/nuclear chemist whose diverse studies have included the distribution of protons during nuclear fission, chemical reactions using molecular beam and photochemical techniques, and the determination of hazardous air pollutants in the atmosphere.

Fink was the first to demonstrate that in certain low-energy ion-molecule reactions, the collision complex exists for a time less than the rotation period of the complex. His photochemical studies permit greater understanding of the threshold energies for abstraction reactions of hydrogen atoms from simple gas-phase hydrocarbons.

The George H. Corey Professor of Chemistry at Amherst College where he was named the Mellon Professor in 1977, Fink was a frequent visiting professor in chemistry at King's College, University of London (1968-96).

Fink has received National Science Foundation Senior Research (1968), Faculty (1976), and Professional Development (1979) Awards, an Alfred P. Sloan Research Fellowship (1970), and an honorary Doctorate of Humane Letters (1988) from Doshisha University in Kyoto, Japan. He received an honorary M.A. (1971) from Amherst College.

Born July 14, 1936, in New York, New York, Fink received his A.B. (1958) from Harvard College and Ph.D. (1962) from the Massachusetts Institute of

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Technology. He was a postdoctoral fellow at Yale University (1962-64) and at King's College, University of London (1968).

Joseph N. Gayles, Jr.

Joseph N. Gayles, Jr., is a physical chemist who has focused on spectroscopic techniques and on self-consistent-field molecular orbital theory. While maintaining an interest in biomedical chemistry, Gayles operates his own company, Jon-Mon Associates, and is serving on assignment as the vice president for development and university relations at Clark Atlanta University.

Gayles has been recognized for his efforts to increase the number of minorities in chemistry. He has been active with the American Chemical Society and the American Physical Society in stimulating public interest in undergraduate- and graduate-level chemistry and physics.

In 1972, Gayles was instrumental in founding the institution that became the Morehouse School of Medicine, where he was a tenured professor of chemistry and an administrator involved in generating funds for medical, scientific, and social programs. He served for seven years as president of Talladega College.

Born August 7, 1937, in Birmingham, Alabama, Gayles received his B.A. (1958) from Dillard University and Ph.D. (1963) from Brown University, and was a postdoctoral fellow at Oregon State University (1963) and at the University of Uppsala, Sweden (1965).

O. Hayes Griffith

O. Hayes Griffith is an educator and a chemist who has utilized a combination of biophysical and biochemical approaches to provide new information about the structure and function of membranes and membrane enzymes.

Griffith was a pioneer in the development of spectroscopic labeling techniques and the detection of molecular motion in membranes. He was also one of the developers of a new type of high-resolution photoelectron microscope for the study of biological surfaces. Most recently, Griffith has focused on understanding how phospholipase functions to generate second messengers in cells.

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A professor of chemistry at the University of Orgeon, Griffith and his group of students and associates have published more than 190 research articles.

Griffith has been the recipient of the Burlington Northern Foundation Faculty Achievement Award for Teaching Excellence (1987), the highest teaching award given at the University of Oregon, and the College of Arts and Sciences Dean's Development Award (1991).

He has also received an Alfred P. Sloan Research Fellowship (1967), a National Cancer Institute Research Career Development Award (1972), and a Guggenheim Fellowship (1977).

Born September 14, 1938, in Torrance, California, Griffith received his B.A. (1960) from the University of California, Riverside, and Ph.D. (1964) from the California Institute of Technology, and was a postdoctoral fellow (1965) at Stanford University.

Daniel S. Kemp

Daniel S. Kemp is an organic chemist working on problems at the interface between chemistry and structural biology.

His research accomplishments include the biomimetic scaffold, *cis, cis*-1,3,5-trimethylcyclohexane-1,3,5-tricarboxylic acid (Kemp's triacid) and the solvation probe, benzisoxazole-3-carboxylic acid. He introduced the concept of reporting conformational templates for probing the energetics of protein secondary structure formation. He has also coauthored a textbook on organic chemistry.

A professor of chemistry at the Massachusetts Institute of Technology, Kemp has been honored with E. M. Baker (1966, 1993) and School of Science (1988) teaching awards, and is an inaugural MacVicar Faculty Fellow (1992).

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Kemp has also received an Alfred P. Sloan Research Fellowship (1969), an Alexander von Humboldt Foundation Research Award (1983), and a National Institutes of Health MERIT Award (1987).

Born October 20, 1936, in Portland, Oregon, Kemp received his B.A. (1958) from Reed College and Ph.D. (1964) from Harvard University.

Fredric M. Menger

Fredric M. Menger is a bioorganic chemist whose interests have centered on self-assembling systems and on organic and enzymatic catalysis.

The Chandler Professor of Chemistry at Emory University, Menger has contributed to understanding micellar catalysis and enzymology. He has elucidated reaction mechanisms at water/hydrocarbon interfaces, and has developed metallomicelles as catalytic agents. His work has advanced scientific understanding of the behavior of lipids and vesicles.

Born December 13, 1937, in South Bend, Indiana, Menger received his B.A. (1958) from The Johns Hopkins University and Ph.D. (1963) from the University of Wisconsin-Madison, and was a postdoctoral fellow (1963-65) at Northwestern University.

Paul B. Moore

Paul B. Moore received the Teacher-Scholar award when he was a member of the Department of Geophysical Sciences at The University of Chicago.

Born November 24, 1940, in Stamford, Connecticut, Moore received his B.S. (1962) from Michigan Technological University and Ph.D. (1965) from The University of Chicago. He was a National Science Foundation postdoctoral fellow (1965-66) and did postdoctoral work (1966) at Naturhistorika Riksmuseets Mineralogiska Sektionen, Stockholm, Sweden.

John A. Osborn

John A. Osborn received the Teacher-Scholar award when he was a member of the Department of Chemistry at Harvard University.

Born July 28, 1939, in Chislehurst, Kent, England, Osborn received his B.A.

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(1962) from Cambridge University and Ph.D. (1966) from Imperial College, University of London, where he was an Imperial Chemical Industries postdoctoral fellow (1966-67).

Mitchel Shen

Mitchel Shen received the Teacher-Scholar award when he was a member of the Department of Chemical Engineering at the University of California, Berkeley, where he remained until his death in 1979.

Born September 1, 1938, in Tientsin, China, Shen received his B.S. (1959) from St. Francis College and Ph.D. (1963) from Princeton University, where he also did postdoctoral work (1964).

Barry M. Trost

Barry M. Trost is a synthetic chemist who is developing new methodologies to create more efficient syntheses of complex organic structures that bring understanding to phenomena in biology and materials science.

Currently the Tamaki Professor of Humanities and Sciences at Stanford University, Trost made a major contribution early in his career with the isolation, structure determination, and synthesis of the insect juvenile hormone, which initiated the concept of insect growth regulants as an alternative to pesticides.

He wrote a pioneering text on the utilization of spectroscopic methods for structure identification and developed a structure-function-based concept for the teaching of introductory organic chemistry.

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Trost has received numerous awards, including the American Chemical Society Award in Pure Chemistry (1977), the American Chemical Society Award for Creative Work in Synthetic Organic Chemistry (1981), the Leo Hendrik Baekeland Award of the American Chemical Society North Jersey Section (1981), the first Allan R. Day Award of the Philadelphia Organic Chemists Club (1983), a Chemical Pioneer Award of the American Institute of Chemists (1983), an Alexander von Humboldt Foundation Research Award (1984), a National Institutes of Health MERIT Award (1988), the Hamilton Award (1988), the American Chemical Society Arthur C. Cope Scholar Award (1989), the American Chemical Society Ernest Guenther Award in the Chemistry of Essential Oils and Related Products (1990), the Dr. Paul Janssen Prize (1990), the Associated Students of Stanford University Teaching Award (1993), and the American Chemical Society Roger Adams Award in Organic Chemistry (1995).

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Trost has also been awarded an Alfred P. Sloan Research Fellowship (1967) and an American-Swiss Foundation Fellowship (1975). He is a Fellow of the American Academy of Arts and Sciences and a member of the National Academy of Sciences.

Born June 13, 1941, in Philadelphia, Pennsylvania, Trost received his B.A. (1962) from the University of Pennsylvania and Ph.D. (1965) from the Massachusetts Institute of Technology.

Richard A. Walton

Richard A. Walton is a synthetic inorganic chemist in the field of transition-metal chemistry. His interests involve the synthesis, reactivity, and structural characterization of metal-cluster compounds, polyhydride complexes, and compounds that contain metal-metal multiple bonds.

Walton was one of the discoverers of the metal-metal triple bond. He accomplished the first synthesis and characterization of compounds that contain the electron-rich triple bond. He is recognized for his fundamental contributions to understanding the redox chemistry of multiply bonded compounds and the relationship between metal-metal bond order and stereochemistry.

He is coauthor of the well-known monograph *Multiple Bonds Between*

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Metal Atoms.

The John A. Leighty Distinguished Professor and chairman of the Department of Chemistry at Purdue University, Walton has received the Royal Society of Chemistry Award for Chemistry and Electrochemistry of Transition Metals (1994).

Born November 9, 1939, in Ryde, Isle of Wight, England, Walton received his B.S. (1961) and Ph.D. (1964) from the University of Southampton, England. He was a postdoctoral fellow at the University of Manchester (1964) and at the Massachusetts Institute of Technology (1969).

F. Sheldon Wettack

F. Sheldon Wettack is a physical photochemist whose research resulted in a new understanding of a number of unimolecular photochemical reactions and electronic energy transfer processes.

Since 1981 he has been involved in college administration. Formerly president of Wabash College, Wettack is vice president, dean of faculty, and a professor of chemistry at Harvey Mudd College. He also serves as a member of the Project Kaleidoscope executive committee.

He has been the principal investigator for several institutionwide efforts to improve teaching and learning, including a current project to explore the use of technology to enhance both effectiveness and productivity.

Born December 5, 1938, in Coffeyville, Kansas, Wettack received his A.B. (1960) from San Jose State College and Ph.D. (1967) from The University of Texas at Austin.

James T. Yardley

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James T. Yardley's research interests include optical materials, electronic materials, optical interconnection, laser processing, lasers, laser chemistry, and molecular spectroscopy.

Yardley is an associate director at the Morristown Technology Center of Allied Signal, where he serves as leader of the Electronic and Optical Materials Skills Center. He led the research team that developed new optical display technology utilizing micro-optical devices to modify liquid crystal displays so that the optical performance is uniform at all viewing angles.

He has published more than 90 research papers and is listed as inventor on more than 25 issued U.S. patents. He has published the successful monograph *Introduction to Molecular Energy Transfer.*

While serving as a professor of chemistry at the University of Illinois at Urbana-Champaign (1967-77), Yardley received the Excellent Instructor Award, Whole U Catalog (1974), designating him as one of the six most outstanding teachers within the College of Liberal Arts and Sciences.

Born May 15, 1942, in Taft, California, Yardley received his B.S. (1964) from Rice University and Ph.D (1967) from the University of California, Berkeley.

Jesse J. Beauchamp

Jesse J. Beauchamp is a physical chemist who has developed novel techniques using mass spectrometry to study the properties, reaction dynamics, and structures of organic, organometallic, and biological molecules and ions in the gas phase and on surfaces.

Beauchamp pioneered the development of chemical applications of ion cyclotron resonance spectroscopy and other experimental methods to problems ranging from determination of the structure and energetics of simple carbonium ions to the rapid sequencing of peptides and oligonucleotides in the gas phase. More recently, he has combined the techniques of near-field scanning optical microscopy with time-of-flight mass spectrometry to generate chemical images of surfaces with submicron resolution.

For more than 30 years he has taught undergraduate courses at the California Institute of Technology, where he is a professor of chemistry. The

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recipient of several National Science Foundation grants over the years, his laboratory has provided cutting-edge learning opportunities and most recently acquired a complete facility for introducing students to modern surface science, including LEED analysis of structures and temperature-programmed desorption studies of adsorbate bonding on single crystals.

Beauchamp has received the American Chemical Society Award in Pure Chemistry (1978). He is a member of the National Academy of Sciences and a Fellow of the American Association for the Advancement of Science.

Born November 1, 1942, in Burbank, California, Beauchamp received his B.S. (1964) from the California Institute of Technology and Ph.D. (1967) from Harvard University.

David A. Evans

David A. Evans is a synthetic organic chemist whose current projects include the asymmetric synthesis of antibiotics, macrolides, and peptide-derived chemotherapeutic agents.

Evans is the Abbott and James Lawrence Professor of Chemistry and chair of the Department of Chemistry and Chemical Biology at Harvard University. His group is also engaged in the discovery and development of enantioselective catalysts for reactions such as cyclopropanation, aziridination, and aldol addition. He is the author of 205 publications.

He has received an Alfred P. Sloan Research Fellowship (1972), a Distinguished Teaching Award, University of California, Los Angeles (1973), the

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American Chemical Society Award for Creative Work in Synthetic Organic Chemistry (1982), the American Chemical Society Arthur C. Cope Scholar Award (1988), and the Ira Remsen Award of the American Chemical Society Baltimore Section (1996). He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences.

Born November 11, 1941, in Washington, D.C., Evans received his A.B. (1963) from Oberlin College and Ph.D. (1967) from the California Institute of Technology.

Peter C. Ford

Peter C. Ford is an inorganic chemist who has made significant contributions toward understanding the photoreaction mechanisms of coordination and organometallic compounds and fundamental reaction mechanisms in the homogeneous catalytic activation of small molecules.

Ford was among the first to probe the reaction dynamics of the ligand-field excited states of coordination compounds using pulse laser techniques. He has used similar techniques, including time-resolved infrared spectroscopy, to characterize the dynamics of reactive intermediates in catalytically relevant systems such as the Wilkinson catalyst-activation of H_2 and the migratory insertion of CO into metal-alkyl bonds.

A professor of chemistry at the University of California, Santa Barbara, Ford has been the recipient of an Alexander von Humboldt Foundation Research Award (1992) and the Richard C. Tolman Medal of the American Chemical Society Southern California Section (1993). He is a Fellow of the American Association for the Advancement of Science.

Born July 10, 1941, in Salinas, California, Ford received his B.S. (1962) from the California Institute of Technology and Ph.D. (1966) from Yale University, and was a postdoctoral fellow (1966-67) at Stanford University.

Yuan Tseh Lee

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Yuan Tseh Lee is a longtime educator whose research includes crossed molecular beam studies of reaction dynamics, investigations of various primary photochemical processes, and the spectroscopy of ionic and molecular clusters.

Lee became president of the Academica Sinica in Taiwan when he retired in 1994 from his position as University Professor and principal investigator for the Lawrence Berkeley Laboratory at the University of California, Berkeley. He has received numerous awards and honors including the 1968 Nobel Prize in Chemistry, the National Medal of Science (1986), and the Faraday Medal (1992). He has also been awarded the Ernest Orlando Lawrence Award (1981), the Harrison Howe Award of the American Chemical Society Rochester Section (1983), and the American Chemical Society Peter Debye Award in Physical Chemistry (1986). He is a Fellow of the American Association for the Advancement of Science and a member of the National Academy of Sciences, the Göttingen Academy of Sciences, and the Third World Academy of Sciences.

Born November 19, 1936, in Hsinchu, Taiwan, Lee received his B.S. (1959) from National Taiwan University and Ph.D. (1965) from the University of California, Berkeley. He was a postdoctoral fellow at the University of California, Berkeley (1965-67), and at Harvard University (1967-68).

Stephen J. Lippard

Stephen J. Lippard is a bioinorganic chemist who has carried out important studies of platinum anticancer drugs, DNA-promoted reaction chemistry, the synthesis of novel polyiron-oxo complexes, characterization of the diiron core in methane monooxygenase, reductive coupling of carbon monoxide and related ligands in high-coordinate organometallic complexes, and the development of catalysts for stereoselective syntheses using transition-metal complexes of

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dinucleating ligands.

Lippard is the Arthur Amos Noyes Professor and head of the Department of Chemistry at the Massachusetts Institute of Technology. He is the author or coauthor of more than 400 articles in professional and scholarly journals, and recently coauthored the textbook *Principles of Bioinorganic Chemistry*. Lippard is also associate editor of the *Journal of the American Chemical Society.*

His awards and honors include the Henry J. Albert Award of the International Precious Metals Institute (1985), the American Chemical Society Award in Inorganic Chemistry (1987), an Alexander von Humboldt Foundation Research Award (1988), the John C. Bailar Medal (1993), the American Chemical Society Award in Inorganic Chemistry (1994), and an honorary D.Sc. from Texas A&M University (1995). He is a Fellow of the American Academy of Arts and Sciences and a member of both the National Academy of Sciences and the Institute of Medicine.

Born October 12, 1940, in Pittsburgh, Pennsylvania, Lippard received his B.A. (1962) from Haverford College and Ph.D. (1965) from the Massachusetts Institute of Technology, where he was a postdoctoral fellow (1965-66).

Kenneth G. Mann

Kenneth G. Mann is a protein biochemist whose research deals with the surface-dependent assembly processes involved in blood coagulation and bone formation.

Mann is a professor and chair of the Department of Biochemistry at the University of Vermont College of Medicine. His laboratory was the first to isolate the Factor V molecule, a feat which enabled detailed physical and enzymatic studies of the formation of the prothrombinase complex which converts prothrombin to thrombin.

Mann is the author of more than 300 scientific papers, including a chapter in the *Annual Review of Biochemistry*, and is coeditor of two volumes of *Methods in Enzymology.* His research earned a cover story in *Trends in Biochemical Science*.

He has been named a University of Vermont Scholar (1988) and honored with a National Institutes of Health MERIT Award (1989), the American Heart

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Association Sol Sherry Award (1992), and the American Society of Hematology Henry Stratton Medal (1992).

Born January 1, 1941, in Floral Park, New York, Mann received his B.S. (1963) from Manhattan College and Ph.D. (1967) from the University of Iowa, where he was a postdoctoral fellow (1967).

J. David Puett

J. David Puett is a biochemist and molecular biologist with research interests in the area of molecular and cellular biochemical endocrinology.

A professor and head of the Department of Biochemistry and Molecular Biology at the University of Georgia, Puett is using site-directed mutagenesis to investigate glycoprotein and peptide hormones and their G protein-coupled receptors. He has recently used protein engineering to prepare a covalent heterodimer-membrane receptor that is constitutively active, thus providing a new approach for investigating the chemical and physical bases of ligand-receptor interactions.

Puett has received a National Institutes of Health Research Career Development Award (1975).

Born March 23, 1939, in Morganton, North Carolina, Puett received his B.S. (1961) from North Carolina State University and Ph.D. (1969) from the University of North Carolina at Chapel Hill.

Stanley I. Sandler

Stanley I. Sandler is a chemical engineer who has developed a variety of applied thermodynamics methods in the design of chemical processes.

Sandler has combined the use of statistical mechanical techniques, molecu-

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lar-level computer simulation, and experimental methods to develop a variety of thermodynamic models and basic data needed for engineering design.

Sandler is the H. B. DuPont Professor of Chemical Engineering at the University of Delaware, having previously served as department chair and interim dean. He is the author of a widely used undergraduate textbook on thermodynamics which has been translated into several languages; he is also the editor of six other books and author or coauthor of more than 200 papers.

He is a member of the National Academy of Engineering, and has received the American Institute of Chemical Engineers Professional Progress (1984) and Warren K. Lewis (1996) Awards, the American Society for Engineering Education Chemical Engineering Lectureship Award (1988), and an Alexander von Humboldt Foundation Research Award (1988).

Born June 10, 1940, in New York, New York, Sandler received his B.Ch.E. (1962) from the City College of New York and Ph.D. (1966) from the University of Minnesota, and was a postdoctoral fellow (1966) at the University of Maryland.

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Lothar Schäfer

Lothar Schäfer is a structural chemist who has worked throughout his career in the area of gas-phase structural chemistry.

Schäfer was among the first to systematically use results from *ab initio* geometry refinements as constraints of experimental structural data analyses. The molecular orbital constrained electron diffraction (MOCED) technique developed by Schäfer makes use of constraints from molecular orbital calculations in gas electron diffraction studies, and is now routinely applied by all researchers in this field. Schäfer was also responsible for the first significant improvements of empirical peptide and protein modeling methods used in commercial modeling software.

In 1968, he joined the faculty of the University of Arkansas, where he is now E. Wertheim Professor of Chemistry. During the early 1980s, Schäfer and his associates developed the first gas electron diffraction instrument in which the conventional photographic data-recording method was replaced by award-win-

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ning modern on-line electronic detection techniques.

Born May 5, 1939, in Düsseldorf, Germany, Schäfer received his Ph.D. (1965) from the University of Munich and was a postdoctoral fellow at the University of Oslo, Norway (1965-67), and at Indiana University (1967-68).

Robert Silbey

Robert Silbey is a theoretical physical chemist who has worked extensively on the theory of energy transfer between molecules, spectroscopic line shapes, nonlinear optics, and the electronic structure of conjugated polymers.

Silbey gave the first explanation of the effect of surfaces on the lifetime of excited-state molecules. He also characterized the unusual electronic states (polaron, bipolaron, soliton) of long conjugated molecules. Silbey is also the author of a textbook on physical chemistry and editor of a monograph on conjugated polymers.

He is the Class of 1942 Professor of Chemistry at the Massachusetts Institute of Technology, where he has won the School of Science (1986), Graduate Council (1988), and E. M. Baker (1991) teaching awards, and is a MacVicar Faculty Fellow (1996).

Silbey's other honors include an Alfred P. Sloan Research Fellowship (1968), a Guggenheim Fellowship (1972), an Alexander von Humboldt Foundation Research Award (1988), and the Max Planck Research Award (1992).

Born October 19, 1940, in New York, New York, Silbey received his B.S. (1961) from Brooklyn College of the City University of New York and Ph.D. (1965) from The University of Chicago, and was a postdoctoral fellow (1965) at the University of Wisconsin-Madison.

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James Snyder

James Snyder received the Teacher-Scholar award when he was a member of the Department of Chemistry at Yeshiva University.

Born February 2, 1939, in Seattle, Washington, Snyder received his B.S. (1961) from St. Martin's College and Ph.D. (1965) from Cornell University.

Leonard D. Spicer

Leonard D. Spicer is a biophysical/physical chemist who has developed and applied novel methods for extending detailed nuclear magnetic resonance (NMR) structure and dynamics studies to significantly large proteins and protein complexes, and previously studied high-energy gas-phase reactions by nucleogenic methods.

Spicer and his colleagues used three- and four-dimensional heteronuclear magnetic resonance methods and triple-isotope labeling to assign and characterize human carbonic anhydrase II, a 29.1 kDa protein, which was the largest biological macromolecule examined in this detail by NMR at the time. Earlier accomplishments included kinetic and mechanistic studies of ultra-high-energy halogen atom-hydrocarbon displacement, addition/decomposition, and abstraction reactions.

The University Distinguished Service Professor at Duke University, Spicer has been recognized for teaching excellence and has served for a number of years as chair of the American Chemical Society national committee responsible for public communication. He has been the recipient of the Duke University Award for Merit (1988) and is a Fellow of the American Association for the Advancement of Science.

Born July 7, 1942, in Detroit, Michigan, Spicer received his B.S. (1964) from the University of Michigan and Ph.D. (1968) from Yale University, and was a postdoctoral fellow (1968) at the University of Washington.

Leonard M. Stephenson

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Leonard M. Stephenson received the Teacher-Scholar award when he was a member of the Department of Chemistry at Stanford University. He is currently at the University of Medicine and Dentistry of New Jersey.

Born September 6, 1942, in Wilmington, North Carolina, Stephenson received his B.S. (1964) from the University of North Carolina and Ph.D. (1968) from the California Institute of Technology, and did postdoctoral work (1967-68) at Harvard University.

Edward I. Stiefel

Edward I. Stiefel has contributed to research ranging from inorganic synthesis, structure, and catalysis to enzymology, genetics, and molecular evolution.

Stiefel's research group synthesized transition-metal sulfur systems of interest as enzyme models, heterogeneous catalyst precursors, and lubricant additives. He discovered bacterioferritins in 1979 at the Charles F. Kettering Research Center and the ferritin family of proteins unified through genetic analysis in the early 1990s at the Exxon Research and Engineering Company, where he is currently a scientific advisor.

Following the Exxon Valdez oil spill, Stiefel was a member of the task force that recommended and implemented the fertilization strategy that led to the bioremediation of Prince William Sound.

Stiefel is the author of more than 100 scientific publications, holds 20 U.S. patents, and edited the book *Molybdenum Enzymes, Cofactors, and Model Systems.*

While teaching at the State University of New York at Stony Brook, Stiefel won the Outstanding Faculty Member Award (1973) in the Department of Chemistry. He is a Fellow of the American Association for the Advancement of

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Science.

Born January 3, 1942, in Brooklyn, New York, Stiefel received his A.B. (1963) from New York University and Ph.D. (1967) from Columbia University.

John S. Swenton

John S. Swenton is an organic chemist who has conducted research in the areas of organic photochemistry, organic electrochemistry, synthetic methods development, and natural product synthesis. His research has largely been directed at understanding the mechanisms of photochemical and electrochemical reactions.

A professor emeritus of chemistry at The Ohio State University, Swenton has been a leader in the synthetic application of electrochemically prepared protected quinone, quinol, quinone imine, and quinol imine derivatives in organic synthesis. The most important synthetic accomplishment was the use of quinone monoketals in the synthesis of daunomycinone and related quinone natural products.

Swenton has been an Alfred P. Sloan Research Fellow (1971) and received both the Ashland Oil Company Recognition Award (1976) and the American Chemical Society Akron Section Award (1985).

Born December 8, 1940, in Kansas City, Kansas, Swenton received his B.A. (1962) from the University of Kansas and Ph.D. (1965) from the University of Wisconsin, and was a postdoctoral fellow (1966) at Harvard University.

Claude H. Yoder

Claude H. Yoder is a main-group inorganic chemist particularly interested in the structure and dynamics of organosilicon amides and amines.

Yoder established the structures of several key organosilicon nitrogen compounds, including bis(trimethylsilyl)acetamide and N-dimethylchlorosilylmethyl amides, and determined the effect of the trimethylsilyl group on barriers to rotation in amides and on amide-imidate tautomerization.

The Charles A. Dana Professor of Chemistry at Franklin & Marshall College,

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Yoder is coauthor of a general chemistry text, an introduction to multinuclear magnetic resonsance, and the first integrated electronic general chemistry text.

Yoder has received the Chemical Manufacturers Association Catalyst Award (1983) and the American Chemical Society Award for Research at an Undergraduate Institution (1994).

Born March 16, 1940, in West Reading, Pennsylvania, Yoder received his A.B. (1962) from Franklin & Marshall College and Ph.D. (1966) from Cornell University, where he was a postdoctoral fellow (1966).

Jon Bordner

Jon Bordner received the Teacher-Scholar award when he was a member of the Department of Chemistry at North Carolina State University. He is currently at Pfizer in Groton, Connecticut.

Born January 25, 1940, in Massillon, Ohio, Bordner received his B.S. (1962) from Case Institute of Technology and Ph.D. (1966) from the University of California, Berkeley, and did postdoctoral work (1969) at the California Institute of Technology.

C. Hackett Bushweller

C. Hackett Bushweller is a physical organic chemist who has applied dynamic nuclear magnetic resonance spectroscopy, molecular mechanics calculations, and *ab initio* molecular orbital calculations to studies of the stereodynamics of a wide variety of molecular systems. These studies identified preferred equilibrium molecular conformations and allowed measurements of the rates of internal motions that interconvert the equilibrium conformations.

With F. R. Jensen at the University of California, Berkeley, Bushweller

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achieved the first unequivocal isolation in solution of the conformationally pure equatorial conformation of chlorocyclohexane and the first measurement of conformational preferences in 4-substituted cyclohexenes.

A professor and chair of the Department of Chemistry at the University of Vermont since 1978, Bushweller has received an Alfred P. Sloan Research Fellowship (1971).

Born June 21, 1939, in Port Jervis, New York, Bushweller received his A.B. (1961) from Hamilton College and Ph.D. (1966) from the University of California, Berkeley.

Jon C. Clardy

Jon C. Clardy is an organic chemist who has pioneered the structural chemistry of biologically active substances.

Clardy was the first to characterize saxitoxin, brevetoxin, dynemicin, okadaic acid, and bryostatin, among other natural products. He also illustrated how small molecules exert their biological effects in a variety of complex antibiotics.

Clardy is the Horace White Professor of Chemistry at Cornell University. A popular teacher of both undergraduate and graduate courses, he has received the Clark Distinguished Teaching Award (1990).

Clardy's other honors include an Alfred P. Sloan Research Fellowship (1973), a Guggenheim Fellowship (1984), the American Chemical Society Akron Section Award (1987), and the American Chemical Society Ernest Guenther Award in the Chemistry of Essential Oils and Related Products (1995). He is a Fellow of the American Association for the Advancement of Science and the American Academy of Arts and Sciences.

Born May 16, 1943, in Washington, D.C., Clardy received his B.S. (1964) from Yale University and Ph.D. (1969) from Harvard University.

Patricia A. Clark

Patricia A. Clark received the Teacher-Scholar award when she was a member of the Department of Chemistry at Vassar College.

Born March 28, 1940, in Dubuque, Iowa, Clark received her A.B. (1962)

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from the University of North Carolina at Greensboro and Ph.D. (1967) from Mount Holyoke College and the University of Massachusetts. She did postdoctoral work (1967-68) at Cornell University.

Clark K. Colton

Clark K. Colton is a chemical engineer who has been a pioneer in devices and processes incorporating semipermeable membranes that are useful in biomedical applications.

Colton's research has provided fundamental understanding in such areas as hemodialysis, ultrafiltration and microfiltration of protein solutions and cell suspensions, including blood, blood oxygenation, and affinity membrane processes for selective isolation of proteins and cells.

A professor of chemical engineering at the Massachusetts Institute of Technology, Colton has received the American Institute of Chemical Engineers Allan P. Colburn Award (1976), the American Society for Engineeering Education Curtis W. McGraw Research Award (1980), and the International Society for Blood Purification Gambro Award (1986).

Born July 20, 1941, in New York, New York, Colton received his B.Ch.E. (1964) from Cornell University and Ph.D. (1969) from the Massachusetts Institute of Technology, where he was a postdoctoral fellow (1969).

Karl F. Freed

Karl F. Freed is a theoretical chemist who has made contributions to a diverse range of areas including radiationless and photodissociation processes in mole-

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cular systems; the statistical mechanics of polymers in solution, in the liquid phase, and at interfaces; the electronic structure of molecules, and the dynamics of polymers and proteins in solution.

Freed has developed a theory for the influence of monomer molecular structure on the miscibility of polymer systems. He has provided the first statistical-mechanical theory for longtime dynamics of polymers and proteins in solution. His electronic structure work has provided the long-standing resolution of the correct connection between *ab initio* and semiempirical electronic structure methods.

A professor of chemistry at The University of Chicago, Freed has received Alfred P. Sloan Research (1969) and Guggenheim (1972) Fellowships, the Marlow Medal of the Royal Society of Chemistry (1973), and the American Chemical Society Award in Pure Chemistry (1976). He is a Fellow of the American Physical Society.

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Born September 25, 1942, in Brooklyn, New York, Freed received his B.S. (1963) from Columbia University and Ph.D. (1967) from Harvard University. He did postdoctoral work (1967) at the University of Manchester, England, and at Harvard University.

Robert M. Gavin, Jr.

Robert M. Gavin, Jr., has been president of Macalester College since 1984. Previously, he was provost of Haverford College for four years and a member of the Department of Chemistry there from 1966 to 1984. He taught in virtually all areas of undergraduate chemistry, especially physical chemistry and spectroscopy.

Gavin is the author of numerous papers on physical chemistry and chemical physics, including reactions in metal surfaces, molecular orbital models for geometry, and X-ray electron diffraction theory and structure determination.

He received an honorary D.Sc. from Haverford College in 1986.

Born August 16, 1940, in Coatsville, Pennsylvania, Gavin received his B.A. (1962) from St. John's University, Minnesota, and Ph.D. (1966) from Iowa State University. He was a postdoctoral fellow (1966) at the University of Michigan.

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James F. Harrison

James F. Harrison is a theoretical chemist who has published extensively on the electronic structure of organic reactive intermediates and small molecules containing a transition metal. His early work on the electronic structure of methylene was instrumental in establishing the predictive power of *ab initio* electronic structure theory.

Harrison is a professor of chemistry at Michigan State University, where he received the 1995 Distinguished Faculty Award from the College of Natural Science.

Born January 19, 1940, in Philadelphia, Pennsylvania, Harrison received his B.S. (1962) from Drexel Institute of Technology and Ph.D. (1966) from Princeton University. He was a postdoctoral fellow (1966-68) at Indiana University.

David N. Hendrickson

David N. Hendrickson is a physical inorganic chemist who is internationally known for his studies of the dynamics of transition-metal molecules.

Hendrickson elucidated details about factors controlling electron transfer in mixed-valence molecules and very recently discovered some of the first single-molecule magnets.

A professor of chemistry at the University of California, San Diego, Hendrickson has coauthored approximately 300 research articles and several book chapters on important issues relating to transition-metal molecules.

He has received several awards, including a Japan Society for the Promotion of Science Award (1986) and an Alexander von Humboldt Foundation Research Award (1993).

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Born January 1, 1943, in Minneapolis, Minnesota, Hendrickson received his B.S. (1966) from the University of California, Los Angeles, and Ph.D. (1969) from the University of California, Berkeley.

Kendall N. Houk

Kendall N. Houk is a theoretical and computational organic chemist who has developed methods for the understanding and predictions of the rates and selectivities of organic reactions.

He has used such methods to predict new reactions and has verified these predictions experimentally. His research accomplishments range from elucidation of modeling of stereoselective organic reactions to mechanisms of catalysis by antibodies.

Houk has been on the faculty of the University of California, Los Angeles, since 1986. Previously, he taught at the University of Pittsburgh (1980-86) and Louisiana State University (1968-80). He has received an Alfred P. Sloan Research Fellowship (1975), an Alexander von Humboldt Foundation Research Award (1982), the American Chemical Society Arthur C. Cope Scholar Award (1988), and the James Flack Norris Award in Physical Organic Chemistry of the American Chemical Society Northeastern Section (1990). He was the Chemistry Division director at the National Science Foundation (1988-90), and is a Fellow of the American Association for the Advancement of Science.

Born February 27, 1943, in Nashville, Tennessee, Houk received his A.B. (1964) from Harvard College and Ph.D. (1968) from Harvard University.

Arnold J. Levine

Arnold J. Levine is a virologist/oncologist who has discovered the genes and their protein products that play a role in human cancers.

Levine discovered the *p53* gene which is altered by mutation in 55 percent of all human cancers and helps form the basis for new understanding of the molecular origin of cancers.

The Harry C. Weiss Professor of Life Sciences at Princeton University,

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Levine is the author of numerous scholarly publications and of *Viruses*, a popular Scientific American Library Series book. In 1996, he chaired the National Institutes of Health AIDS Research Program Evaluation Working Group that revised the budget for research and set research priorities for the next five years.

Levine has been awarded honorary degrees from the University of Paris and the University of Pennsylvania, and was the recipient of the Steiner Prize (1993), the S. Korman Foundation Prize (1993), and the Bristol-Myers Squibb Prize for Cancer Research (1994). He is a member of the National Academy of Sciences and the Institute of Medicine.

Born July 30, 1939, in Brooklyn, New York, Levine received his B.A. (1961) from the State University of New York at Binghamton and Ph.D. (1966) from the University of Pennsylvania, and was a postdoctoral fellow (1966-68) at the California Institute of Technology.

J. Michael McBride

J. Michael McBride is a physical organic chemist with special interest in organic solid-state, free-radical reactions, and the history of organic chemistry.

By spectroscopic investigation of free-radical reactions in single-crystal samples, McBride has developed the most detailed pictures available of the structural course of complex reactions, in some cases identifying more than 50 reaction intermediates on multiple independent pathways. Reinvestigating topics popular in nineteenth-century scientific literature has led McBride to discoveries about the growth and optical properties of crystals that are relevant to current materials science.

A professor of chemistry at Yale University, McBride has received an Alfred

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P. Sloan Research Fellowship (1971), the American Chemical Society Nobel Laureate Signature Award for Graduate Education in Chemistry (1987), the Dylan Hixon Award for Teaching in the Natural Sciences from Yale College (1992), the DeVane Medal for Distinguished Scholarship and Teaching from Phi Beta Kappa (1994), the Prelog Medal from ETH Zürich (1992), and the Chemical Manufacturers Association Catalyst Award (1996).

Born February 25, 1940, in Lima, Ohio, McBride received his A.B. (1962) from Harvard College and Ph.D. (1967) from Harvard University.

William R. Moomaw

William R. Moomaw is a physical chemist who formerly concentrated on spectroscopy but now works on the scientific aspects of global climate change and other international environmental policy issues.

Moomaw has published extensively on the electronic and triplet-state spectra of azabenzenes, and on climate change and ozone depletion. He was a principal lead author for two chapters prepared by the 1995 Intergovernmental Panel on Climate Change. His current work focuses on the role of industrial processes and energy technologies in global change. He is working to develop better models that account for the relationship between greenhouse gases and other pollutants and economic growth.

Moomaw is a professor of international environmental policy and director of the International Environmental and Resource Policy Program at the Fletcher School of Tufts University. He was an American Association for the Advancement of Science Congressional Science Fellow (1975) and has received teaching awards from Williams College and Tufts.

Born February 18, 1938, in Kansas City, Missouri, Moomaw received his B.A. (1959) from Williams College and Ph.D. (1965) from the Massachusetts Institute of Technology, and was a postdoctoral fellow (1965-66) at the University of California, Los Angeles.

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William P. Reinhardt

William P. Reinhardt is a theoretical and computational chemist with expertise in atomic and molecular physics and applied mathematics.

Reinhardt's research has spanned the areas of quantum chemistry and many-body theory, electron and photon scattering processes and the development of new algorithms for solution of quantum scattering problems, classical and quantum chaos, internal energy flow within isolated molecules, semiclassical methods, development of new methods for the computation of entropies and free energies of complex systems, and, most recently, development of simple models of forces between mesoscopic objects in solution and self-assembly of two-dimensional systems.

Reinhardt has been a professor of chemistry at the University of Washington since 1991 and is currently associate chair for the undergraduate program. He has also served on the editorial boards of several major journals.

He has received Alfred P. Sloan Research (1972) and Guggenheim (1977) Fellowships, and is a Fellow of both the American Physical Society and the American Association for the Advancement of Science.

Born May 22, 1942, in San Francisco, California, Reinhardt received his B.A. (1964) from the University of California, Berkeley, and Ph.D. (1968) from Harvard University.

Frederick S. Richardson

Frederick S. Richardson is a physical chemist whose research focuses largely on the electronic-state structure, optical properties, and stereochemical dynamics of molecules in solution and in crystals. His research also includes both experimental and theoretical studies of optical processes in phosphors and laser mate-

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rials that contain rare-earth ions.

Richardson has pioneered the development of both steady-state and time-resolved chiroptical luminescence spectroscopy as well as fluorescence-detected two-photon circular dichroism spectroscopy. He has applied chiroptical spectroscopic techniques to a wide variety of problems in chemistry and biochemistry, including the characterization of chirality-dependent intermolecular interaction processes.

Richardson is Commonwealth Professor of Chemistry at the University of Virginia, where he is also serving his third term as chemistry department chair.

Born June 8, 1939, in Carlisle, Pennsylvania, Richardson received his B.S. (1961) from Dickinson College and Ph.D. (1966) from Princeton University, and was a postdoctoral fellow (1968) at the University of California, San Diego.

John H. Seinfeld

John H. Seinfeld is a chemical engineer who has specialized in fundamental studies of the chemistry and physics of the atmosphere.

Seinfeld is widely recognized as a pioneer in the modeling of atmospheric chemistry whose work has led to an understanding of the dynamics of gases and aerosols in the atmosphere.

The Louis E. Nohl Professor at the California Institute of Technology, Seinfeld is the author of the widely used textbook *Atmospheric Chemistry and Physics of Air Pollution*.

He has received numerous awards including the Donald P. Eckman Award from the American Automatic Control Council (1970), the Curtis W. McGraw Research Award of the American Society for Engineering Education (1976), the American Institute of Chemical Engineers Allan P. Colburn Award (1976), the William H. Walker Award of the American Institute of Chemical Engineers (1980, 1986), the NASA Public Service Award (1980), the George Westinghouse Award of the American Society for Engineering Education (1987), the Service Through Chemistry Award of the American Chemical Society Orange County Section (1988), the Distinguished Alumnus Award from the College of Engineering and Applied Science, University of Rochester (1989), and the American Chemical Society Award for Creative Advances in Environmental Science and

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Technology (1993).

He is a Fellow of the Japan Society for the Promotion of Science and of the American Academy of Arts and Sciences.

Born August 3, 1942, in Elmira, New York, Seinfeld received his B.S. (1964) from the University of Rochester and Ph.D. (1967) from Princeton University.

Frank A. Weinhold

Frank A. Weinhold is a theoretical physical chemist who has contributed to methods for analyzing *ab initio* polyatomic wave functions in terms of localized chemical bonding concepts.

Weinhold pioneered the development of natural bond orbital localization methods, including natural population analysis and natural resonance theory, as incorporated in leading electronic structure packages. Such methods have proven useful in clarifying the electronic nature of torsional barriers and hydrogen bonding. He also formulated the metric geometry of equilibrium thermodynamics.

A professor of chemistry at the University of Wisconsin-Madison, Weinhold has created several software packages and videos for undergraduate and graduate usage. He has also authored more than 100 research publications.

He has been the recipient of an Alfred P. Sloan Research Fellowship (1970) and is on the honorary editorial advisory boards of two international journals.

Born May 18, 1941, in Scottsbluff, Nebraska, Weinhold received his B.A. (1962) from the University of Colorado and Ph.D. (1967) from Harvard University. He was a National Science Foundation postdoctoral fellow at Oxford University (1967-68) and at the University of California, Berkeley (1968-69).

William H. Breckenridge

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William H. Breckenridge is an experimental physical chemist who has pioneered the laser "pump-probe" method for characterizing state-to-state collisional dynamics of energy transfer collisions and chemical reactions of electronically excited atoms in the gas phase. He has also developed "half-collision" methods by which the excited atom is laser-created within a jet-cooled van der Waals complex of the atom and the species of interest.

Breckenridge recently published several articles and reviews on bonding and spin-orbit coupling in atom-rare gas van der Waals complexes.

A professor of chemistry at the University of Utah, Breckenridge has been the recipient of several teaching awards including the Chemistry Student Advisory Committee Teaching Award (1974, 1984), the Robert W. Parry Teaching Award in Chemistry (1990), the University of Utah Distinguished Teaching Award (1992), and the University of Utah Presidential Teaching Scholar Award (1994).

Other honors include a National Science Foundation Faculty Development Award (1977), a Senior Fulbright Fellowship (1984), and a Guggenheim Fellowship (1985).

Born October 14, 1941, in Louisburg, Kansas, Breckenridge received his B.S. (1963) from the University of Kansas and Ph.D. (1968) from Stanford University.

Michael P. Doyle

Michael P. Doyle is an organic chemist and educator who has vigorously promoted research at the undergraduate level while maintaining internationally recognized programs in catalysis and bioinorganic chemistry.

Doyle designed and developed extraordinarily effective asymmetric catalysts for chemical syntheses and pioneered highly selective synthetic methodologies involving metal carbenes. His work on nitrogen oxides and nitrosyls has provided basic understanding of their interaction with metalloproteins.

The Dr. D. R. Semmes Distinguished Professor of Chemistry at Trinity

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University, Doyle is the coauthor of two textbooks on organic chemistry and one monograph; he and 115 of his undergraduate students have coauthored more than 180 research publications.

Doyle has received the Chemical Manufacturers Association Catalyst Award (1982), the American Chemical Society Award for Research at an Undergraduate Institution (1988), an Alexander von Humboldt Foundation Research Award (1995), and the James Flack Norris Award for Outstanding Achievement in the Teaching of Chemistry (1995).

He was elected Doctor *honoris causa* of the Russian Academy of Sciences and is a Fellow of the American Association for the Advancement of Science.

Born October 31, 1942, in Minneapolis, Minnesota, Doyle received his B.S. (1964) from the College of St. Thomas and Ph.D. (1968) from Iowa State University, and was a postdoctoral fellow (1968) at the University of Illinois at Chicago Circle.

Irving R. Epstein

Irving R. Epstein is a physical chemist who studies nonlinear dynamics and pattern formation in chemical and biological systems.

Epstein and coworkers developed the first systematic approach to designing chemical oscillators, resulting in the discovery of several dozen new oscillating reactions. He has also pioneered methods for mechanistic analysis of complex chemical reactions and for developing systems that exhibit new forms of wave behavior and spatial pattern formation.

Epstein has been a key figure in bringing the study of nonlinear phenomena in chemical systems into the mainstream of chemical education. He is the author of a monograph on nonlinear chemical dynamics aimed at advanced undergraduates, graduate students, and scientists from other fields, as well as chemists. He currently serves on the editorial boards of *Chaos* and the *Inter-*

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journal of Complex Systems.

Provost and senior vice president for academic affairs at Brandeis University, Epstein has received a National Science Foundation Faculty Professional Development Award (1977), an Alexander von Humboldt Foundation Research Award (1977), and Guggenheim Fellowships (1977, 1987).

Born August 9, 1945, in Brooklyn, New York, Epstein received his A.B. (1966) and Ph.D. (1971) from Harvard University, and was a postdoctoral fellow (1971) at Cambridge University.

Martin R. Feinberg

Martin R. Feinberg is a chemical engineer who has been a pioneer in the development of chemical reaction network theory.

He has developed powerful theoretical tools that enable practicing engineers and chemists to make rapid inferences about the behavior of systems involving extremely complex chemistry, including those systems governed by intricate nonlinear equations.

Feinberg has been a member of the editorial board of the *Archive for Rational Mechanics and Analysis*, and a plenary lecturer at the third Society for Industrial and Applied Mathematics Conference on Dynamical Systems (1995).

A professor of chemical engineering at the University of Rochester, Feinberg has been awarded the Edward Peck Curtis Award for Excellence in Undergraduate Teaching (1994), received the American Institute of Chemical Engineers Richard Wilhelm Award (1996), and been named the John von Neumann Lecturer in Theoretical Biology at the Institute for Advanced Study (1996).

Born April 2, 1942, in New York, New York, Feinberg received his B.Ch.E. (1962) from The Cooper Union and Ph.D. (1968) from Princeton University.

Frederick D. Lewis

Frederick D. Lewis is an organic photochemist who has investigated reaction mechanisms and applications of photochemistry to organic synthesis and polymer chemistry.

Lewis has established relationships between molecular structure and photo-

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chemical reactivity for both inter- and intramolecular addition reactions, especially those involving excimer, exciplex, and radical ion intermediates and molecular aggregates.

He is a professor of chemistry at Northwestern University, where he designed the undergraduate chemistry curriculum and served as the associate dean for science. He has also been associate editor of the *Journal of the American Chemical Society*.

Lewis has received the College of Arts and Sciences Award for Distinguished Teaching (1975) and an Alfred P. Sloan Research Fellowship (1975).

Born August 12, 1943, in Boston, Massachusetts, Lewis received his A.B. (1965) from Amherst College and Ph.D. (1968) from the University of Rochester, and was a postdoctoral fellow (1968-69) at Columbia University.

Richard M. Losick

Richard M. Losick is a molecular geneticist who has contributed to the understanding of RNA polymerase sigma factors, promoter recognition, and gene transcription in bacteria, and who has helped decipher complex pathways of gene control and morphogenesis in developing microorganisms.

Losick demonstrated the existence of alternative sigma factors in bacteria and elucidated the mechanism by which RNA polymerase recognizes promoter sequences. He showed that the developmental process of spore formation in bacteria is driven by a cascade of sigma factors, and he discovered and elucidated mechanisms of cell-specific and intercellular gene control operating at the level of the activity of these factors.

Losick is chair of the Department of Molecular and Cellular Biology at

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Harvard University, where he also holds the title of Maria Moors Cabot Professor of Biology and teaches the principal introductory course on molecular biology.

He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences.

Born July 27, 1943, in Jersey City, New Jersey, Losick received his A.B. (1965) from Princeton University and Ph.D. (1969) from the Massachusetts Institute of Technology, and was a postdoctoral fellow (1968-71) at Harvard University.

William H. Miller

William H. Miller is a theoretical physical chemist who has developed a variety of methods and models for describing the dynamics of chemical reactions and molecular collision processes.

Miller's most notable accomplishments are the development of a general semiclassical theory of molecular collision processes (the classical S-matrix), the S-matrix version of the Kohn variational method for quantum reactive scattering, and a rigorous quantum approach for calculating the rate constants of chemical reactions.

A professor of chemistry at the University of California, Berkeley, Miller has received an Alfred P. Sloan Research Fellowship (1970), the Medal of the International Academy of Quantum Molecular Sciences (1974), a Guggenheim Fellowship (1975), an Overseas Fellowship at Churchill College, Cambridge University (1975), an Alexander von Humboldt Foundation Research Award (1981), the Ernest Orlando Lawrence Award (1985), the American Chemical Society Irving Langmuir Award in Chemical Physics (1990), the American Chemical Society Award in Theoretical Chemistry (1994), and the J. O. Hirschfelder Prize in Theoretical Chemistry (1996). Miller was a Christensen Fellow at St. Catherine's College, Oxford University (1993), and was elected to the International Academy of Quantum Molecular Sciences, the National Academy of Sciences, and the American Academy of Arts and Sciences.

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Born March 16, 1941, in Kosciusko, Mississippi, Miller received his B.S. (1963) from the Georgia Institute of Technology and Ph.D. (1967) from Harvard University, and was a postdoctoral fellow at the University of Freiburg, Germany.

David L. Nelson

David L. Nelson received the Teacher-Scholar award when he was a member of the Department of Biochemistry at the University of Wisconsin-Madison.

Born June 19, 1942, in Fairmont, Minnesota, Nelson received his B.A. (1964) from St. Olaf College and Ph.D. (1969) from Stanford University School of Medicine. He did postdoctoral work (1969-71) at Harvard University Medical School.

David F. Ollis

David F. Ollis is a chemical engineer who has authored or coauthored more than 100 papers on catalysis, biocatalysis, and photochemical engineering. With Jay Bailey, he wrote the textbook *Biochemical Engineering Fundamentals.*

Ollis' work over the last 20 years has helped establish the versatility of photocatalysis for purification and remediation of contaminated water and air.

A Distinguished Professor of Chemical Engineering at North Carolina State University, he has received the school's Outstanding Teacher Award (1995) and the American Society for Engineering Education Corcoran Award (1996).

Born September 28, 1941, in San Francisco, California, Ollis received his B.S.

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(1963) from the California Institute of Technology and Ph.D. (1969) from Stanford University. He did postdoctoral work (1969) at France's Centre de Cinétique Physico-Chimique.

Michael R. Philpott

Michael R. Philpott has research interests in optical properties of organic materials, electrochemical interfaces, tribology, and magnetic recording.

He developed theories of excitons and polaritons in molecular crystals, and performed collaborative experiments that detected new classes of surface optical waves on anthracene and organic dye crystals. This effort also led to the first systematic use of surface plasmon polaritons to study organic thin films. In electrochemistry a variety of optical probes were developed to study ionic adsorption in the electric double layer region on charged metal electrodes. A long-term interest in the tribology of the head-disk interface of computer disk drives has resulted in studies of the migration of disk lubricants on patterned surfaces, atomic force microscope studies of Langmuir-Blodgetts layers as lubricant models, and molecular dynamics simulations of amorphous films of carbon.

Philpott is a Ramsay Memorial Fellow (1964) and a Fellow of the American Physical Society (1986). He has received an Alfred P. Sloan Research Fellowship (1970) and a Williams-Wright Award for Vibrational Spectroscopy (1995). He was on the faculty of the University of Oregon (1965-1973) and, since 1973, has been at the IBM Almaden Research Center in San Jose, California.

Born January 2, 1940, in Bristol, England, Philpott received his B.Sc. (1961), Ph.D. (1964), and D.Sc. (1973) from University College, London. He was a postdoctoral fellow (1964) at University College, London, and the University of Oregon (1965-1967).

Douglas Poland

Douglas Poland is a theoretical chemist specializing in the application of statistical mechanics to conformational transitions in biopolymers and models for the kinetics of cooperative processes.

Poland has applied the use of Toeplitz matrices to the calculation of series

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of expansions for the thermodynamic properties of lattice gases, to the calculation of exact end-to-end distance distributions in polymers and to the determination of the properties of cooperative random walks.

He is coauthor, with H. A. Scheraga, of a text on helix-coil transitions in biopolymers and the author of a text on cooperative processes in physical biochemistry.

Poland is a professor of chemistry at The Johns Hopkins University, where from 1983 to 1987 he was chemistry department chair.

Born September 20, 1939, in Westfield, New Jersey, Poland received his B.A. (1961) and Ph.D. (1966) from Cornell University, where he was a postdoctoral fellow (1966-69).

David J. Prescott

David J. Prescott is a biochemist who has studied lipid and RNA metabolism in several organisms and the cholinergic system in insects.

Prescott has shown that protozoa first form unsaturated fatty acids that ultimately give the rich array of fatty acids found in these organisms. He has also studied nicotine resistance in insects that consume tobacco during a stage in their life cycle. He has shown that these organisms may contain a variant form of the cholinergic receptor which does not respond to nicotine in the same manner as the receptor in insects susceptible to nicotine toxicity.

An associate professor of biology and chair of the program in biochemistry

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at Bryn Mawr College, Prescott has trained several generations of undergraduates and graduates in biochemistry and neurochemistry. He has received a Charles A. Dana Fellowship (1986).

Born October 8, 1939, in Philadelphia, Pennsylvania, Prescott received his A.B. (1961) and Ph.D. (1970) from the University of Pennsylvania, and was a postdoctoral fellow at the Washington University School of Medicine.

Peter R. Rony

Peter R. Rony is a chemical engineer who has written pioneering laboratory-oriented textbooks, called "Bugbooks," in digital electronics, microprocessor interfacing, and programming. These texts have been translated into several languages, including Italian, Spanish, Japanese, French, and German. He is also the creator of one of the earliest short courses on microprocessor interfacing.

His chemical engineering research has included tautomeric catalysis, the extent of separation index, and supported liquid-phase catalysis.

Rony has been a professor in the Department of Chemical Engineering at Virginia Polytechnic Institute and State University since 1971. He was editor-in-chief of the Institute for Electrical and Electronic Engineers Computer Society magazine, *IEEE MICRO*, from 1973 to 1975.

Born June 29, 1939, in Paris, France, Rony received his B.S. (1960) from the California Institute of Technology and Ph.D. (1965) from the University of California, Berkeley.

Martin F. Semmelhack

Martin F. Semmelhack is an organic chemist who is developing new methods of synthesis with emphasis on transition-metal reagents. He is also synthesizing molecules that illuminate questions of bonding theory and mechanism, as well as those with biological activity potentially applicable in medicinal chemistry.

Semmelhack produced spiro[4.4]nonatetraene, the first molecule to show the effects of spiroconjugation, and a series of natural products including

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cephalotaxine, fommanosin, and confertin. He was the first to develop as synthesis methodology the activating effect of metals π-bonded to arene rings, which allows new versions of nucleophilic aromatic substitution.

A professor of chemistry at Princeton University, Semmelhack has been awarded Alfred P. Sloan Research (1973) and Guggenheim (1978) Fellowships.

Born November 19, 1941, in Appleton, Wisconsin, Semmelhack received his B.S. (1963) from the University of Wisconsin and Ph.D. (1967) from Harvard University, and did postdoctoral work (1967-68) at Stanford University.

K. Barry Sharpless

K. Barry Sharpless, an organic chemist who works at the interface of that discipline and inorganic chemistry, develops new homogeneous catalysts for the oxidation of organic compounds, uses inorganic reagents to discover new methods for organic chemistry, and investigates early and late transition-metal-mediated asymmetric catalysis.

He is best known for his 1980 discovery of the Sharpless asymmetric epoxidation, a general and catalytic route to optically pure compounds that changed the practice of organic synthesis. He subsequently discovered two other reactions that bear his name: the Sharpless asymmetric dihydroxylation (1987) and the Sharpless asymmetric aminohydroxylation (1995).

Before becoming W. M. Keck Professor of Chemistry at The Scripps Research Institute, Sharpless was on the faculties of the Massachusetts Institute of Technology and Stanford University. A member of the National Academy of Sciences, he has received numerous American and international prizes, awards, and honorary doctorates.

Born April 28, 1941, in Philadelphia, Pennsylvania, he received his B.A.

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(1963) from Dartmouth College and Ph.D. (1969) from Stanford University. He was a postdoctoral fellow at Stanford and at Harvard University (1969-70).

Robert W. Vaughan

Robert W. Vaughan received the Teacher-Scholar award when he was a member of the Department of Chemistry at the California Institute of Technology, and went on to win an Alfred P. Sloan Research Fellowship (1974). He died in 1979.

Born September 9, 1941, in McAlester, Oklahoma, Vaughan received his B.S. (1963) from the University of Oklahoma and Ph.D. (1967) from the University of Illinois.

Niels H. Andersen

Niels H. Andersen, educated in natural products synthesis and structural characterization, uses biophysical nuclear magnetic resonance methods to examine helix/coil transitions and the sequence determinants of protein folding, and their relationships to peptide conformational dynamics.

Andersen is recognized for his previous work on prostaglandin structure/activity relationships, organosilicon intermediates in synthesis, chiroptical correlations, and biomimetic sesquiterpene syntheses.

A professor of chemistry at the University of Washington, Andersen has received an Alfred P. Sloan Research Fellowship (1972) and a National Institutes of Health Research Career Development Award (1975).

Born October 9, 1943, in Copenhagen, Denmark, Andersen received his B.A. (1963) from the University of Minnesota and Ph.D. (1967) from Northwestern University, and was a postdoctoral fellow (1967) at Harvard University.

James E. Bailey

James E. Bailey is a chemical engineer leading an interdisciplinary team at ETH Zürich that employs modern genetics to develop new processes and products.

Bailey's group has discovered novel genetic strategies to improve productiv-

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ity of oxygen-limited organisms and to enable mammalian cells to grow in culture without added growth factors.

Bailey is coauthor of *Biochemical Engineering Fundamentals*, now in its second edition and the primary text in its field worldwide since 1977.

Bailey has received the American Institute of Chemical Engineers Allan P. Colburn Award (1979), the Curtis W. McGraw Research Award of the American Society for Engineering Education (1983), the Marvin Johnson Award of the American Chemical Society Division of Microbial and Biochemical Technology (1990), the American Institute of Chemical Engineers Food, Pharmaceutical, and Bioengineering Award (1991), and the Amgen Award in Biochemical Engineering (1993). He is a Fellow of the National Academy of Engineering and the American Association for the Advancement of Science.

Born February 28, 1944, in Great Falls, Montana, Bailey received his B.A. (1966) and Ph.D. (1969) from Rice University.

Robert Bereman

Robert Bereman is a synthetic inorganic chemist who has contributed to the understanding of the stereoelectronic properties of copper-containing metalloenzymes; to the role of diverse ligands in the superconductivity of dithiolene complexes, and recently, to the coordination chemistry of supercluster complexes.

Bereman has developed the area of iron/oxo/hydroxo "polymers" to lead to an understanding of the structure/reactivity relationships in these unique clusters. He is the author of more than 125 publications and has been a leader in developing environmental science case studies which bring together diverse topics in a single course.

A professor of chemistry at North Carolina State University, and the first Center Fellow at Sigma Xi, Bereman has received many awards from students, faculty and staff for his work in academic affairs. Recently chosen to develop the

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new First Year College, he still maintains a vigorous research program.

Born October 2, 1943, in Clinton, Indiana, Bereman received his B.S. (1965) from Butler University and Ph.D. (1969) from Michigan State University. He was a postdoctoral fellow (1969-70) at the University of Illinois.

Michael Berry

Michael Berry is a physical chemist who has discovered more than 100 chemical lasers and has employed lasers of all types for chemical, medical, and other applications.

Berry used chemical lasers to understand intimate details of chemical reaction dynamics, such as the distribution of reaction exoergicity into product electronic and vibrational states. He also invented vibrational overtone laser photochemistry, methods for isotope separation, photoacoustic Raman spectroscopy, and methods and apparatus to correct ocular refractive errors by laser thermal keratoplasty (heating of the cornea to change its shape and refractive status).

Berry is director of the cornea program at Sunrise Technologies in Fremont, California, and is also president of Antropix Corporation, one of two companies he founded.

He has received a Merck Award (1971), an Alfred P. Sloan Research Fellowship (1975), a Guggenheim Fellowship (1981), the Fresenius Award of Phi Lambda Upsilon (1982), and the American Chemical Society Award in Pure Chemistry (1983). He is a Fellow of the American Association for the Advancement of Science and the American Society for Laser Medicine and Surgery.

Born July 17, 1947, in Chicago, Illinois, Berry received his B.S. (1967) from the University of Michigan and Ph.D. (1970) from the University of California, Berkeley.

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Robert G. Bryant

Robert G. Bryant is a biophysical inorganic chemist who has worked primarily in applications of magnetic resonance to the determination of structure and molecular dynamics in biological systems.

Bryant was instrumental in understanding the nuclear spin relaxation of water protons in heterogeneous systems and has been a pioneer in developing applications of spin relaxation coupling to magnetic resonance imaging.

A Commonwealth Professor of Chemistry at the University of Virginia, Bryant has made significant contributions in applying magnetic relaxation to problems in molecular dynamics, ion-macromolecule binding, solvent-protein, and solvent-nucleic acid interactions.

Born September 13, 1943, in Mineola, New York, Bryant received his B.A. (1965) from Colgate University and Ph.D. (1969) from Stanford University.

Francis J. Castellino

Francis J. Castellino is a biochemist/molecular biologist who is one of the world's foremost investigators into the structural biology of components of the blood-clot forming and blood-clot dissolving systems.

Castellino has made important basic contributions to the mechanisms involved in plasminogen activation and in domain functions in this protein, as well as in the plasminogen activators streptokinase and tissue-type plasminogen activator. He is the coauthor of more than 200 manuscripts in these fields.

The Kleider-Pezold Professor of Biochemistry and dean of the College of Science at the University of Notre Dame, Castellino is a Fellow of the American Association for the Advancement of Science and of the New York Academy of Sciences.

Born March 7, 1943, in Pittston, Pennsylvania, Castellino received his B.S.

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(1964) from the University of Scranton and Ph.D. (1968) from the University of Iowa, and was a postdoctoral fellow (1968-70) at Duke University.

Janet E. Del Bene

Janet E. Del Bene is a computational quantum chemist who has made significant contributions to the understanding of acid-base interactions, particularly hydrogen bonding, protonation, and lithium ion association.

Del Bene has identified the levels of theory required to produce reliable structures and binding energies for acid-base complexes, and has applied these levels to investigate various chemical systems. She has characterized the vibrational spectral consequences of hydrogen bonding and proton transfer, providing a basis for understanding some of the complex spectral patterns that have been observed experimentally.

A professor of chemistry at Youngstown State University, Del Bene has published more than 100 papers in her field and has lectured extensively. Del Bene is a Fellow of the American Association for the Advancement of Science, and has received a Distinguished Alumni Award (1994) from the College of Arts and Sciences at the University of Cincinnati.

Born June 3, 1939, in Youngstown, Ohio, Del Bene received her A.B. (1963) from Youngstown University and Ph.D. (1968) from the University of Cincinnati. She was a postdoctoral fellow at the University of Wisconsin-Madison (1968) and at the Mellon Institute (1969).

Robert H. Grubbs

Robert H. Grubbs is involved in the design, synthesis, and mechanistic studies of complexes that catalyze useful organic transformations.

Over the past few years, his research group has focused on the olefin metathesis reaction. This reaction has been used to prepare families of new polymer structure from the ring opening metathesis polymerization (ROMP) of cyclic olefins that have useful mechanical, electronic, or optical properties.

Grubbs is the Victor and Elizabeth Atkins Professor of Chemistry at the California Institute of Technology. His awards include an Alfred P. Sloan

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Research Fellowship (1974), an Alexander von Humboldt Foundation Research Award (1975), the American Chemical Society Award in Organometallic Chemistry (1988), the American Chemical Society Arthur C. Cope Scholar Award (1990), and the American Chemical Society Award in Polymer Chemistry (1995). He was elected to the National Academy of Sciences in 1989 and the American Academy of Arts and Sciences in 1994.

Born February 27, 1942, in Calvert City, Kentucky, Grubbs received his B.S. (1963) from the University of Florida at Gainesville and Ph.D. (1968) from Columbia University. He was a postdoctoral fellow (1968-69) at Stanford University.

Leroy E. Hood

Leroy E. Hood is a molecular biologist, biotechnologist, and immunologist who has developed the modern instrumentation employed for DNA and protein sequencing and synthesis. He also pioneered the understanding of mechanisms of diversification in the vertebrate immune system.

As creator of the DNA sequencer that is the workhorse of the Human Genome Project, Hood was first to apply it to sequence complex immune receptor gene families.

The William Gates III Professor of Biomedical Sciences at the University of Washington, Hood is the author of three widely respected textbooks on biochemistry, molecular biology, and immunology, and has published more than 470 papers.

Hood has received the Albert Lasker Award (1987) for studies of immune diversity. He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences, and is a Fellow of the American Association

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for the Advancement of Science.

Born October 10, 1938, in Missoula, Montana, Hood received his B.S. (1960) from the California Institute of Technology, M.D. (1964) from The Johns Hopkins Medical School, and Ph.D. (1968) from the California Institute of Technology. He was a postdoctoral fellow (1967-70) at the National Cancer Institute.

Bruce S. Hudson

Bruce S. Hudson is a physical and biophysical chemist who has pioneered the use of ultraviolet resonance Raman scattering for application to problems in molecular spectroscopy.

In early work he demonstrated that the excited electronic-state ordering of linear conjugated polyenes is not that predicted by simple theories. He has pioneered the use of several fluorescent probes including the linear polyene parinaric acid. His recent work includes the first spectroscopic determination of the barrier of a unimolecular reaction, the isomerization of ethylene.

A professor of chemistry at Syracuse University, Hudson is the author of more than 150 publications in a wide range of areas, including biophysical chemistry and molecular electronic and vibrational spectroscopy.

He has received an Alfred P. Sloan Research Fellowship (1975) and a National Institutes of Health Research Career Development Award (1975). He is a Fellow of the American Physical Society.

Born March 15, 1945, in Peekskill, New York, Hudson received his B.S (1967) from the California Institute of Technology and Ph.D. (1972) from Harvard University.

John A. Katzenellenbogen

John A. Katzenellenbogen is an organic chemist who has studied the action of steroids and has used steroid receptors as vehicles for the development of novel diagnostic agents.

He has collaboratively developed the first positron-emitting radiopharma-

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ceuticals for imaging receptor-positive tumors in the breast and prostate. He has also developed fluorescent ligands and effective chemical probes for the estrogen receptor, and novel mechanism-based serine protease inhibitors.

Katzenellenbogen is widely recognized for his contributions to understanding the pharmacology of steroid receptors and for articulating and implementing general principles for the design and development of receptor-based radiopharmaceuticals.

The Roger Adams Professor of Chemistry at the University of Illinois at Urbana-Champaign, Katzenellenbogen has received an Alfred P. Sloan Research Fellowship (1974), a Guggenheim Fellowship (1977), and the Society of Nuclear Medicine Paul Aebersold Award (1995). He is a Fellow of the American Association for the Advancement of Science and the American Academy of Arts and Sciences.

Born May 10, 1944, in Poughkeepsie, New York, Katzenellenbogen received his A.B. (1966) and Ph.D. (1969) from Harvard University.

Denis A. Kohl

Denis A. Kohl is a physical chemist who has been involved in experimental, theoretical, and educational projects in chemistry.

His work has included the observation of the free-radical intermediate on the bromination of ethylene, multiple scattering in electron-molecule collisions, and the use of computers for handling large lecture courses.

An associate professor of chemistry at The University of Texas at Austin, Kohl is currently developing hardware and software for introductory chemistry laboratory courses.

Born November 17, 1938, in Mason City, Iowa, Kohl received his B.S. (1960) from Iowa State University and Ph.D. (1967) from Indiana University. He was a

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postdoctoral fellow at the University of Michigan (1967) and at The University of Texas (1968-70).

Edward E. Penhoet

Edward E. Penhoet is president and chief executive officer of Chiron, the biotechnology company he cofounded in 1981. He has responsibility for Chiron Therapeutics and Chiron Vision, as well as finance and administration, regulatory and quality affairs, manufacturing, engineering, human resources, and the firm's relationships with the financial community and other key publics.

For 10 years prior to founding Chiron, Penhoet was a faculty member of the biochemistry department of the University of California, Berkeley, and continued as an adjunct member of the faculty, teaching each year. In May 1991, Penhoet received the first Distinguished Faculty Award from the university's Department of Molecular and Cell Biology. He has published more than 50 scientific articles and papers.

Penhoet has shared, with William J. Rutter, a Chiron cofounder, the Entrepreneur of the Year Award presented by Ernst & Young and Inc. Magazine (1992). They have also received the Harvard Business School Northern California Alumni Chapter's Entrepreneur of the Year Award (1994).

A member of the board of directors of numerous civic, professional, and not-for-profit organizations, Penhoet is a member of the American Society of Biological Chemists and has testified before the U.S. Congress on the biotechnology industry and the role of federal funding in support of basic research.

Born December 11, 1941, in Oakland, California, Penhoet earned his A.B. (1963) from Stanford University and Ph.D. (1968) from the University of Washington. He was a postdoctoral fellow (1968-70) at the University of California, San Diego.

Herschel A. Rabitz

Herschel A. Rabitz's research interests lie at the interface of chemistry, physics, and engineering, with principal areas of focus including molecular dynamics, chemical kinetics, and optical interactions with matter.

An overriding theme throughout his research is molecular scale systems analy-

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sis. Rabitz has more than 400 publications in the general area of chemical physics.

Rabitz joined the faculty of the Department of Chemistry at Princeton University in 1991, and was chair of the department from 1993 to 1996. He is also an affiliated member of Princeton's Program in Applied and Computational Mathematics.

Born April 10, 1944, in Los Angeles, California, Rabitz received his B.S. (1966) from the University of California, Berkeley, and Ph.D. (1970) from Harvard University, where he was a postdoctoral fellow (1971).

Robert F. Schleif

Robert F. Schleif is a biochemist/molecular biologist who is studying the basic mechanisms of gene regulation, primarily in the L-arabinose operon of *Escherichia coli.*

A professor of biology at The Johns Hopkins University, Schleif discovered the phenomenon of DNA looping, a mechanism of gene regulation that has since been found to be operational in a wide variety of gene systems in both prokaryotes and eukaryotes.

He is the author of a monograph on experimental methods in molecular biology and an advanced text on molecular biology as well as more than 80 peer-reviewed research papers.

Born November 22, 1940, in Wenatchee, Washington, Schleif received his B.S. (1963) from Tufts University and Ph.D. (1967) from the University of California, Berkeley, and was a postdoctoral fellow (1967-71) at Harvard University.

Jeffrey I. Zink

Jeffrey I. Zink is an inorganic chemist who has carried out pioneering studies in

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the areas of spectroscopy of metal-containing compounds and of inorganic optical materials.

Zink has identified the origin and mechanisms of triboluminescence (emission of light caused by mechanical stress). His fundamental work on excited-state distortions led to the measurement and explanation of the origins of unusual interference effects in the spectra of metal complexes caused by coupled states. Most recently, he made the first optical materials and biosensors using encapsulated proteins in sol-gel silicate glass.

Zink is a professor of chemistry at the University of California, Los Angeles, and the author of more than 175 publications. He has received an Alexander von Humboldt Foundation Research Award (1979), a Guggenheim Fellowship (1987), the Hanson-Dow Distinguished Teaching Award (1994), and a U.S. Department of Energy Materials Science Award (1996).

Born January 8, 1945, in Milwaukee, Wisconsin, Zink received his B.S. (1966) from the University of Wisconsin-Madison and Ph.D. (1970) from the University of Illinois at Urbana-Champaign.

Larry R. Dalton

Larry R. Dalton is a materials chemist who is developing new techniques in nonlinear spectroscopy and is synthesizing new materials characterized by novel nanoscale architectures.

Dalton introduced and advanced saturation-transfer magnetic resonance spectroscopy and phase-sensitive detection techniques in femtosecond, multidimensional pulsed nonlinear optical spectroscopy. He has pioneered the development of polymeric electro-optic modulators and their integration with semiconductor VLSI electronics for utilization in communication systems.

As principal investigator for the IBM-sponsored Socrates program, Dalton led the development of computer-assisted instruction at the University of Southern California, where he is the Harold and Lillian Moulton Professor of Chemistry and a professor of materials science and engineering. Dalton also serves as codirector of the Loker Hydrocarbon Research Institute and director of the Center for Nanoscale Materials and Processing. He has received the university's Associates Award for Creativity in Research and Scholarship (1990).

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Other honors include an Alfred P. Sloan Research Fellowship (1974), a National Institutes of Health Research Career Development Award (1976), and the Burlington Northern Foundation Faculty Achievement Award for Teaching Excellence (1986).

Born April 25, 1943, in Belpre, Ohio, Dalton received his B.S. (1965) from the Honors College of Michigan State University and Ph.D. (1971) from Harvard University.

Victor W. Day

Victor W. Day is a structural inorganic chemist who uses single-crystal diffraction techniques to discern the relationship between structure and reactivity of properties for inorganic and organometallic compounds.

Day clarified inaccuracies in the literature concerning Mn(III) coordination chemistry and performed some of the first structural analyses for Mn porphyrin and Schiff base complexes. He performed extensive structural analyses for some of the first catalytically active molecular metal cluster species, bent metallocene organoactinide complexes, and organometallic derivatives of polyoxoanions. He has also structurally characterized the stable intermediates for the complex system of Ti(IV) alkoxide hydrolysis/condensation reactions and is currently characterizing microtwinning associated with phase transitions of selected silicate-based ferroic materials.

Day is a professor of chemistry at the University of Nebraska-Lincoln. In addition to using X-ray crystallography as a powerful research tool for applications like these, he has been a longtime advocate of its use as a routine analytical tool for synthetic chemists.

Born December 12, 1943, in Dayton, Kentucky, Day received his B.S. (1965) from the University of Kentucky and Ph.D. (1969) from Cornell University. He

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was a postdoctoral fellow (1972) at the Massachusetts Institute of Technology.

Robert Ditchfield

Robert Ditchfield is a theoretical chemist who has developed methods for studying the ground-state electronic structure of molecules in external magnetic and electric fields.

Ditchfield successfully developed *ab initio* techniques for the calculation of nuclear magnetic shielding tensors using gauge-including atomic functions. The application of these methods produced the first *ab initio* gauge-invariant magnetic shielding tensors for the nuclei in organic molecules.

A professor of chemistry at Dartmouth College, Ditchfield served as department chair from 1985 to 1988. He has been honored for his accomplishments as a teacher in introductory and major- and graduate-level physical chemistry courses with a J. Kenneth Huntington Distinguished Teaching Award (1981). He has also received an Alfred P. Sloan Research Fellowship (1976).

Born April 8, 1944, in Walkden, England, Ditchfield received his B.Sc. (1965) from the University of Sheffield and D.Phil. (1968) from the University of Sussex. He was a postdoctoral fellow at Carnegie-Mellon University (1968-70) and at Bell Laboratories (1972).

Elvera Ehrenfeld

Elvera Ehrenfeld is a biochemist and molecular biologist studying the replication of RNA viruses and their interaction with their host cells.

Ehrenfeld's research program involves the structure and function of specific genes and gene products of several viruses that infect humans. She has identified the viral protein that catalyzes replication of the poliovirus RNA genome, and has performed extensive structural and molecular genetic analyses of that protein. This work may lead to the design of a specific inhibitor with potential as a chemotherapeutic antiviral agent. She has defined the mechanism of viral interference with host cell protein synthesis, and characterized RNA-protein interactions required for viral RNA translation.

A professor of biochemistry and molecular biology at the University of

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California, Irvine, as well as dean of the School of Biological Sciences, Ehrenfeld serves on the editorial boards of several scientific journals and as a consultant to government and private organizations on scientific policy and funding issues.

Born March 1, 1942, in Philadelphia, Pennsylvania, Ehrenfeld received her B.A. (1962) from Brandeis University and Ph.D. (1967) from the University of Florida, and was a postdoctoral fellow (1967) at Albert Einstein College of Medicine.

Thomas F. George

Thomas F. George is an academic administrator and a theoretical chemical physicist who has developed novel theories of laser-induced processes associated with molecular collisions, chemical reactions, and surface/materials physics.

Formerly provost/academic vice president and a professor of chemistry and physics at Washington State University, George is now chancellor of the University of Wisconsin-Stevens Point and an adjunct research professor of physics at Korea University, Seoul. He is the author of some 500 research articles.

George's honors and awards include an Alfred P. Sloan Research Fellowship (1976), the Marlow Medal of the Royal Society of Chemistry (1979), a University of Rochester Mentor Award (1982), a Guggenheim Fellowship (1983), and a Distinguished Alumni Award, Gettysburg College (1987). He is a Fellow of the New York Academy of Sciences (1981), the American Physical Society (1984), the Society of Photo-Optical Instrumentation Engineers (1994), and the American Association for the Advancement of Science (1994).

Born March 18, 1947, in Philadelphia, Pennsylvania, George received his B.A. (1967) from Gettysburg College and Ph.D. (1970) from Yale University. He was a postdoctoral fellow at the Massachusetts Institute of Technology (1970-71) and at the University of California, Berkeley (1971-72).

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William C. Harris

William C. Harris is president and executive director of the Biosphere 2 Center and associate director of the Earth Institute at Columbia University. He was formerly director of mathematical and physical sciences at the National Science Foundation, where he was responsible for providing leadership for the Foundation's investment in astronomy, chemistry, mathematics, materials and physics, and in undergraduate research and interdisciplinary research.

Before joining the National Science Foundation, Harris was a member of the faculty at Furman University, where he established a highly innovative program in molecular spectroscopy.

Born November 4, 1944, in New York, New York, Harris received his B.S. (1966) from The College of William and Mary and Ph.D. (1970) from the University of South Carolina. He was a postdoctoral fellow (1970) at the Laboratory of Chemical Physics in Bethesda, Maryland.

Wayne L. Hubbell

Wayne L. Hubbell is a biophysical chemist who has pioneered several EPR spin-labeling techniques and their applications to biological systems.

Hubbell's laboratory has developed a novel strategy called site-directed spin labeling and demonstrated its utility for determination of secondary structure, tertiary interactions, and real-time conformational dynamics in membrane and membrane-active proteins. The technique promises to be a major tool in analysis of structure-function relationships in these proteins.

Hubbell is the Jules Stein Professor of Ophthalmology and a professor of chemistry and biochemistry at the University of California, Los Angeles. He has

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received an Alfred P. Sloan Research Fellowship (1973), Research to Prevent Blindness Senior Investigator Award (1990), the Biophysical Society's E. R. Cole Award (1991), an Alcon Research Institute Award (1994), and a National Institutes of Health MERIT Award (1990).

Born March 24, 1943, in Riverside, California, Hubbell received his B.S. (1965) from Oregon State University and Ph.D. (1970) from Stanford University. He held postdoctoral positions at the Massachusetts Institute of Technology (1970-71) and at the University of California, Berkeley (1971-72).

Marc W. Kirschner

Marc W. Kirschner is a cell biologist whose research focuses on three areas: the controls that regulate the cell cycle, identifying and characterizing the genes involved in establishing the basic body plan of the vertebrate embryo, and the role of microtubules and actin filaments in cell morphogenesis.

He is past president of the American Society for Cell Biology, former chair of its public policy committee, and a member of the Delegation for Biomedical Research. He serves on several scientific advisory boards, including the advisory board to the director of the National Institutes of Health.

Chair of the Department of Cell Biology and Carl W. Walter Professor at Harvard Medical School, Kirschner was a member of the Department of Molecular Biology at Princeton University.

Born February 28, 1945, in Chicago, Illinois, Kirschner received his B.A. (1966) from Northwestern University and Ph.D. (1971) from the University of California, Berkeley. He was a National Science Foundation postdoctoral fellow at the University of California, Berkeley (1971), and at Oxford University (1972).

Lynn C. Klotz

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Lynn C. Klotz is a consultant to the biotechnology industry in technical-business strategy.

As a graduate student under Bruno Zimm, Klotz developed viscoelasticity, the first technique for determining molecular weights of chromosome-sized molecules. He was one of the first to combine molecular evolution studies with molecular biology, using evolution of key microorganisms from RNA sequences to help understand the evolution of their DNA and chromosome structures.

Klotz serves as a consultant to OncorPharm, Inc., one of four biotechnology companies that he cofounded. He is the author of more than 40 scientific and business articles and has been awarded two U.S. patents. In the early 1980s, he coauthored *The Gene Age: Genetic Engineering and the Next Industrial Revolution*, which was nominated for a Pulitzer Prize.

Born November 25, 1940, in Trenton, New Jersey, Klotz received his A.B. (1965) from Princeton University and Ph.D. (1971) from the University of California, San Diego.

L. Gary Leal

L. Gary Leal is a chemical engineer with research interests in fluid mechanics, and in the dynamics of complex fluids such as polymeric liquids, liquid crystals, suspensions, and emulsions.

Leal's research has led to approximately 175 publications. He is the author of a widely used graduate-level textbook on fluid mechanics and convective transport processes, and has been a leader in incorporation of asymptotic techniques to studies of transport phenomena for chemical engineers.

A professor and the chair of chemical engineering at the University of California, Santa Barbara, Leal has received the Allan P. Colburn (1978) and William H. Walker (1993) Awards of the American Institute of Chemical Engineers. He was elected a Fellow of the American Physical Society in 1984 and a member of the National Academy of Engineering in 1987.

Born March 18, 1943, in Bellingham, Washington, Leal received his B.S. (1965) from the University of Washington and Ph.D. (1969) from Stanford University, and was a postdoctoral fellow (1969-70) at Cambridge University.

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W. Carl Lineberger

W. Carl Lineberger is a physical chemist who has developed multiple experimental techniques for probing the structure and reactivity of gas-phase anions.

The E. U. Condon Professor of Chemistry and Biochemistry and Fellow of the Joint Institute for Laboratory Astrophysics at the University of Colorado, Lineberger and his students are responsible for a large number of the accurately known electron affinities of molecules, and have measured intercombination splittings and structures of transition states.

Lineberger has received an Alfred P. Sloan Research Fellowship (1972), the Herbert P. Broida Prize in Chemical Physics (1981), and the Bomem-Michelson Prize from the Coblentz Society (1987). He has also been awarded the Meggers Prize (1988) from the Optical Society of America, the Earle K. Plyler Prize in Spectroscopy (1992) from the American Physical Society, and the American Chemical Society Irving Langmuir Award in Chemical Physics (1996). He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences.

Born December 5, 1939, in Hamlet, North Carolina, Lineberger received both his B.E.E. (1961) and Ph.D. (1965) from the Georgia Institute of Technology. He was a postdoctoral fellow at U.S. Army, Aberdeen Research and Development Center (1965-68), and at the University of Colorado (1968-70).

Patrick S. Mariano

Patrick S. Mariano is an organic chemist whose research has produced important contributions to the areas of organic photochemistry, synthetic organic chemistry, and mechanistic enzymology.

Mariano is perhaps best known for his pioneering investigations that have led to the design and mechanistic analysis of new classes of synthetically

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useful photochemical processes which are initiated by excited-state electron transfer. In addition, his studies related to synthetic methodology development have led to efficient syntheses of key members of several alkaloid natural product families.

A professor of chemistry at the University of New Mexico, Mariano is the author of more than 140 research publications. He is also the editor of a widely regarded monograph on electron-transfer chemistry and biochemistry. He has received the Fresenius Award of Phi Lambda Upsilon (1978).

Born August 31, 1942, in Lyndhurst, New Jersey, Mariano received his B.S. (1964) from Fairleigh Dickinson University and Ph.D. (1969) from the University of Wisconsin-Madison. He was a postdoctoral fellow (1968-70) at Yale University.

Tobin J. Marks

Tobin J. Marks received the Teacher-Scholar award as a member of the Department of Chemistry at Northwestern University, where he is Morrison Professor and professor of materials science and engineering. His other honors include an Alfred P. Sloan Research Fellowship (1974).

Born November 25, 1944, in Washington, D.C., he received his B.A. (1966) from the University of Maryland and Ph.D. (1970) from the Massachusetts Institute of Technology.

James A. Spudich

James A. Spudich is a biochemist who has established *in vitro* movement assays for molecular motor function and a cell system for molecular genetic analysis of myosin, a molecular motor.

Spudich is widely recognized for his pioneering work in the field of molecular motors. His work has determined the roles of myosin *in vivo* in nonmuscle cells, and has provided a better understanding of the molecular basis of transduction of chemical energy of ATP hydrolysis by myosin into mechanical motion and force production.

The Douglass M. and Nola Leishman Professor of Cardiovascular Disease

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and chair of the Department of Biochemistry at Stanford University School of Medicine, Spudich has received an American Heart Association Basic Research Prize (1991), an Alexander von Humboldt Foundation Research Award (1991), a Biophysical Society National Lectureship (1995), and the Lewis S. Rosenstiel Award for Distinguished Work in Basic Medical Sciences (1996). He was elected to the National Academy of Sciences in 1991.

Born January 7, 1942, in Collinsville, Illinois, Spudich received his B.S. (1963) from the University of Illinois at Urbana-Champaign and Ph.D. (1968) from Stanford University. He was a postdoctoral fellow at Stanford and at Cambridge University.

Mark S. Wrighton

Mark S. Wrighton's research has concentrated on elucidating the basic principles underlying the conversion of solar energy to chemical fuels and electricity, discerning new catalysts and ways of making them, understanding chemistry at interfaces, and providing the knowledge base for the development of new electrochemical devices.

Wrighton is chancellor and a professor of chemistry at Washington University in St. Louis.

He is also coauthor of *Organometallic Photochemistry*, and served as consulting editor for four editions of the textbook *General Chemistry* by Darrell Ebbing.

Wrighton, who was the first recipient of the Herbert Newby McCoy Award from the California Institute of Technology (1972), has gone on to receive several major awards and honors including the American Chemical Society Award in Pure Chemistry (1981), a MacArthur Fellowship (1983), the Ernest Orlando Lawrence Award (1983), and the American Chemical Society Award in Inorganic

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Chemistry (1988). He is a Fellow of the American Academy of Arts and Sciences.

Born June 11, 1949, in Jacksonville, Florida, Wrighton earned his B.S. (1969) from Florida State University and Ph.D. (1972) from the California Institute of Technology.

Ronald W. Davis

Ronald W. Davis is a leader in biotechnology and in the development and application of novel DNA methodologies to biological systems.

Davis is involved in research on the development of molecular biology of yeast, higher plants, and human parasites, and in the development of technology for constructing genetic and physical maps and for automation of DNA sequencing for the Human Genome Project.

Davis now serves as director of the Stanford DNA Sequencing Center, and is also a professor of biochemistry and genetics at the Stanford University School of Medicine. He was elected to the National Academy of Sciences in 1983 and serves as chair of the Strategic Research Steering Committee of the World Health Organization. He has received many awards in biochemistry and genetics, including the American Chemical Society Eli Lilly Award in Biological Chemistry (1976).

Born July 17, 1940, in Maroa, Illinois, Davis received his B.A. (1964) from Eastern Illinois University and Ph.D. (1970) from the California Institute of Technology. He was a postdoctoral fellow (1970-72) at Harvard University.

William M. Gelbart

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William M. Gelbart is a theoretical physical chemist who has worked in gas-phase photophysics, light scattering from simple liquids, liquid-crystal phase transitions, and the statistical thermodynamics of complex fluids (surfactant solutions, colloidal suspensions, adsorbed monolayers, and model membrane and biomolecule interactions).

A professor of chemistry and biochemistry at the University of California, Los Angeles, and head of the physical chemistry division, Gelbart's enthusiasm and dedication both in first-year undergraduate and advanced graduate classes

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have earned him the UCLA Distinguished Teaching Award (1996).

He has been recognized with several other awards including an Alfred P. Sloan Research Fellowship (1974) and the Lennard-Jones Medal of the Royal Society of London (1991). He was elected a Fellow of the American Physical Society in 1987.

Born June 12, 1946, in Syracuse, New York, Gelbart received his B.S. (1967) from Harvard College and Ph.D. (1970) from The University of Chicago, where he was a postdoctoral fellow (1970-71).

George C. Levy

George C. Levy is a chemist who began his career developing technology in nuclear magnetic resonance (NMR) spectroscopy and NMR data processing, and has more recently been an entrepreneur leading several high-tech startup companies. Levy is currently president of Advanced Modular Power Systems, Inc., a firm developing energy conversion devices for aerospace and future consumer and industrial applications.

Levy published many of the early studies linking carbon-13 and other-nuclei spin relaxation to important molecular dynamics information in complex molecules. He is coauthor of the first published monograph on carbon-13 nuclear magnetic resonance, and is credited as editor or coauthor of eight other monographs.

He has been the recipient of an Alfred P. Sloan Research Fellowship (1975) and the Thomas L. Saaty Prize for Applied Advances in Mathematical and Management Science (1990).

Born June 4, 1944, in Brooklyn, New York, Levy received his A.B. (1965) from Syracuse University and Ph.D. (1968) from the University of California, Los Angeles.

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Roger K. Murray, Jr.

Roger K. Murray, Jr., is a synthetic organic chemist who has pursued the synthesis and chemistry of cage compounds related to adamantane and its derivatives.

In collaboration with George A. Olah, Murray prepared and defined the structures of the 8,9-dehydro-2-adamantyl cation, the 4-methyl-2,5-dehydro-4-protoadamantyl cation, the 2,4-dehydro-5-homoadamantyl cation, and the triaxane-2-methyl cation.

Murray is an associate professor in the Department of Chemistry and Biochemistry at the University of Delaware. He has been a Fulbright-Hays Visiting Professor at the Université de Reims (1977-78) and the Herbert H. Lank Exchange Professor at the Université de Montréal (1981).

Born July 9, 1942, in Buffalo, New York, Murray received his A.B. (1964) from Cornell University and Ph.D. (1969) from Michigan State University, and was a postdoctoral fellow (1969-71) at Princeton University.

Jack R. Norton

Jack R. Norton is active in both inorganic and organic chemistry. He has elucidated the mechanisms of a number of reactions important either in industrial catalysis or in organic synthesis. Norton has identified the factors that determine the rates of proton transfer in organometallic and inorganic systems. He has shown how the presence of metals affects the symmetry rules for cycloaddition reactions. He coauthored and edited *Transition-Metal Organometallic Chemistry.*

At Colorado State University, Norton teaches both organic and inorganic chemistry at the graduate level, and has developed a kinetics course taken by students from both divisions. He is also an associate editor of the *Journal of the American Chemical Society.*

He has received an Alfred P. Sloan Research Fellowship (1977), an Innovation Recognition Award from Union Carbide (1985), a Guggenheim Fellowship (1989), and an Alexander von Humboldt Foundation Research Award (1993).

Born May 5, 1945, in Dallas, Texas, Norton received his A.B. (1967) from Harvard College and Ph.D. (1972) from Stanford University, and was a postdoctoral fellow (1971-72) at Cambridge University.

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Larry E. Overman

Larry E. Overman's research interests involve the invention of new reactions and strategies in organic synthesis, and the total synthesis of complex target molecules.

Among his methodological accomplishments are the invention of a broadly useful method for preparing allylic nitrogen compounds from readily available allylic alcohols, and a group of cyclization reactions that create new heterocyclic and carbocyclic rings while controlling stereochemistry to an exceptional degree. Overman's group has completed total syntheses of more than 50 natural products.

Overman is Distinguished Professor of Chemistry at the University of California, Irvine, where he has received the Alumni Association Distinguished Research Award (1979) and the School of Physical Sciences Distinguished Teaching Award (1981).

His other honors include an Alfred P. Sloan Research Fellowship (1975), an Alexander von Humboldt Foundation Research Award (1985), an American Chemical Society Arthur C. Cope Scholar Award (1989), a Guggenheim Fellowship (1993), and the American Chemical Society Award for Creative Work in Synthetic Organic Chemistry (1995). He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences.

Born March 9, 1943, in Chicago, Illinois, Overman received his B.A. (1965) from Earlham College and Ph.D. (1969) from the University of Wisconsin-Madison. He was a postdoctoral fellow (1969-71) at Columbia University.

Alexander Pines

Alexander Pines is a physical chemist whose primary area of research has been

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nuclear magnetic resonance (NMR) theories and experiments; his techniques are widely used in chemistry and materials science.

In 1972, Pines demonstrated time reversal of dipole-dipole coupling and helped launch a new era of modern solid-state NMR with the introduction of proton-enhanced NMR of dilute spins using cross-polarization and spin coupling. Pines continued to develop multiple-quantum spectroscopy, zero-field NMR, iterative schemes, sample reorientation, optical pumping and surface NMR. A recent achievement has been the enhancement of solution NMR and magnetic resonance imaging (MRI) by means of laser-polarized xenon. Pines is the author of more than 280 scientific publications.

A professor of chemistry at the University of California, Berkeley, Pines holds the President's Chair in Undergraduate Education and has received the university's Distinguished Teaching Award (1986), as well as the Robert Foster Cherry Great Teacher Award from Baylor University (1994).

Pines has been Joliot-Curie Professor at the École Supérieure de Physique et Chimie in Paris (1987), Hinshelwood Lecturer at Oxford University (1990), Centenary Lecturer of the Royal Society of Chemistry (1994), and Loeb Lecturer in Physics at Harvard University (1994). In 1991, he shared the Wolf Prize in Chemistry with Richard Ernst.

Other awards and honors include the Leo Hendrik Baekeland Award of the American Chemical Society North Jersey Section (1985), the American Chemical Society Nobel Laureate Signature Award for Graduate Education in Chemistry (1982), the Harrison Howe Award of the American Chemical Society Rochester Section (1991), the Ernest Orlando Lawrence Award (1988), the Pittsburgh Spectroscopy Award (1989), and the Bourke Medal of the Royal Society of Chemists (1988). He is a member of the National Academy of Sciences.

Born June 22, 1945, in Tel Aviv, Israel, Pines received his B.S. (1967) from the Hebrew University of Jerusalem and Ph.D. (1972) from the Massachusetts Institute of Technology.

Christopher A. Reed

Christopher A. Reed is an inorganic chemist who specializes in the synthesis, structural characterization, physical properties, and reactivity of novel mole-

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cules in bioinorganic, organometallic, and coordination chemistry.

He is best known for systematizing the spin-state/structure relationships of iron porphyrins and showing their relevance to the functioning of hemoproteins such as hemoglobin. More recently, he has discovered that derivatized carboranes are a versatile new class of exceptionally inert anions with applications in electrophilic catalysis, in new strong acid chemistry, and as counterions to some of the most potent one-electron oxidizing agents known to date.

Reed has served on the editorial board of the journal *Inorganic Chemistry*.

A professor of chemistry at the University of Southern California, Reed has received the campus' highest recognition for creativity in research, the Associates Award (1986). Other honors include an Alfred P. Sloan Research Fellowship (1986).

Born February 25, 1947, in Auckland, New Zealand, Reed received his B.S. (1968) and Ph.D. (1971) from the University of Auckland, and was a postdoctoral fellow (1971-73) at Stanford University.

Robert G. Roeder

Robert G. Roeder is a biochemist and molecular biologist who has pioneered studies of the structure, function, and mechanism of action of both general and gene-specific transcription factors in eukaryotic cells.

The Arnold O. and Mabel M. Beckman Professor of Biochemistry and Molecular Biology at The Rockefeller University, Roeder's awards include the Outstanding Investigator Award of the National Cancer Institute (1986), the National Academy of Sciences-U.S. Steel Award in Molecular Biology (1986), a Harvey Society Lectureship (1988), the Lewis S. Rosenstiel Award for Distin-

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guished Work in Basic Medical Sciences (1995), and the Passano Award (1995).

Roeder is a member of the National Academy of Sciences (1988), and a Fellow of the American Association for the Advancement of Science (1992), the American Academy of Microbiology (1992), the New York Academy of Sciences (1995), and the American Academy of Arts and Sciences (1995). He is past president of the Harvey Society of New York (1994-95).

Born June 3, 1942, in Boonville, Indiana, Roeder received his B.A. (1964) from Wabash College and Ph.D. (1969) from the University of Washington. He was a postdoctoral fellow (1969-71) at the Carnegie Institution of Washington.

William H. Scouten

William H. Scouten is a biochemist/biotechnologist working in the area of solid-phase biochemistry, including protein immobilization and purification.

Scouten is the developer of several novel protein immobilization methods, as well as a series of biosensors based on the reagent dansyl aziridine, which was first synthesized in his lab. He also has developed a novel immobilized protein synthesis system and new methods for oriented immobilization of biomolecules.

The author of a widely used monograph on affinity chromatography, he is on the editorial board of four journals, including the American Chemical Society journal *Bioconjugate Chemistry.*

Director of the Biotechnology Center at Utah State University, Scouten has received the Lindback Award for Distinguished Teaching (1975) and a Fulbright Fellowship (1976).

Born February 12, 1942, in Corning, New York, Scouten received his B.A. (1964) from Houghton College and Ph.D. (1969) from the University of Pittsburgh. He was a National Institutes of Health postdoctoral fellow (1969) at the State University of New York at Stony Brook.

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Barbara Ramsay Shaw

Barbara Ramsay Shaw is a biological chemist well known for her seminal studies on the nucleosome structure of chromatin and her pioneering work on modification of DNA by boron substituents. Her lab created a novel set of boronated nucleic acids that may find use as antitumor and gene therapy agents, as well as DNA sequencing agents. From genetic experimentation, she elucidated the origin and kinetics of cytosine mutations in DNA.

A professor of chemistry at Duke University, Shaw teaches and conducts basic research in biochemistry.

Born October 19, 1943, in Newton, New Jersey, Shaw received her B.A. (1965) from Bryn Mawr College and Ph.D. (1973) from the University of Washington. She was a postdoctoral fellow (1973) at Oregon State University.

John P. Simons

John P. Simons is a theoretical chemist who has studied the electronic structures and dynamical behavior of a wide range of negative molecular ions.

Simons was among the earliest to characterize so-called dipole-bound anions and double-Rydberg anions. His work on vibrational/rotational/collisional to electronic energy flow helped interpret various electron autodetachment experiments.

Simons has written three graduate-level textbooks on quantum mechanics in chemistry as well as more than 200 scientific papers.

The Henry Eyring Professor of Chemistry at the University of Utah, Simons has been the recipient of an Alfred P. Sloan Research Fellowship (1973), a Guggenheim Fellowship (1979), and the Medal of the International Academy of Quantum Molecular Sciences (1993).

Born April 2, 1945, in Youngstown, Ohio, Simons earned his B.S. (1967)

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from Case Institute of Technology and Ph.D. (1970) from the University of Wisconsin, and was a postdoctoral fellow (1970-71) at the Massachusetts Institute of Technology.

Christopher T. Walsh

Christopher T. Walsh is a biochemist who has worked on a wide variety of topics in enzyme mechanistic analysis, bioorganic chemistry, and molecular pharmacology.

Walsh worked extensively on mechanism-based as well as slow-binding inhibitors of enzymes. He also studied several classes of redox enzymes including those that utilize mercury or nickel. He has characterized the mechanism of action of antibacterial drugs and the molecular mechanisms of resistance to vancomycin.

Walsh has published more than 400 research publications and written the monograph *Enzymatic Reaction Mechanisms.*

He has held chaired professorships at the Massachusetts Institute of Technology and at Harvard University, where he is the Hamilton Kuhn Professor of Biological Chemistry and Molecular Pharmacology at the Harvard Medical School. He has been elected to both the Institute of Medicine (1989) and the National Academy of Sciences (1989).

Born February 16, 1944, in Boston, Massachusetts, Walsh received his A.B. (1965) from Harvard College and Ph.D. (1970) from The Rockefeller University, and was a postdoctoral fellow (1970-72) at Brandeis University.

W. Henry Weinberg

W. Henry Weinberg is a chemical engineer and physical chemist who conducts fundamental research in the areas of surface science, catalysis, and electronic materials.

Weinberg's research is directed at understanding the chemistry and physics governing the interactions and reactions of molecules at solid surfaces. His group has made numerous seminal contributions in the development of experimental techniques and their application to the study of elementary surface reactions. Weinberg has written more than 450 scientific papers and is coauthor of *Low-*

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Energy Electron Diffraction.

Currently the chief technical officer of Symyx Technologies, Weinberg is also a professor of chemical engineering and chemistry at the University of California, Santa Barbara, which has honored him with the Distinguished Teaching Award of the College of Engineering (1995).

Weinberg's other awards include the Wayne B. Nottingham Prize of the American Physical Society (1972), the Victor K. LaMer Award of the American Chemical Society (1973), an Alfred P. Sloan Research Fellowship (1975), the American Institute of Chemical Engineers Allan P. Colburn Award (1981), an Alexander von Humboldt Foundation Research Award (1982), the Giuseppe Parravano Award of the Michigan Catalysis Society (1989), the American Chemical Society Award in Colloid or Surface Chemistry (1991), and the American Chemical Society Arthur W. Adamson Award in Surface Chemistry (1995).

Weinberg is a Fellow of the American Physical Society, a Founding Fellow of the American Vacuum Society, and a Fellow of the American Association for the Advancement of Science. He is a member of the National Academy of Engineering.

Born December 5, 1944, in Columbia, South Carolina, Weinberg received his B.S. (1966) from the University of South Carolina and Ph.D. (1970) from the University of California, Berkeley. He was a NATO postdoctoral fellow (1971) at Cambridge University.

John R. Wiesenfeld

John R. Wiesenfeld is a physical chemist whose primary interests have been in the characterization of elementary photochemical and reactive events controlling the chemistry of ozone in the stratosphere.

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Wiesenfeld has published more than 100 papers in various areas of chemistry and physics, but is best known for his work on the production and fate of electronically excited oxygen atoms in the atmosphere.

In 1995, after more than 20 years on the faculty at Cornell University, Wiesenfeld became dean of science and a professor of chemistry at Florida Atlantic University in Boca Raton. He has been an Alfred P. Sloan Research Fellow (1976) and is a Fellow of the American Association for the Advancement of Science.

Born July 26, 1944, in the Bronx, New York, Wiesenfeld received his B.S. (1965) from City College of New York and Ph.D. (1969) from Case Institute of Technology. He was a postdoctoral Stokes Fellow (1971) and U.S. Honorary Ramsay Memorial Fellow (1971) at Cambridge University.

John E. Bercaw

John E. Bercaw is an organometallic chemist specializing in synthetic, structural, and mechanistic organotransition-metal chemistry, especially with early transition metals.

Bercaw has investigated dinitrogen fixation, carbon monoxide hydrogenation, carbon-hydrogen bond activation, and olefin polymerization with metallocene complexes. His work has established mechanisms for a number of fundamental transformations occurring at transition-metal centers.

The Centennial Professor of Chemistry at the California Institute of Technology, Bercaw has received American Chemical Society Awards in Pure Chemistry (1980) and in Organometallic Chemistry (1990), and the Frankland Prize of the Royal Chemical Society (1992). He held the Shell Distinguished Professorship in Chemistry (1985-90), and was selected as Distinguished Alumnus, School of Physical and Mathematical Sciences, North Carolina State University (1992). Bercaw delivered the Baker Lectures at Cornell University (1993) and the Wynberg Lectures at the University of Groningen (1995). He is a Fellow of the American Association for the Advancement of Science (1986), and is a member of both the National Academy of Sciences (1990) and the American Academy of Arts and Sciences (1991).

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Born December 4, 1944, in Cincinnati, Ohio, Bercaw received his B.S. (1967) from North Carolina State University and Ph.D. (1971) from the University of Michigan, and was a postdoctoral fellow (1971-72) at The University of Chicago.

Robert E. Cohen

Robert E. Cohen is a chemical engineer who has produced pioneering research results in the field of synthetic polymers and has significantly contributed to interdisciplinary graduate-level education in polymer science and technology.

Cohen's research group was the first to exploit contrast-matching techniques in small-angle neutron scattering experiments to elucidate the spatial organization of chain molecules in microphase-separated block copolymers. He is coauthor of two widely quoted review articles on toughening mechanisms in block copolymers and polymer blends.

Cohen has received numerous honors for his teaching and research accomplishments at the Massachusetts Institute of Technology, including DuPont and Edgerton Faculty Awards and Bayer and St. Laurent Professorships in Chemical Engineering. He has directed the school's interdepartmental polymer program, served as associate chair of the faculty, and been coordinator of the graduate program in chemical engineering.

Born January 21, 1947, in Oil City, Pennsylvania, Cohen received his B.S. (1968) from Cornell University and Ph.D. (1972) from the California Institute of Technology. He was an Imperial Chemical Industries postdoctoral fellow (1972-73) in the Department of Engineering Science at Oxford University.

Paul J. Dagdigian

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Paul J. Dagdigian is an experimental chemical physicist who is interested in the molecular dynamics of gas-phase collisional phenomena, including chemical reactions and nonreactive energy transfer processes, with special emphasis on the study of collisions involving small molecular free radicals.

Dagdigian has concentrated on the experimental investigation of rotationally and electronically inelastic collisions of open-shell molecules. He has contributed substantially to the present understanding of the mechanisms of these processes, in particular the role played by the coupling between the nuclear rotational and electronic angular momenta.

He is a professor of chemistry at The Johns Hopkins University, where he has served as chair of the Division of Chemical Physics. Dagdigian was named an Alfred P. Sloan Research Fellow (1976) and is a Fellow of the American Physical Society.

Born October 18, 1945, in Philadelphia, Pennsylvania, Dagdigian received his A.B. (1967) from Haverford College and Ph.D. (1972) from The University of Chicago, and was a postdoctoral fellow (1972-74) at Columbia University.

David Dressler

David Dressler received the Teacher-Scholar award when he was a member of the Department of Biochemistry and Molecular Biology at Harvard University. He is currently a lecturer in the Department of Neurobiology, Harvard Medical School, and organizer and director of the school's Shelton Lectures in Molecular Medicine.

Born May 29, 1941, in Cincinnati, Ohio, Dressler received his A.B. (1963) from Columbia University and Ph.D. (1969) from Harvard University, where he also did postdoctoral work (1971) as a Helen Hay Whitney Fellow.

John R. Eyler

John R. Eyler is an experimental physical chemist whose research covers a wide range of problems from elemental analysis to the study of biomolecules, utilizing the techniques of Fourier-transform ion cyclotron resonance (FTICR) mass

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spectrometry.

He has used FTICR to study the reactivity and spectroscopy of gaseous ions, including those of semiconductors and metal clusters. He has been most active in demonstrating the advantages of coupling FTICR mass detection with elemental ionization sources such as glow discharges and inductively coupled plasmas.

Eyler is co-principal investigator of the National Science Foundation grant that has established a national ICR facility at the National High Magnetic Field Laboratory, a joint venture of Florida State University, the University of Florida, and Los Alamos National Laboratory. The ICR facility seeks to solve unique scientific problems by developing and providing for external users FTICR instruments operating at the highest possible magnetic fields.

Eyler is a professor of chemistry at the University of Florida and is currently serving as chair of the department.

Born May 29, 1945, in Wilmington, Delaware, Eyler received his B.S. (1967) from the California Institute of Technology and Ph.D. (1972) from Stanford University, and was a postdoctoral fellow (1972) at the National Research Council.

Michael D. Fayer

Michael D. Fayer is a pioneer in the study of condensed-matter molecular systems through the application of ultrafast optical nonlinear techniques and theory.

Fayer performed the first picosecond photon-echo and stimulated photon-echo experiments on molecular materials. He also pioneered the application of ultrafast transient grating experimental methods to the study of liquids, solids, and biological materials. Fayer's experimental and theoretical work on the applications of photon echoes, stimulated echoes, and hole-burning spectroscopies to the study of low-temperature molecular glasses redefined the field. Fayer performed the world's first infrared vibrational photon-echo experiments

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in liquids, glasses, and proteins, opening vibrational spectroscopy to methods that have proven to be invaluable in nuclear magnetic resonance.

A professor of chemistry at Stanford University, Fayer has received the Dean's Award for Distinguished Teaching (1986). He has also been awarded an Alfred P. Sloan Research Fellowship (1977) and a Guggenheim Fellowship (1983), and is a Fellow of the American Physical Society.

Born September 12, 1947, in Los Angeles, California, Fayer received his B.S. (1969) and Ph.D. (1974) from the University of California, Berkeley.

Gregory L. Geoffroy

Gregory L. Geoffroy is a synthetic organometallic chemist who has advanced the understanding of a variety of transition-metal carbonyl cluster compounds and transition-metal carbyne, carbene, and vinylidene complexes.

Geoffroy is the coauthor of more than 200 journal articles and coauthor, with Mark S. Wrighton, of *Organometallic Photochemistry.*

Geoffroy serves as dean of the Eberly College of Science at The Pennsylvania State University. He has received an Alfred P. Sloan Research Fellowship (1978) and a Guggenheim Fellowship (1982), and is a Fellow of the American Association for the Advancement of Science.

Born July 8, 1946, in Honolulu, Hawaii, Geoffroy received his B.S. (1968) from the University of Louisville and Ph.D. (1974) from the California Institute of Technology.

Eric J. Heller

Eric J. Heller specializes in quantum, classical, and semiclassical approaches to atomic and molecular physics.

He pioneered the use of wavepackets in time-dependent quantum mechanics, and formulated electronic and Raman spectroscopy in novel time-dependent ways that make use of the wavepacket picture. His work in quantum chaos theory led to the discovery of "scars" in chaotic eigenstates.

He is director of the Institute for Theoretical Atomic and Molecular Physics, Harvard-Smithsonian Center for Astrophysics of Harvard University.

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Heller has been the recipient of an Alfred P. Sloan Research Fellowship (1976). He is a Fellow of the American Physical Society, a member of the American Academy of Arts and Sciences, and a member of the International Academy of Quantum Molecular Sciences.

Born January 10, 1946, in Washington, D.C., Heller received his B.A. (1968) from the University of Minnesota and Ph.D. (1973) from Harvard University, and did postdoctoral work (1973-75) at The University of Chicago.

Kenneth D. Jordan

Kenneth D. Jordan is a physical chemist who has done pioneering studies on molecular anions and clusters.

Jordan carried out the first *ab initio* electronic structure calculations on dipole-bound anions as well as on a wide range of anionic clusters. He also did the first computer simulations demonstrating that small water clusters can undergo a "solid-to-liquid" transition. Jordan has also pioneered, together with his collaborator Paul Burrow of the University of Nebraska, the application of electron-scattering methods to the characterization of the temporary anions of polyatomic molecules.

Jordan is on the faculty of the University of Pittsburgh, which has honored him with a Chancellor's Distinguished Faculty Research Award (1995). He has also received Alfred P. Sloan Research (1977) and Guggenheim (1981) Fellowships, and is a Fellow of the American Physical Society.

Born February 25, 1948, in Norwood, Massachusetts, Jordan received his B.A. (1970) from Northeastern University and Ph.D. (1974) from the Massachusetts Institute of Technology.

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Harold L. Kohn

Harold L. Kohn is an organic chemist whose research focuses on the elucidation of the mode of action of clinically important drugs and the design and development of new chemotherapeutic agents.

Kohn and coworkers have provided important information concerning the mechanism of mitomycin C and bicyclomycin function. In both areas, studies have revealed the activation pathway for drug function and how the drug binds with its target. The Kohn group has also developed a new series of anticonvulsants showing superior activity against *grand mal*-type seizures in animal models.

The M. D. Anderson Professor of Chemistry at the University of Houston, Kohn has received an Alfred P. Sloan Research Fellowship (1977) and the University of Houston Research Excellence Award (1993).

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Born April 1, 1945, in New York, New York, Kohn received his B.S. (1966) from the University of Michigan and Ph.D. (1971) from The Pennsylvania State University, and was a postdoctoral fellow (1971-72) at Columbia University.

Paul L. Modrich

Paul L. Modrich is a biochemist who has studied DNA mismatch repair, a genetic stabilization system that protects cells from mutation. Defects in this system are associated with a strong predisposition to tumor development in humans.

An investigator of the Howard Hughes Medical Institute and James B. Duke Professor of Biochemistry at Duke University Medical Center, Modrich is a member of the National Academy of Sciences (1993) and has received the Pfizer Award in Enzyme Chemistry (1983) and the General Motors Mott Prize in Cancer Research (1996).

Born June 13, 1946, in Raton, New Mexico, Modrich received his B.S. (1968) from the Massachusetts Institute of Technology and Ph.D. (1973) from Stanford University, and was a postdoctoral fellow (1973-74) at Harvard University.

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Mario J. Molina

Mario J. Molina is an atmospheric chemist who has been a world leader in developing scientific understanding of the chemistry of the stratosphere ozone layer and its susceptibility to manmade perturbations.

Molina coauthored, with F. Sherwood Rowland, the 1974 publication in *Nature* outlining their research on the threat to the ozone layer from chlorofluorocarbon (CFC) gases. The publication laid the groundwork for the 1985 discovery of the ozone hole over the South Pole and led to the 1987 United Nations' Montreal Protocol banning the production of CFCs from 1996 on. More recently, Molina and his coworkers demonstrated experimentally a new reaction sequence that accounts for most of the observed ozone destruction in the Antarctic stratosphere.

Molina is the Lee and Geraldine Martin Professor of Environmental Studies and holds a dual appointment in the Departments of Earth, Atmospheric and Planetary Sciences and of Chemistry at the Massachusetts Institute of Technology. He is the recipient of the Tyler Prize in Ecology and Energy (1983), the Esselen Award of the American Chemical Society (1987), the Newcomb-Cleveland Prize of the American Association for the Advancement of Science (1987), and the NASA Medal for Exceptional Scientific Achievement (1989). He shared the 1995 Nobel Prize in Chemistry with Rowland and Paul Crutzen for their work in atmospheric chemistry. Molina has been elected to the National Academy of Sciences (1993) and appointed to serve on the President's Committee of Advisers on Science and Technology (1994).

Born March 19, 1943, in Mexico City, Molina received his A.B. (1965) from the Universidad Nacional Autónoma de México and Ph.D. (1972) from the University of California, Berkeley. He was a postdoctoral fellow at Berkeley (1972), and at the University of California, Irvine (1973).

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John S. Olson

John S. Olson is a biochemist/biophysicist who has developed mechanisms for ligand binding to myoglobins and hemoglobins and strategies for improving the stabilities of protein-based blood substitutes.

Olson and colleagues have collected background structural and functional data for the rational design of recombinant myoglobins and hemoglobins with increased resistance to oxidation, heme loss, and protein denaturation. Their work has provided new approaches for increasing the expression yields of heme proteins in bacteria. Olson and his coworkers have authored a series of papers which provide a complete molecular description of how myoglobin discriminates among the three physiological gases, O_2, CO, and NO.

Olson is a professor of biochemistry and cell biology at Rice University where he has received the Amoco Teaching Award (1995) for his lectures in general biochemistry and physical chemistry for the biosciences.

Born May 21, 1946, in Evanston, Illinois, Olson received his B.S. (1968) from the University of Illinois at Urbana-Champaign and Ph.D. (1972) from Cornell University, and was a postdoctoral fellow (1972-73) at the University of Michigan.

Hong Yong Sohn

Hong Yong Sohn is a metallurgical and materials process engineer who has developed techniques for quantitative engineering analyses of physical and chemical processes for the production of metals and materials.

His major research accomplishments are in the field of fluid-solid reaction rate analysis, which he has applied to minerals extraction processes, new materials synthesis (including intermetallic and ceramic materials), flash reaction processes, and solvent extraction processes. Sohn is the coauthor of two highly regarded monographs in the field of gas-solid reactions and metallurgical processes, 10 conference proceedings, and some 230 research articles.

A professor of metallurgical engineering and adjunct professor of chemical and fuels engineering at the University of Utah, Sohn received the Champion H. Mathewson Gold Medal (1993), the Extraction and Processing Distinguished

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Lecturer Award (1990), and Extraction and Processing Best Science Award (1990, 1994), all from the Minerals Metals Materials Society-American Institute of Metallurgical Engineers.

Born August 21, 1941, in Kaesung, Korea, Sohn received his B.S. (1962) from Seoul National University, Korea, and Ph.D. (1970) from the University of California, Berkeley. He was a postdoctoral fellow (1971-73) at the State University of New York at Buffalo.

George Stephanopoulos

George Stephanopoulos is a chemical engineer who has established new research areas and introduced a number of methodological approaches, computer-aided tools, and industrial applications in the general field of process systems engineering.

Stephanopoulos is the author of a widely regarded textbook on chemical process dynamics and control (1984) that ushered the subject into the modern era, and the author or coauthor of nine monographs on various aspects of process systems engineering.

The Arthur D. Little Professor of Chemical Engineering at the Massachusetts Institute of Technology, Stephanopoulos has received the G. Taylor Teaching Award, University of Minnesota (1977), the American Institute of Chemical Engineers Allan P. Colburn Award (1982), the Curtis W. McGraw Research Award of the American Society for Engineering Education (1986), the Best Paper Award, Computers and Chemical Engineering (1987, 1992), the R. W. Fahien Distinguished Alumnus Award of the University of Florida (1989), and the Computing in Chemical Engineering Award from the Computing and Systems Technology Division of the American Institute of Chemical Engineers (1993). He is a foreign member of the Russian Academy of Technological Sciences.

Born June 1, 1947, in Kalamata, Greece, Stephanopoulos received his A.B.

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(1970) from the National Technical University of Athens, Greece, and Ph.D. (1974) from the University of Florida, where he was also a postdoctoral fellow (1974).

Dwight A. Sweigart

Dwight A. Sweigart is an inorganic chemist with research interests in the application of organometallics to synthesis and catalysis, and in the application of electrochemistry to organometallic mechanisms and the development of redox switches.

Sweigart has developed arene manganese chemistry for the functionalization of aromatic molecules (including steroids), the synthesis of new classes of bimetallics, and the desulfurization of thiophenes. He has also developed the concept of self-closing redox switches and has applied submicroelectrodes to probe heterogeneous electron transfer in chemical reactions.

Sweigart is a professor of chemistry at Brown University. He has received the Emmet Reid Award of the American Chemical Society Middle Atlantic Section (1979) and the National Institutes of Health Research Career Development Award (1983).

Born June 7, 1945, in Ephrata, Pennsylvania, Sweigart received his A.B. (1967) from Franklin & Marshall College and Ph.D. (1971) from Northwestern University. He was a NATO postdoctoral fellow at Oxford University (1970-72) and at the University of Wales (1975-76).

Peter B. Dervan

Peter B. Dervan is an organic chemist who has combined organic synthesis, biophysical chemistry, and molecular biology to create novel synthetic organic molecules with sequence specificities for double helical DNA six orders of magnitude beyond restriction endonucleases.

The Bren Professor of Chemistry and chair of the Division of Chemistry and Chemical Engineering at the California Institute of Technology, he has twice received the school's Associated Students Teaching Award (1980, 1981).

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He has received a number of other honors and awards, including the Harrison Howe Award of the American Chemical Society Rochester Section (1988), the American Chemical Society Arthur C. Cope Scholar Award (1993), the Willard Gibbs Medal of the American Chemical Society Chicago Section (1993), the Nichols Medal of the American Chemical Society New York Section (1994), and the Maison de la Chimie Fondation Grand Prix (1996). Dervan is a member of the National Academy of Sciences.

Born June 28, 1945, in Boston, Massachusetts, Dervan received his B.S. (1967) from Boston College and Ph.D. (1972) from Yale University, and was a postdoctoral fellow (1972-73) at Stanford University.

David A. Dixon

David A. Dixon is a computational chemist who applies the techniques of numerical simulation—notably computational electronic structure theory—to chemical problems of interest to experimental chemists and engineers, with specific emphasis on materials and production processes.

At DuPont Central Research and Development from 1983 to 1995, Dixon focused on calculating accurate thermochemical and kinetic properties of alternatives for the chlorofluorocarbons. He is an expert in computational aspects of fluorine chemistry, with a broad range of studies on organic, inorganic, and polymer systems. Dixon was one of the first computational chemists to use density functional theory to solve chemical problems.

At the Pacific Northwest National Laboratory operated by Battelle in Richland, Washington, he is focused on the application of computational methods to solve environmental problems. New areas of research include relativistic

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effects in quantum chemistry, the design of new separations materials, the aqueous chemistry of metal ions, and atmospheric chemistry.

Dixon has published more than 270 papers on a wide range of topics and is considered a leader in the application of numerical simulation methods, as implemented on high-performance computers, to problems in materials and chemical process design.

An adjunct professor of chemistry at the University of Delaware and at the University of Utah, he was on the faculty of the Department of Chemistry at the University of Minnesota from 1977 to 1983.

Dixon has received a number of awards, including an Alfred P. Sloan Research Fellowship (1977) and the Leo Hendrik Baekeland Award of the American Chemical Society North Jersey Section (1989). He is a Fellow of the American Association for the Advancement of Science.

Born December 3, 1949, in Houston, Texas, Dixon received his B.S. (1971) from the California Institute of Technology and Ph.D. (1976) from Harvard University.

James A. Dumesic

James A. Dumesic is a chemical engineer who is using spectroscopic, microcalorimetric, and kinetic techniques to study the surface and dynamic properties of heterogeneous catalysts.

Dumesic pioneered the field of microkinetic analysis, in which diverse information from experimental and theoretical studies is combined to elucidate the essential surface chemistry that controls catalyst performance. He has also developed microcalorimetric techniques to measure surface chemical bond strengths for adsorbates on metal, oxide, and acidic catalysts.

The Steenbock Professor of Engineering at the University of Wisconsin, Dumesic has been awarded the Benjamin Smith Reynolds Award for Excellence in Teaching Engineers (1995). He has also received the Allan P. Colburn Award of the American Institute of Chemical Engineers (1983), the Emmett Award of the North American Catalysis Society (1989), and the New York Catalysis Society Award for Excellence in Research (1994).

Born August 13, 1949, in Milwaukee, Wisconsin, Dumesic received his B.S.

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(1971) from the University of Wisconsin-Madison and Ph.D. (1974) from Stanford University. He was a postdoctoral fellow at France's Centre de Cinétique et Chimique (1974-75) and at the Institute of Chemical Physics (1975).

William J. Evans

William J. Evans is a synthetic inorganic/organometallic chemist who has shown that the previously overlooked lanthanide metals have an extensive and distinctive inorganic and organometallic chemistry which is now being investigated by many laboratories around the world.

Evans prepared the first molecular lanthanide hydrides, the first soluble organometallic Sm(II) reagents, and the first $(C_5Me_5)_3M$ complexes of any kind. He has shown that lanthanide complexes can accomplish unique transformations of a wide variety of unsaturated substrates including CO, N_2, olefins, and alkynes.

A professor of chemistry at the University of California, Irvine, Evans has received a DuPont Young Faculty Award (1975), an Alfred P. Sloan Research Fellowship (1982), and was Peter C. Reilly Lecturer at the University of Notre Dame (1992).

Born October 14, 1947, in Madison, Wisconsin, Evans received his B.S. (1969) from the University of Wisconsin-Madison and Ph.D. (1973) from the University of California, Los Angeles, and was a postdoctoral fellow (1973-74) at Cornell University.

Bruce Ganem

Bruce Ganem's broad scientific research interests highlight the emerging interfaces of organic and biological chemistry with biochemistry, biotechnology, and

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molecular medicine.

Ganem is an expert in the shikimic acid biosynthetic pathway. He has used both classical biochemical and recombinant DNA techniques for structural and mechanistic studies of shikimate pathway enzymes. He is also a specialist in carbohydrate chemistry, and in the chemistry of carbohydrate analogs (glycomimetics). He is the author of more than 180 scientific papers as well as numerous popular articles about science and science education.

The Franz and Elisabeth Roessler Professor and chair of the Department of Chemistry at Cornell University, Ganem has been recognized there with the Clark Distinguished Teaching Award (1986). He has also been the recipient of Alfred P. Sloan Research (1978) and Guggenheim (1981) Fellowships. Other awards include an Eli Lilly Grantee Award (1976), the American Cyanamid Award in Chemical Synthesis (1985), and the Arthur C. Cope Scholar Award of the American Chemical Society (1996).

Born February 7, 1948, in Boston, Massachusetts, Ganem received his B.A. (1969) from Harvard College and Ph.D. (1972) from Columbia University, and was a postdoctoral fellow (1973-74) at Stanford University.

William L. Jorgensen

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William L. Jorgensen and his research group have pioneered the development and application of theoretical methods for studying organic and biomolecular systems in solution.

Jorgensen and his group have made seminal contributions in understanding solvent effects on conformational equilibria, reaction surfaces, and molecular complexation. They have also made advances in the development of procedures for computing free energy changes in solution, and in the creation of the widely used OPLS intermolecular potential functions for computer simulations of water and organic and biomolecular systems.

Jorgensen has been the Whitehead Professor of Chemistry at Yale University since 1990. He is the author of more than 200 publications and was named as one of the 30 most frequently cited chemists by Science Watch for 1984-91.

Born October 5, 1949, in New York, New York, Jorgensen received his A.B. (1970) from Princeton University and Ph.D. (1975) from Harvard University,

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where he was also a postdoctoral fellow (1975).

Michael E. Jung

Michael E. Jung is an active teacher and researcher in synthetic organic chemistry and has developed numerous new methods for the stereo- and enantioselective synthesis of complex biologically active natural products.

A professor of chemistry at the University of California, Los Angeles, Jung has won every teaching award offered there, including a University Distinguished Teaching Award (1978), a Gold Shield Faculty Prize (the inaugural awardee in 1986), and the Hanson-Dow Award (1992).

Jung has also received an Alfred P. Sloan Research Fellowship (1979), been named a Fulbright-Hays Senior Research Fellow (1980), and received the American Chemical Society Arthur C. Cope Scholar Award (1995).

Born May 14, 1947, in New Orleans, Louisiana, Jung received his B.A. (1969) from Rice University and Ph.D. (1973) from Columbia University. He was a NATO postdoctoral fellow (1973-74) at ETH Zürich.

Thomas F. Keyes

Thomas F. Keyes is a theoretical and computational chemist who has worked on a broad spectrum of problems concerning the dynamical properties of liquids.

Keyes introduced the "Instantaneous Normal Mode" (INM) approach to liquid-state dynamics. INM-based theories are currently being applied to a growing list of phenomena, notably relaxation in supercooled liquids, ultrafast dynamics, and solvation dynamics.

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A professor of chemistry at Boston University, Keyes has been a Yale University Junior Faculty Fellow (1977) and an Alfred P. Sloan Research Fellow (1978).

Born September 21, 1945, in New Haven, Connecticut, Keyes received his B.S. (1967) from Yale University and Ph.D. (1971) from the University of California, Los Angeles, and was a postdoctoral fellow (1971-74) at the Massachusetts Institute of Technology.

Daniel A. Kleier

Daniel A. Kleier is a computational chemist who has developed widely used techniques for modeling molecular behavior. He presently applies computer modeling and simulation to the design and discovery of crop-protection chemicals.

He has pioneered developments in nuclear magnetic resonance spectral simulations, and has made extensive applications of electronic structure theory to studies of chemical bonding in electron deficient compounds, electronic excited states, and protein binding sites. His most recent theoretical work has enabled a better understanding of the transport and action of crop-protection chemicals.

The author of more than 60 journal articles and book chapters on the subject of computational chemistry, Kleier has been a leader in the introduction of computational chemistry at the undergraduate level.

Kleier is a senior research associate in the Chemical Discovery Section of DuPont Agricultural Products, where he is the technical leader of the computational chemistry group.

Born August 19, 1945, in Louisville, Kentucky, Kleier received his B.A. (1967) from Bellarmine College and Ph.D. (1971) from the University of Notre Dame, and was a postdoctoral fellow (1972-75) at Harvard University.

Walter G. Klemperer

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Walter G. Klemperer is a synthetic inorganic chemist whose research has focused on the chemistry of oxides in solution and the solid state.

Klemperer's accomplishments include synthesis of the first polyoxoanion-supported organometallic complexes, elucidation of the molecular growth pathways followed during the sol-gel processing of oxides, and, more recently, development of the first self-assembled inorganic monolayers. Klemperer recently has developed software for teaching inorganic structural chemistry interactively at the undergraduate and graduate level.

A professor of chemistry and Beckman Institute Professor at the University of Illinois at Urbana-Champaign, Klemperer has received a Guggenheim Fellowship (1980), the American Chemical Society Award in Inorganic Chemistry (1992), and an Alexander von Humboldt Foundation Research Award (1994). He is a Fellow of the American Association for the Advancement of Science.

Born April 2, 1947, in Saranac Lake, New York, Klemperer received his B.A. (1968) from Harvard College and Ph.D. (1973) from the Massachusetts Institute of Technology.

Nancy Harrison Kolodny

Nancy Harrison Kolodny is a physical chemist who has specialized in applications of magnetic resonance imaging (MRI) and spectroscopy to medical and biological problems.

Kolodny has characterized ocular melanoma by phosphorus-31 nuclear magnetic resonance (NMR) spectroscopy of perfused human cells and animal tumor models. She has developed sodium-23 NMR imaging and chemical shift imaging techniques for the study of various ocular diseases. Her current work is focused on contrast-enhanced proton MRI studies of ocular physiology in normal and diseased states, and on multinuclear NMR spectroscopic studies of

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the metabolism of cyanobacteria.

The Nellie Z. Cohen and Anne Cohen Heller Professor in the Health Sciences and a professor of chemistry at Wellesley College, Kolodny has received the school's Pinanski Prize for Excellence in Teaching (1991) and has served as dean of the college (chief academic officer) since 1992. She has also received a Camille and Henry Dreyfus Scholar/Fellow Award for Undergraduate Institutions (1990) and a Guggenheim Fellowship (1991).

Born March 30, 1944, in Brooklyn, New York, Kolodny received her B.A. (1964) from Wellesley College and Ph.D. (1969) from the Massachusetts Institute of Technology, and was a postdoctoral fellow (1970-72) at Harvard University Medical School.

F. Raymond Salemme

F. Raymond Salemme is chairman and chief scientific officer of 3-Dimensional Pharmaceuticals, Inc., the company he founded in 1993 to integrate structure-based drug design, combinatorial chemistry, and chemi-informatics technology for the cost-effective discovery of new pharmaceuticals.

He was a professor of biochemistry at the University of Arizona from 1973 through 1983, when he organized the Protein Engineering Division at Genex Corporation, among the first industrial groups to use 3-D structural tools for protein engineering. Salemme subsequently held senior research management positions at DuPont Merck Pharmaceuticals (1991) and Sterling Winthrop Pharmaceuticals (1992-93). At Sterling Winthrop, Salemme established the Department of Biophysics and Computational Chemistry to carry out structure-based drug design programs directed at therapeutic targets in cardiovascular disease, inflammatory disease, virology, and cancer.

Salemme has served as a member of numerous professional societies and on several journal editorial boards. He is the author of more than 70 scientific publications and patents in the areas of structural biology, biomaterials, computer modeling of proteins, structure-based drug design, and computer control of combinatorial chemistry.

Born June 8, 1945, in Norwood, Massachusetts, Salemme received his B.S. (1967) from Yale University and Ph.D. (1972) from the University of California,

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San Diego, where he was also a postdoctoral fellow (1973).

Richard R. Schrock

Richard R. Schrock's research is conducted primarily in synthetic and mechanistic organo-transition metal chemistry, with interests in multiple metal-ligand bonds, dinitrogen reduction, controlled polymer synthesis, polyenes, nonlinear optical and electroactive materials, and alternative Ziegler-Natta catalysts.

Schrock is perhaps best known as the discoverer of "high oxidation-state carbene" (alkylidene complexes), or alkylidyne complexes, by hydrogen abstraction reactions in high oxidation-state metal alkyl and alkylidene complexes, respectively.

Schrock is the Frederick G. Keyes Professor of Chemistry at the Massachusetts Institute of Technology. He has been an Alfred P. Sloan Research Fellow (1976) and the Royal Society Centenary Lecturer and Medalist (1991). Other honors include the American Chemical Society Award in Organometallic Chemistry (1985), the Harrison Howe Award of the American Chemical Society Rochester Section (1990), the Alexander von Humboldt Foundation Research Award (1995), and the American Chemical Society Award in Inorganic Chemistry (1996). He has been elected to the American Academy of Arts and Sciences and the National Academy of Sciences.

Born January 4, 1945, in Berne, Indiana, Schrock received his A.B. (1967) from the University of California, Riverside, and Ph.D. (1971) from Harvard University, and was a postdoctoral fellow (1971-72) at Cambridge University.

John R. Shapley

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John R. Shapley is a synthetic inorganic chemist who has developed pioneering approaches for the synthesis and characterization of organometallic cluster compounds.

Shapley synthesized the first set of cluster compounds that effectively model the chemisorption of methane on a metal surface and successfully applied nuclear magnetic resonance techniques, including the novel use of equilibrium isotope effects, to characterize the solution structures and dynamics of the compounds. His work has stimulated improved understanding of hydrocarbon reactions on metal surfaces.

Shapley is a professor of chemistry at the University of Illinois at Urbana-Champaign, where he has received an Award for Excellence in Teaching from the School of Chemical Sciences (1977). He has also received an Alfred P. Sloan Research Fellowship (1978), the Fresenius Award of Phi Lambda Upsilon (1980), and an Alexander von Humboldt Foundation Research Award (1990).

Born April 15, 1946, in Manhattan, Kansas, Shapley received his B.S. (1967) from the University of Kansas and Ph.D. (1972) from Harvard University, and was a postdoctoral fellow (1971-72) at Stanford University.

Amos B. Smith, III

Amos B. Smith, III, conducts research in three diverse areas: natural product synthesis, bioorganic chemistry, and materials science. To date, more than 70 architecturally complex natural products have been prepared in Smith's laboratory.

Smith is the Rhodes-Thompson Professor of Chemistry at the University of Pennsylvania, where he was department chair (1988-93), and is a member of the Monell Chemical Senses Center and the Laboratory for Research on the Structure of Matter. He is also a visiting director at the Kitasato Institute, Tokyo, Japan.

Smith is coauthor of more than 330 publications.

His honors and awards include a Japan Society for the Promotion of Science Fellowship (1986), the Kitasato Institute Medal (1990), the Philadelphia Section Award of the American Chemical Society (1986), the American Chemical Society Arthur C. Cope Scholar Award (1991), the Alexander von Humboldt Foundation Research Award (1992), the first Philadelphia Organic Chemists Club

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Award (1990), the American Chemical Society Ernest Guenther Award in the Chemistry of Essential Oils and Related Products (1993), and Bucknell University's Alumni Award for Outstanding Professional Achievement (1994).

Born August 26, 1944, in Lewisburg, Pennsylvania, Smith was awarded Bucknell University's first combined four-year B.S.-M.S. degree in chemistry (1966) and received his Ph.D. (1972) from The Rockefeller University, where he was also a postdoctoral fellow (1972-73).

K. Peter C. Vollhardt

K. Peter C. Vollhardt's efforts have been directed toward the development of organocobalt reagents in organic synthesis, the preparation of theoretically interesting hydrocarbons, and the assembly of novel transition-metal arrays with potential in catalysis.

Of his 217 publications, Vollhardt values especially his textbooks in organic chemistry, translated into five languages. He is the current chief editor of *SYNLETT*.

Vollhardt is a professor of chemistry at the University of California, Berkeley. Among other honors, he has been awarded an Alfred P. Sloan Research Fellowship (1976), the German Chemical Society Studienstifler and Adolf Windaus Medal (1983), an Alexander von Humboldt Foundation Research Award (1986), the American Chemical Society Award in Organometallic Chemistry (1987), the Otto Bayer Prize (1990), and the American Chemical Society Arthur C. Cope Scholar Award (1991).

Born March 7, 1946, in Madrid, Spain, Vollhardt studied at the University of Munich and received his Ph.D. (1972) from University College, London. He was a postdoctoral fellow (1972-74) at the California Institute of Technology.

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Thomas A. Albright

Thomas A. Albright is a theoretical chemist who uses molecular orbital theory to understand structure and reactivity in the fields of organometallic, inorganic, and solid-state chemistry.

Albright is noted for his work on conformational effects in organometallic chemistry, the prediction of unusual structures, and development of frontier orbital arguments for the prediction of reaction pathways, *e.g.*, haptotopic rearrangements. He is the coauthor of a widely used textbook on applied molecular orbital theory.

A professor of chemistry at the University of Houston, Albright has served as the graduate chair for a number of years and in that capacity has developed two successful graduate programs. He has been awarded an Alfred P. Sloan Research Fellowship (1985).

Born September 3, 1948, in Perham, Minnesota, Albright received his B.S. (1970) from North Dakota State University and Ph.D. (1975) from the University of Delaware, and was a postdoctoral fellow (1975-77) at Cornell University.

Douglas L. Brutlag

Douglas L. Brutlag is a leader in the field of bioinformatics. His research is concerned with discovering the meaning of gene and protein sequences using machine learning, simulation, and statistical methods.

Brutlag's group has developed novel methods for aligning biological sequences that permit one to obtain a range of near-optimal as well as truly optimal alignments. He has also found new methods for discovering short-sequence motifs (consensus sequences) in proteins and for discovering structural features of proteins based on finding correlations between pairs of residues in a protein family. He has revealed conserved properties of amino acids that have

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formed the basis for a new pattern-finding method.

A professor of biochemistry at Stanford University, Brutlag was a cofounder of IntelliCorp, IntelliGenetics and Mercury Technologies, Inc. He serves on the editorial board of the *Journal of Computational Biology* and on the steering committee of the International Society for Computational Biology. He has received a Computerworld-Smithsonian Award for Science (1992).

Born December 19, 1946, in Alexandria, Minnesota, Brutlag received his B.S. (1968) from the California Institute of Technology and Ph.D. (1972) from Stanford University. He was a postdoctoral fellow (1972-74) at the Commonwealth Scientific and Industrial Research Organization of Australia.

Jeremy K. Burdett

Jeremy K. Burdett was a theorist who worked at the interface of physics and chemistry until his death in 1997. He studied the electronic structure of molecules, surfaces, and solids, and its relationship to chemical and physical properties.

Burdett published several books and also translated and edited *Introduction à la Théorie des Orbitales Moleculaires* by Yves Jean et François Volatron, as *An Introduction to Molecular Orbitals.*

Burdett was a professor in the Department of Chemistry and The James Franck Institute at The University of Chicago. He was awarded the Meldola Medal by the Royal Society of Chemistry (1977), an Alfred P. Sloan Research Fellowship (1979), the Wilsmore Fellowship at the University of Melbourne (1985), and a Guggenheim Fellowship (1991). He also received the Sc.D. degree from Cambridge University (1991), the Amoco Foundation Award for Distinguished Contributions to Undergraduate Teaching (1993), and the Tilden Medal from the Royal Society of Chemistry (1995).

Born July 1, 1947, in London England, Burdett received his B.A. (1968) from

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Magdalene College, Cambridge University, and Ph.D. (1972) from Cambridge, where he was also a postdoctoral fellow (1970-72).

Malcolm H. Chisholm

Malcolm H. Chisholm is an inorganic chemist with interests including organometallic and materials chemistry.

Chisholm has pioneered the use of alkoxide ligands in organometallic chemistry in addition to developing the reactivity of metal-metal multiple bonds as inorganic functional groups. This work has led to many novel stoichiometric reactions and some catalytic reactions involving unsaturated hydrocarbons.

Chisholm is the author or coauthor of more than 400 scientific publications, and the editor of three books and the journals *Polyhedron* and *Chemical Communications, Inorganic.*

The Distinguished Professor of Chemistry at Indiana University, he has received the campus' Tracy Sonneborn Award for Excellence in Teaching and Research (1992).

Chisholm's other honors include an Alfred P. Sloan Research Fellowship (1978), the Corday-Morgan Medal of the Royal Society of Chemistry (1981), the Award for Chemistry and Electrochemistry of the Transition Elements (1987), an Alexander von Humboldt Foundation Research Award (1988), and the Centenary Medal and Lectureship of the Royal Society of Chemistry (1995). He has also received the American Chemical Society Akron Section Award (1981), Buck-Whitney Award of the Eastern New York Section (1987), and Award for Inorganic Chemistry (1989). He was elected a Fellow of the Royal Society of London in 1990.

Born October 15, 1945, in Bombay, India, Chisholm received a B.Sc. (1966) and Ph.D. (1969) from Queen Mary College, University of London, and was a postdoctoral fellow (1969-72) at the University of Western Ontario, Canada.

Gary G. Christoph

Gary G. Christoph is a computer scientist specializing in applying computer and network security, data mining, anomaly detection, and pattern recognition to

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detecting fraudulent activity in networks, medical care, immigration, and taxation.

Christoph is currently leader of the Information Surety Team of the Computer Research and Applications Group at the Los Alamos National Laboratory, where he was responsible for the first-time accreditation of its multi-security-level, multi-supercomputer Department of Energy network. He now leads projects applying pattern recognition and simulation to problems of fraud detection and prevention, one being a multiyear program for Medicare.

Christoph received the Social Security Administration (SSA)'s Deputy Commissioner's Citation for educating SSA policy staff in risks of providing government services on the Internet.

Born June 25, 1945, in Evanston, Illinois, Christoph received his B.S. (1967) from the California Institute of Technology and Ph.D. (1971) from The University of Chicago. He did postdoctoral work (1974) at the California Institute of Technology.

Christos Georgakis

Christos Georgakis is a chemical engineer who has developed insightful approaches to the modeling of batch reactors and the control of continuous processes.

Georgakis has proposed the systematic development of approximate mathematical models for batch reactors, referred to as Tendency Models. He was first to propose the use of thermodynamic concepts to better comprehend the dynamic characteristics of processes. He has also elucidated the effect that micro-mixing has on the performance of polyethylene reactors and has proposed nonlinear control strategies to stabilize their operation.

Georgakis is a member of the chemical engineering faculty at Lehigh

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University and the founding director of the Chemical Process Modeling and Control Research Center, a National Science Foundation-funded Industry/University Cooperative Center. He is a visiting professor at Delft University, the Netherlands, and an affiliate fellow of the Foundation of Research and Technology in Greece. He is presently chair of the Technical Committee in Chemical Process Control of the International Federation of Automatic Control.

Born August 13, 1947, in Parta, Greece, Georgakis received his chemical engineering diploma (1970) from the National Technical University in Athens and Ph.D. (1975) from the University of Minnesota.

Christopher G. Goff

Christopher G. Goff received the Teacher-Scholar award when he was a member of the Department of Biology at Haverford College. He retired as a full professor in 1993.

Born April 11, 1945, in Providence, Rhode Island, Goff received his B.A. (1967) from Amherst College and Ph.D. (1973) from Harvard University, and was a postdoctoral fellow at Cambridge University.

David R. Herrick

David R. Herrick is a theoretical chemist who has developed innovative applications of group theory to the study of atomic and molecular symmetry properties. His work has provided dramatically new representations of correlated two-electron atoms and excited states of linear polyene molecules and radicals.

Herrick is a professor of chemistry and member of the Institute of Chemical Physics and the Institute of Theoretical Science at the University of Oregon, where he has also served as head of the Department of Chemistry (1987-93). Herrick has received a Guggenheim Fellowship (1983), and is a Fellow of the American Physical Society (1985).

Born May 9, 1947, in Lafayette, Indiana, Herrick received his B.S. (1969) from the University of Rochester and Ph.D. (1973) from Yale University, and was a postdoctoral fellow (1973-75) at Bell Laboratories.

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Philip M. Keehn

Philip M. Keehn is an organic chemist who has contributed substantially to the preparation and properties of molecular systems that test the effect of various intramolecular interactions on structure, chemical and physical properties, conformation, and molecular recognition.

Keehn prepared the first ionic cyclophane and demonstrated that intramolecular charge transfer complexes can be realized between weak donors and acceptors if positioned in a non-dissociable manner. He is the author of numerous articles on laser chemistry, and the synthesis and physical organic chemistry of natural and non-naturally occurring materials. He has coauthored a monograph in the field of laser-induced chemistry, and has coedited two volumes on the synthesis, structure, chemistry, and utility of cyclophanes.

A professor of chemistry at Brandeis University, Keehn has received a Wolfson Professorship at the Weizmann Institute of Science (1979-80), two Fulbright Scholarships at the Rudjer Boskovic Institute in Zagreb (1985, 1988), and was an Academica Sinica Lecturer in China (1987).

Born March 22, 1943, in Brooklyn, New York, Keehn received his B.A. (1964) from Yeshiva University and Ph.D. (1969) from Yale University, and was a postdoctoral fellow (1969-71) at Harvard University.

Nancy E. Kleckner

Nancy E. Kleckner's research interests span diverse areas of chromosome metabolism in prokaryotic and eukaryotic cells. Specific subjects include transposable genetic elements, control of replication initiation and chromosome pairing, and

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recombination during meiosis.

Kleckner is a professor of biochemistry and molecular biology at Harvard University. A member of the National Academy of Sciences, she has received the GSA Medal of the Genetics Society of America (1993).

Born October 16, 1947, in Santa Monica, California, Kleckner received her A.B. (1968) from Harvard University and Ph.D. (1974) from the Massachusetts Institute of Technology, where she was also a postdoctoral fellow (1974-76).

George McLendon

George McLendon is a bioinorganic chemist with a special interest in metalloproteins. His work includes detailed studies of heme protein dynamics, protein design, protein electron transfer, and zinc-dependent protein-RNA binding.

McLendon is Russell Wellman Moore Professor of Chemistry, a professor of molecular biology, and chair of the Department of Chemistry at Princeton University. He has received Alfred P. Sloan Research (1980) and Guggenheim (1989) Fellowships, and from the American Chemical Society, the Award in Pure Chemistry (1987) and the Eli Lilly Award in Biological Chemistry (1990).

Born June 6, 1952, in Forth Worth, Texas, McLendon received his B.S. (1972) from The University of Texas at El Paso and Ph.D. (1976) from Texas A&M University, where he was also a postdoctoral fellow (1976).

Horia Metiu

Horia Metiu is a physical chemist who has contributed substantially to understanding surface chemistry and reactions on a femtosecond time scale. He has developed and applied the theory of rate processes at surfaces and made numerous contributions in the areas of crystal growth and adsorbate self-organization. He has also worked out the theory of electrons solvated in zeolites.

A professor at the University of California, Santa Barbara, since 1976, Metiu was named Faculty Research Lecturer in 1987. He has received an Alfred P. Sloan Research Fellowship (1978) and an American Chemical Society Exxon Faculty Fellowship in Solid State Chemistry (1979), and is a Fellow of the American Physical Society and of the Japan Society for the Promotion of Science.

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Born March 7, 1940, in Cluj, Romania, Metiu received a degree in chemical engineering (1961) from the Polytechnic Institute of Bucharest and a Ph.D. in physical chemistry (1974) from the Massachusetts Institute of Technology.

Kathlyn A. Parker

Kathlyn A. Parker is a synthetic organic chemist who has developed novel methods for the synthesis of antitumor antibiotics, antivirals, and analgesics.

Parker's contributions include new chemistry of quinones and carbohydrates and early studies of the intramolecular Diels-Alder reaction and of radical cyclizations. She has also developed computer-delivered study tools for undergraduate organic chemistry.

Parker served as councilor of the Organic Division of the American Chemical Society and chaired the first ACS Task Force for National Institutes of Health Funding.

A professor of chemistry at Brown University, Parker has received an Alfred P. Sloan Research Fellowship (1979), a Guggenheim Fellowship (1987), a National Science Foundation Visiting Professorship for Women (1988), and a National Science Foundation Career Advancement Award (1992).

Born January 28, 1945, in Chicago, Illinois, Parker received her B.A. (1966) from Northwestern University and Ph.D. (1970) from Stanford University, and was a postdoctoral fellow (1971-73) at Columbia University.

Christian R. H. Raetz

Christian R. H. Raetz and his laboratory are doing research in the areas of mem-

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brane biochemistry, molecular genetics of lipid metabolism in animal cells, and structure, biosynthesis, and function of bacterial endotoxins.

Raetz and his coworkers' most intriguing discovery has been the recognition of a new family of glucosamine-based lipids in *E. Coli.* These substances are precursors of endotoxin (lipid A), which makes up the outer surface of *E. Coli* and plays an important role in the pathogenesis of gram-negative infections.

The George Geller Professor for Research in Molecular Biology and chairman of the Department of Biochemistry at Duke University Medical Center, he also serves as director of the medical biochemistry course for first-year medical students and has helped restructure and improve the medical school courses.

Born November 17, 1946, in Berlin, Germany, Raetz received his B.S. (1967) from Yale University and Ph.D. and M.D. (1973) from Harvard University Medical School. He was a postdoctoral fellow (1974-76) at the National Institutes of Health.

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Gary B. Schuster

Gary B. Schuster is an organic chemist who has applied photochemistry to a variety of "information transfer" processes.

Schuster identified the Chemically Induced Electron-Exchange Luminescence (CIEEL) path for chemiluminescence and bioluminescence. He analyzed and developed a number of photoaffinity labeling agents based on carbenes and nitrenes, and discovered visible-light-sensitive photoinitiators useful in reprographic processes. He developed a series of chiral compounds that can trigger phase transitions under the influence of circularly polarized light.

Schuster is the author of 195 research papers and has contributed chapters to numerous monographs and review volumes.

A professor of chemistry and dean of sciences at the Georgia Institute of Technology, Schuster has received an Alfred P. Sloan Research Fellowship (1977), a Guggenheim Fellowship (1985), the Flory Fellowship of IBM (1990), and the American Chemical Society Arthur C. Cope Scholar Award (1994).

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Born August 6, 1946, in New York, New York, Schuster received his B.S. (1968) from Clarkson University and Ph.D. (1971) from the University of Rochester. He did postdoctoral work (1975) at Columbia University.

Ahmed H. Zewail

Ahmed H. Zewail has made pioneering contributions to chemistry, especially the development of the field of laser femtochemistry and the elucidation of the dynamics of the chemical bond. Zewail is the coauthor of some 300 publications, author of two books, and editor of six books.

The Linus Pauling Professor of Chemistry and Physics at the California Institute of Technology, Zewail has received numerous honors including an Alfred P. Sloan Research Fellowship (1978), an Alexander von Humboldt Foundation Research Award (1983), a Guggenheim Fellowship (1987), the King Faisal Prize in Science (1989), the Hoechst Award (1990), the Carl Zeiss Award (1992), the Medal of the Royal Netherlands Academy of Arts and Sciences (1993), the Wolf Prize in Chemistry (1993), the Bonner Chemiepreis (1994), and the International Leonardo Da Vinci Award of Excellence (1995).

From the American Physical Society, Zewail has been awarded the Earle K. Plyler Prize (1993) and the Herbert P. Broida Prize (1995). From the American Chemical Society, he has received the Buck-Whitney Award of the Eastern New York Section (1985), the Harrison Howe Award of the Rochester Section (1989), the Nobel Laureate Signature Award for Graduate Education in Chemistry (1992), and the Peter Debye Award in Physical Chemistry (1996). He has also won the National Academy of Sciences Award in Chemical Sciences (1996).

Zewail is a member of the National Academy of Sciences, the American

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Academy of Arts and Sciences, the Third World Academy of Science, and the European Academy of Arts, Sciences and Humanities. He is also a Fellow of the American Physical Society.

Born February 26, 1946, in Egypt, Zewail received his B.S. (1967) from Alexandria University and Ph.D. (1974) from the University of Pennsylvania, and was a postdoctoral fellow (1974-76) at the California Institute of Technology.

Bruce S. Ault

Bruce S. Ault is an experimental physical chemist studying reactive intermediates in a range of chemical systems through the combination of matrix isolation and infrared spectroscopy.

Ault has identified and characterized several intermediates that are implicated in chemical vapor deposition processes, and added mechanistic insights into these commercially important reactions.

He has actively taught courses from the freshman through advanced graduate levels, receiving awards for the teaching of freshman chemistry and also for promoting good student-faculty relationships.

Ault is a professor of chemistry and head of the Department of Chemistry at the University of Cincinnati. He has also served in many capacities for the Cincinnati Section of the American Chemical Society and in 1994 was named Cincinnati Chemist of the Year.

Born October 3, 1948, in Altadena, California, Ault received his B.S. (1970) from the California Institute of Technology and Ph.D. (1973) from the University of California, Berkeley, and was a postdoctoral fellow (1973-76) at the University of Virginia.

Steven G. Boxer

Steven G. Boxer is a physical chemist who does research at the interface of chemistry and biology.

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Boxer's work includes studies of the mechanism of the early light-driven events in photosynthesis; electrostatics, dynamics, and function in heme proteins; development of Stark spectroscopy to probe electronic and vibrational transitions, and novel methods for electrical manipulation of biological membranes.

A professor at Stanford University, Boxer has received the Dean's Award for Undergraduate Teaching (1982). Other honors include an Alfred P. Sloan Research Fellowship (1979), an American Society for Photobiology Research Award (1992), a National Institutes of Health MERIT Award (1994), and an American Chemical Society Arthur C. Cope Scholar Award (1995).

Born October 18, 1947, in New York, New York, Boxer received his B.A. (1969) from Tufts University and Ph.D. (1976) from The University of Chicago.

Harry G. Brittain

Harry G. Brittain, currently vice president for pharmaceutical and chemical development at Acute Therapeutics Inc., is a physical chemist with a major interest in chiroptical spectroscopy.

Prior to joining ATI, Brittain served as director of pharmaceutical development for Ohmeda Pharmaceutical Products Division, and before that led a variety of groups at Bristol-Myers Squibb Co. He has also held faculty positions at Ferrum College and Seton Hall University.

During his academic career, Brittain used the novel technique of circularly polarized luminescence to elucidate the solution-phase coordination chemistry of numerous lanthanide complexes. Since joining the pharmaceutical industry, he has pioneered the use of multidisciplinary materials science techniques for the pharmaceutical sciences.

Brittain has published extensively in the areas of inorganic and pharmaceutical chemistry, and has edited a widely regarded monograph on the physical

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characterization of pharmaceutical solids. He is editor-in-chief of the book series *Analytical Profiles of Drug Substances and Excipients*, and is the book review editor for *Pharmaceutical Development and Technology*. Brittain is also a member of the editorial boards of *Pharmaceutical Technology*, the *Saudi Pharmaceutical Journal*, *Chirality*, and *Instrumentation Science and Technology*.

Brittain is a Fellow of the American Association of Pharmaceutical Scientists.

Born October 27, 1949, in New York, New York, Brittain received his B.S. (1970) from Queens College of the City University of New York and Ph.D. (1975) from City University of New York. He was a postdoctoral fellow (1975) at the University of Virginia.

Chi K. (Chris) Chang

Chi K. (Chris) Chang is an organic chemist who has contributed significantly to advances in porphyrin synthesis and in the design of novel metalloporphyrin structures as biomimetic models for heme enzymes.

In addition to his early work in reversible oxygen-binding hemes and thiolate-heme complexes, Chang developed practical syntheses of cofacially linked porphyrin dimers useful as functional models for studying multielectron reduction of oxygen in respiration and photoinitiated charge separation in photosynthesis. He also pioneered the use of fluorinated metalloporphyrins as a catalyst in hydroxylation and epoxidation of hydrocarbons. He led an effort to discover new medically useful photosensitizers for photodynamic therapy to cure cancer.

The author or coauthor of more than 170 publications, Chang is a professor of chemistry at Michigan State University, where he has been honored with a Distinguished Faculty Award (1991). He has also received an Alfred P. Sloan Research Fellowship (1980).

Born December 25, 1947, in Nanjing, China, Chang received his B.Sc. (1969) from Fu Jen Catholic University and Ph.D. (1973) from the University of California, San Diego. He was a postdoctoral fellow (1975-76) at the University of British Columbia, Canada.

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Marye Anne Fox

Marye Anne Fox is a physical organic chemist who has pioneered the field of organic photoelectrochemistry.

Fox's work was the first to clarify the mechanisms for interfacial electron transfer on irradiated semiconductor surfaces and her innovative use of flash spectroscopy and pulse radiolysis has provided important information about radicals and radical ions and how their chemistry can be affected by the local environment.

She is the author of more than 300 refereed papers and three books, including a popular undergraduate text.

Holder of the M. J. and J. V. Waggoner Regents Chair in Chemistry and Vice President for Research at The University of Texas at Austin, Fox has been honored with the American Chemical Society Francis C. Garvan-John M. Olin Award (1988), Arthur C. Cope Scholar Award (1989), and Southwest Regional Award (1993). She has been vice chair of the National Science Board, and is a member of both the National Academy of Sciences and the American Academy of Arts and Sciences, a Fellow of the American Association for the Advancement of Science, and a foreign member of the Royal Academy of Barcelona.

Born December 9, 1947, in Canton, Ohio, Fox received her B.S. (1969) from Notre Dame College and Ph.D. (1974) from Dartmouth College, and was a postdoctoral fellow (1974-76) at the University of Maryland.

John A. Gladysz

John A. Gladysz is an organometallic chemist whose research spans a wide range

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of interests in synthesis, mechanism, and catalysis.

Gladysz has made many creative contributions to organometallic chemistry, notably the development of the coordination chemistry of chiral transition-metal Lewis Acids, including chiral recognition phenomena, stereoselective reactions, enantioselective synthesis, and the elucidation of underlying mechanistic principles. He is the author of more than 225 publications and, since 1984, has been associate editor of *Chemical Reviews.*

Gladysz is a professor of chemistry at the University of Utah, which has honored him with a Distinguished Research Award (1992). He has also received an Alfred P. Sloan Research Fellowship (1980), the American Chemical Society Arthur C. Cope Scholar (1988) and Organometallic Chemistry (1994) Awards, and an Alexander von Humboldt Foundation Research Award (1995).

Born August 13, 1952, in Kalamazoo, Michigan, Gladysz received his B.S. (1971) from the University of Michigan and Ph.D. (1974) from Stanford University.

Paul L. Houston

Paul L. Houston is a physical chemist whose research has led to a new understanding about how the motions of reaction products are correlated with one another.

Houston and his group were the first to find an unusual dissociation channel for ozone in which very slow oxygen atoms are produced in coincidence with highly vibrationally excited oxygen molecules. The new channel has implications for an understanding of the concentration of stratospheric ozone.

He is the author of more than 120 publications and a senior editor of the *Journal of Physical Chemistry*. He is completing a textbook on chemical kinetics and reaction dynamics.

Houston is a professor of chemistry at Cornell University. He has been the recipient of Alfred P. Sloan Research (1979) and Guggenheim (1986) Fellowships.

Born January 27, 1947, in Hartford, Connecticut, Houston received his B.S. (1969) from Yale University and Ph.D. (1973) from the Massachusetts Institute of Technology, and was a postdoctoral fellow (1973-75) at the University of California, Berkeley.

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Joseph N. Kushick

Joseph N. Kushick is a theoretical physical chemist with special interests in the computer simulation of biological macromolecules. He has applied statistical mechanical methods to the study of protein structure and dynamics, including the computation of entropies from protein simulation data.

Kushick is a professor of chemistry at Amherst College, which awarded him an honorary degree in 1988. He has also served as chair of the chemistry department.

Born July 18, 1948, in New York, New York, Kushick received his A.B. (1969) and Ph.D. (1975) from Columbia University, and was a postdoctoral fellow (1974-76) at The University of Chicago.

Elias Lazarides

Elias Lazarides is best known for his academic work in the structure and function of cytoskeletal proteins during development and cell differentiation. He is currently president and chief executive officer of Tanabe Research Laboratories (TRL) in San Diego, a wholly owned subsidiary of Tanabe Seiyaku, headquartered in Osaka, Japan. TRL's mission is to discover and develop drugs used in inflammatory diseases such as asthma and rheumatoid arthritis using novel biological mechanisms.

Lazarides began his professional career as a professor of biology at the California Institute of Technology and subsequently became an executive direc-

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tor of research and pharmacology at Merck & Company. He then served as president of a startup biotechnology concern before joining TRL.

He has coauthored more than 140 original manuscripts and reviews.

Born May 3, 1950, in Athens, Greece, Lazarides received his B.S. (1971) from Wesleyan University and Ph.D. (1975) from Harvard University, and was a postdoctoral fellow (1975) at the University of Colorado.

Martin Newcomb

Martin Newcomb is a physical organic chemist who studies the kinetics of radical reactions, and mechanisms of organic and biochemical reactions, that are known or thought to involve radical intermediates.

Newcomb developed methods for studying the kinetics of ultrafast radical reactions and has applied these in studies of intermediates with lifetimes as short as sub-picosecond. Calibrated ultrafast radical rearrangements have been employed in mechanistic studies of enzyme oxidations that allow timing of the lifetimes of components in transition states for oxygen insertion reactions.

A professor of chemistry at Wayne State University since 1991, Newcomb has been honored with a College of Science Distinguished Achievement Award in Teaching from Texas A&M University (1985). He was named a Marion Merrell Dow Distinguished Lecturer at Colorado State University (1993) and has received an American Chemical Society Arthur C. Cope Scholar Award (1994).

Born November 17, 1946, in Mishawaka, Indiana, Newcomb received his B.A. (1969) from Wabash College and Ph.D. (1973) from the University of Illinois at Urbana-Champaign, and was a postdoctoral fellow (1973-75) at the University of California, Los Angeles.

Kyriacos C. Nicolaou

Kyriacos C. Nicolaou is a synthetic organic chemist involved in total synthesis and the chemistry and biology of natural products.

Nicolaou's research allowed the development of several new methods and strategies for the construction of complex organic structures and resulted in many designed molecules whose biological investigation led to a better under-

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standing of the mechanism of action of several natural products. Nicolaou is the author or coauthor of more than 350 articles and two books, and holds 45 patents.

Holder of the Darlene Shiley Chair in Chemistry, Nicolaou is the chair of the Department of Chemistry at The Scripps Research Institute; he is also a professor of chemistry at the University of California, San Diego.

His awards and honors include an Alfred P. Sloan Research Fellowship (1979), a Guggenheim Fellowship (1984), an Alexander von Humboldt Foundation Research Award (1987), the American Chemical Society Award for Creative Work in Synthetic Organic Chemistry (1993), the American Chemical Society Ernest Guenther Award in the Chemistry of Natural Products (1996), the Chemical Pioneer Award of the American Institute of Chemists (1996), and the William H. Nichols Medal of the American Chemical Society New York Section (1996). Nicolaou is a Fellow of the American Academy of Arts and Sciences and holds honorary degrees from the University of Pennsylvania, the University of London, and the University of Athens.

Born July 5, 1946, in Cyprus, Nicolaou received his B.Sc. (1969) from Bedford College, London, and Ph.D. (1972) from University College, London, and was a postdoctoral fellow at Columbia University (1972-73) and Harvard University (1973-76).

David W. Oxtoby

David W. Oxtoby is a physical chemist who uses techniques of statistical mechanics to study liquids, with particular emphasis on the dynamics of phase transitions.

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Oxtoby has pioneered the application of density functional methods to the study of nucleation and crystal growth, and has applied time-correlation function methods to the spectroscopy, relaxation, and reaction of molecules in condensed phases. He is coauthor of two major first-year chemistry textbooks, *Principles of Modern Chemistry* and *Chemistry: Science of Change*.

A professor of chemistry and dean of the physical sciences division at The University of Chicago, Oxtoby has received an Alfred P. Sloan Research Fellowship (1977), an Alexander von Humboldt Foundation Research Award (1981), the Marlow Medal of the Royal Society of Chemistry (1983), and a Guggenheim Fellowship (1987). He is a member of the board of trustees of Bryn Mawr College and the board of governors of Argonne National Laboratory, and is a Fellow of the American Physical Society.

Born October 17, 1951, in Bryn Mawr, Pennsylvania, Oxtoby received his A.B. (1972) from Harvard College and Ph.D. (1975) from the University of California, Berkeley, and was a postdoctoral fellow (1975-76) at The University of Chicago.

Mary Fedarko Roberts

Mary Fedarko Roberts is a biochemist who has worked to understand how enzymes function at phospholipid interfaces. Her group has used a variety of biophysical methods to characterize synthetic interfaces and to monitor how phospholipases, as examples of interfacial enzymes, interact with them.

She has pioneered the use of a variety of nuclear magnetic resonance methods to monitor how archaebacteria deal with environmental changes, notably temperature and salt stress. This work has led to the detection and characterization of a series of novel osmolytes including several β-amino acids and unusual phosphodiesters.

Roberts is a professor of chemistry at Boston College. She has received an Alfred P. Sloan Research Fellowship (1982) and a National Science Foundation Faculty Award for Women Scientists and Engineers (1991).

Born July 11, 1947, in Pittsburgh, Pennsylvania, Roberts received her A.B. (1969) from Bryn Mawr College and Ph.D. (1974) from Stanford University. She was a postdoctoral fellow at the University of Illinois at Urbana-Champaign (1974-75) and at the University of California, San Diego (1975-78).

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Matthew V. Tirrell, III

Matthew V. Tirrell, III, has done work in transport phenomena and interfacial properties of polymers, frequently using molecular models to explain dynamics of thermodynamic phenomena of technological significance.

Tirrell's work has concerned the direct measurement of forces between adsorbed polymer layers, with applications for the stabilization of colloidal dispersions and adhesion. Most recently, he has concentrated on adhesion phenomena, developing microscopic tests of adhesion and applying them to bioadhesion and other biophysical processes.

He is editor of the *American Institute of Chemical Engineers Journal*, and has published more than 180 papers in polymer dynamics and interfacial phenomena.

Tirrell is a professor and head of the Department of Chemical Engineering and Materials Science at the University of Minnesota, where he holds the Earl E. Bakken Chair in Engineering. He has been the recipient of Alfred P. Sloan Research (1982) and Guggenheim (1987) Fellowships, as well as the Dillon Medal of the American Physical Society (1987) and the Allan P. Colburn (1985) and Professional Progress (1994) Awards of the American Institute of Chemical Engineers.

Born September 5, 1950, in Philipsburg, New Jersey, Tirrell received his B.S. (1973) from Northwestern University and Ph.D. (1977) from the University of Massachusetts.

Paul A. Wender

Paul A. Wender directs a broadly based research group with interests including

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synthesis, organometallic chemistry, photochemistry, the molecular mechanism of action of chemotherapeutic agents, tumor promotion, DNA cleavage, computer modeling, and molecular recognition.

Wender's group pioneered the use of a number of novel photochemical and organometallic reactions which have figured in exceptionally concise syntheses of dozens of molecules of medicinal significance including syntheses of phorbol ester, taxol, and resiniferatoxin.

The Bergstrom Professor of Chemistry at Stanford University, in 1991 Wender was honored with both the Hoagland Prize for Undergraduate Teaching and a most valued teaching award from the Associated Students of Stanford University. He has also received the Bing Teaching Award (1992).

For his research contributions, Wender has been honored with an Eli Lilly Grantee Award (1979), the American Chemical Society Ernest Guenther Award in the Chemistry of Essential Oils and Related Products (1988), the American Chemical Society Arthur C. Cope Scholar Award (1990), the Imperial Chemical Industries Pharmaceutical Group's Stuart Award for Excellence in Chemistry (1988), an Alexander von Humboldt Foundation Research Award (1991), the National Institutes of Health MERIT Award (1993), and the Pfizer Research Award for Synthetic Organic Chemistry (1995). He has been an Alfred P. Sloan Research Fellow and is a Fellow of the American Academy of Arts and Sciences.

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Born August 27, 1947, in Wilkes-Barre, Pennsylvania, Wender received his undergraduate degree (1969) from Wilkes College and Ph.D. (1973) from Yale University. He was a postdoctoral fellow (1973-74) at Columbia University.

Myung-Hwan Whangbo

Myung-Hwan Whangbo is a theoretical chemist whose interests lie in studying structure-property correlations of low-dimensional organic and inorganic materials on the basis of electronic band structure calculations.

Whangbo wrote the tight-binding electronic band structure program based on the extended Hückel method; developed a band orbital picture of magnetic insulating states; formulated the concept of hidden Fermi surface nesting, and generated computer programs to simulate scanning-tunneling and atomic-force

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microscopy images on the basis of electronic band structure calculations.

He is the coauthor of three books and approximately 250 papers in the research areas of low-dimensional conducting materials and scanning-tunneling and atomic-force microscopy image analyses.

Whangbo has been the recipient of an Alexander von Humboldt Foundation Research Award (1994).

Born October 21, 1945, in Korea, Whangbo received his B.S. (1968) from Seoul National University and Ph.D. (1974) from Queen's University, Ontario, Canada, and was a postdoctoral fellow (1975-76) at the University of British Columbia, Canada.

Robert C. Aller

Robert C. Aller is a marine biogeochemist with particular expertise in early diagenetic processes and elemental cycling in surface sediments.

Aller was one of the first environmental researchers to recognize, document, and quantify the effects of large bottom-dwelling animals on sediment chemistry, natural organic matter decomposition, nutrient regeneration, and sediment-overlying water solute fluxes. Many of the principles first developed by Aller are now commonly accepted and taught in the field of sedimentary biogeochemistry. Along with past and present students, he has demonstrated the occurrence of massive reverse weathering reactions and rapid clay formation in terrigenous tropical-shelf environments.

Aller is a professor of marine sciences at the State University of New York at Stony Brook. He has received an Alfred P. Sloan Research Fellowship (1978).

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Born May 17, 1950, in Chelsea, Massachusetts, Aller received his B.S. and B.A. (1972) from the University of Rochester and Ph.D. (1977) from Yale University.

Alfons L. Baumstark

Alfons L. Baumstark is an organic chemist whose research interests center on the chemistry of oxygen-containing compounds with a special emphasis on the reactions of organic peroxides and hydroperoxides.

He has published more than 100 articles on synthesis and oxygen-atom transfer reactions of α-azohydroperoxides, dioxiranes, and peroxides; oxyphosphorane formation; dioxolane reactions; chemiluminescence (dioxetanes), and ^{17}O nuclear magnetic resonance spectroscopy. He is the series editor for *Advances in Oxygenated Processes*.

Baumstark is a professor and chair of the Department of Chemistry at Georgia State University, where he has been honored with the Distinguished Research Award from the Golden Key National Honor Society (1987).

Born May 4, 1948, in Bleiburg, Austria, Baumstark received his A.B. (1970) from the University of California, Riverside, and Ph.D. (1974) from Harvard University.

Lewis C. Cantley

Lewis C. Cantley does research on the biochemical basis for signaling by growth factors and hormones.

His laboratory discovered a new signaling pathway that involves the phosphorylation of phosphatidylinositol at the D-3 position of the inositol ring. This pathway is widely implicated in regulation of cell growth and cell movement. Cantley's laboratory has also developed combinatorial peptide library techniques that have led to an understanding of how cytosolic proteins assemble into signaling complexes in response to extracellular stimuli.

Cantley is a professor of cell biology at Harvard University Medical School and chief of the Division of Signal Transduction at Beth Israel Hospital, Boston.

Born February 20, 1949, in Charleston, West Virginia, Cantley received his

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B.S. (1971) from West Virginia Wesleyan College and Ph.D. (1975) from Cornell University, and was a postdoctoral fellow (1975-78) at Harvard University.

John H. Clark

John H. Clark received the Teacher-Scholar award when he was a member of the Department of Chemistry at the University of California, Berkeley.

Born November 22, 1949, in San Gabriel, California, Clark received his B.S. (1971) from the University of California, Santa Barbara, and Ph.D. (1976) from the University of California, Berkeley. He did postdoctoral work (1976-79) at the Los Alamos National Laboratory.

Robert H. Crabtree

Robert H. Crabtree is an inorganic chemist with an interest in organic and biological problems.

In early work, he developed a number of alkene hydrogenation catalysts with unusual selectivity, a series of alkane dehydrogenation catalysts, and discovered halocarbon complexation to metal ions. More recently, he has developed "Mercat" chemistry for the preparative scale functionalization of unactivated CH bonds in a variety of organic compounds.

Crabtree is the author of a standard text in organometallic chemistry (1988, 1994) and of nearly 300 scientific papers. He has also served as an editor of the *Encyclopedia of Inorganic Chemistry* and as a guest editor of the *Journal of Organometallic Chemistry*.

A professor of chemistry at Yale University, Crabtree has received numerous awards including the Corday-Morgan Medal of the Royal Society of Chemistry

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(1984), the Organometallic Chemistry Awards of the American Chemical Society (1993) and the Royal Society of Chemistry (1991), the Esso Distinguished Lectureship, University of Toronto (1986), the Albright and Wilson Visiting Professorship, Warwick University, England (1986), and The Ohio State University's MACK Award in Chemistry (1994). He has also been named a DuPont Young Faculty Fellow (1977), an Alfred P. Sloan Research Fellow (1981), and H. C. Brown Lecturer, Purdue University (1996).

Born April 17, 1948, in London, England, Crabtree received his B.A. (1970) from Oxford University and Ph.D. (1973) from Sussex University, England, and was a postdoctoral fellow at the Institut de Chemie des Substances Naturelles in Gif, France.

Richard C. Finke

Richard C. Finke is a mechanistic inorganic-organic chemist interested in catalysis. Finke has clarified understanding of the bioinorganic chemistry involved in coenzyme B_{12}-dependent enzymic reactions. He has also developed new types of catalysts based on the discrete metal-oxide complexes known as polyoxoanions, and has provided the mechanistic studies necessary to understand and exploit their catalytic reaction pathways.

Finke is a coauthor of the most frequently cited textbook on organometallic chemistry, *Principles and Applications of Organotransition Metal Chemistry*.

A professor of chemistry at Colorado State University, Finke has received Alfred P. Sloan Research (1982) and Guggenheim (1984) Fellowships.

Born July 1, 1950, in Scottsbluff, Nebraska, Finke received his B.A. (1972) from the University of Colorado and Ph.D. (1976) from Stanford University, where he was also a postdoctoral fellow (1976-77).

Stephan S. Isied

Stephan S. Isied has carried out pioneering experiments directed toward understanding the factors that control the rates of electron transfer in biological systems. His research has made use of various rigid constrained polypeptides,

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redox metal modified proteins, and protein-protein interfaces to study biological charge-transfer phenomena. Results of this research are applicable to the immobilization and specific orientation of proteins onto surfaces which can lead to selective rapid electronic communication between electrode surfaces, proteins, and enzymes.

Isied is a professor of inorganic and bioinorganic chemistry at Rutgers University, where he has been honored with the Board of Trustees Award for Excellence in Research (1989). He has been adjunct faculty at The Rockefeller University (1977-78), a visiting scientist at Stanford University and the California Institute of Technology (1981), and a faculty research collaborator at Brookhaven National Laboratory (1982-present).

He has received a National Institutes of Health Research Career Development Award (1980) and a Johnson & Johnson Research Discovery Award (1988).

Born August 4, 1946, in Jerusalem, Israel, Isied received his B.S (1967) from the American University of Beirut, Lebanon, and Ph.D. (1974) from Stanford University. He was a postdoctoral fellow (1974-75) at the University of California, Berkeley.

Alan P. Kozikowski

Alan P. Kozikowski works in the area of organic chemistry applied to the neurosciences. He has pioneered work on the design and synthesis of huperzine A and its analogs for use in treatment of Alzheimer's disease, and is one of the founders of a company that will develop this compound for clinical use.

The director of chemical research at the Mayo Clinic in Jacksonville, Florida, Kozikowski has made important discoveries in the area of cocaine abuse, identifying compounds capable of functioning as weak antagonists of cocaine.

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He has also contributed to the identification of compounds that can serve as isozyme-selective activators of the important signaling enzyme, protein kinase C, thus providing new opportunities for the discovery of anticancer agents. He is editor of the book *Drug Design for Neuroscience*.

Kozikowski has been the recipient of an Alfred P. Sloan Research Fellowship (1978).

Born October 27, 1948, in Menominee, Michigan, Kozikowski received his B.A. (1970) from the University of Minnesota and Ph.D. (1974) from the University of California, Berkeley. He was a postdoctoral fellow (1974-76) at Harvard University.

Dennis Liotta

Dennis Liotta is best known for his research efforts centering on the development of novel therapeutic agents. Liotta is investigating alternative anti-HIV/HBV agents, as well as studying boron-neutron capture therapy in cancer, dietary sphingolipids in the prevention of colon cancer, and effects of long-chain (sphingoid) bases on signal transduction, cell growth, and cell differentiation.

Liotta has published extensively and serves on numerous study sections, including a number of those for the National Institutes of Health and the American Cancer Society. He has also been a consultant for numerous pharmaceutical companies.

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A professor of chemistry, department chair, and vice president for research at Emory University, Liotta has been honored with the university's Emory Williams Distinguished Teaching Award for the Natural Sciences (1987). He has also been awarded an Alfred P. Sloan Research Fellowship (1980) and an Alexander von Humboldt Foundation Research Award (1994).

Born January 31, 1949, in Brooklyn, New York, Liotta received his B.A. (1970) from Queens College of the City University of New York and Ph.D. (1974) from the City University of New York. He was a postdoctoral fellow (1974-76) at The Ohio State University.

Gary L. Miessler

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Gary L. Miessler is a synthetic inorganic chemist with special interest in the synthesis and photochemistry of organometallic complexes of dithiolene and other sulfur-containing ligands.

Together with his students, he has developed syntheses of new dithiolene complexes of molybdenum and other metals. In addition, he has worked with colleagues to develop new teaching approaches for introductory chemistry courses for both majors and nonmajors and has introduced an innovative organometallic chemistry course placing special emphasis on developing students' scientific writing skills.

A professor and chair of chemistry at St. Olaf College, Miessler is coauthor of two textbooks, *Inorganic Chemistry* (1991) and *Organometallic Chemistry* (1996).

Born January 5, 1949, in Independence, Kansas, Miessler received his B.S. (1970) from the University of Tulsa and Ph.D. (1978) from the University of Minnesota.

Glenn D. Prestwich

Glenn D. Prestwich has done research involving hormonal-based insect control strategies, cholesterol-lowering agents, cellular communication in the brain, molecular studies of olfaction and of platelet aggregation, hormonally induced improvements in shrimp aquaculture, and hyaluronate-based biomaterials for drug delivery and tissue engineering.

Prestwich has published more than 260 technical papers and book chapters, including articles in *National Geographic* and *Scientific American*. His name appears on five patents, including an enabling technology for a startup company, Clear Solutions Biotech, Inc.

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A professor and chair of medicinal chemistry at the University of Utah, Prestwich formerly taught at the State University of New York at Stony Brook, and was director of the New York State Center for Advanced Technology in Medical Biotechnology.

Born Novermber 29, 1948, in the Canal Zone, Prestwich received his B.S. (1970) from the California Institute of Technology and Ph.D. (1974) from Stanford University, and was a postdoctoral fellow (1974-77) at Cornell University.

Mary C. Rakowski DuBois

Mary C. Rakowski DuBois is a synthetic inorganic chemist who has studied the syntheses and structures of metallosulfur complexes and their reactions related to heterogeneous metal sulfide catalysts.

Rakowski DuBois has demonstrated that sulfide sites in certain metal complexes display a high level of reactivity. Mechanistic features of hydrogen activation and hydrogenolysis reactions which are promoted by sulfide ligands have been established and compared to reactions of heterogeneous catalysts.

A professor of chemistry at the University of Colorado at Boulder, Rakowski DuBois has developed courses in inorganic and organometallic chemistry at both undergraduate and graduate levels. She has supervised the research theses of 20 graduate students, and with these students has coauthored 70 research publications.

She has received Alfred P. Sloan Research (1981) and Guggenheim (1984) Fellowships.

Born December 18, 1946, in Omaha, Nebraska, Rakowski DuBois received her B.S. (1970) from Creighton University and Ph.D. (1974) from The Ohio State University, and was a postdoctoral fellow (1974-76) at Cornell University.

James E. Rothman

James E. Rothman is renowned for his work in elucidating the biochemical basis

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of protein transport in cells.

An experimental system he developed has made it possible to analyze precisely how proteins move from the internal cell structures where they are synthesized to the surface for export out of cell, by reproducing these transport processes in cell-free extracts. This advance opened an entirely new area of research by enabling scientists to discern the molecular interactions in this vital process, which previously could only be studied by observation under an electron microscope and related methods.

Prior to his current position of vice chairman at Memorial Sloan-Kettering Cancer Research Center, Rothman was the E. R. Squibb Professor of Molecular Biology at Princeton University. He has received numerous awards and honors, including the Passano Young Scientist Award (1986), the Mattia Prize and the Lewis S. Rosenstiel Award for Distinguished Work in Basic Medical Sciences (1994), the King Faisal International Prize for Science (1996), and a Gairdner Foundation International Award (1996). He has been elected a member of the National Academy of Sciences (1993) and the Institute of Medicine (1995), and a Fellow of the American Academy of Arts and Sciences (1994).

Born November 3, 1950, in Haverhill, Massachusetts, Rothman received his B.A. (1971) from Yale University and Ph.D. (1976) from Harvard University Medical School, and was a postdoctoral fellow (1976-78) at the Massachusetts Institute of Technology.

George C. Schatz

George C. Schatz is a theoretical chemist who specializes in the dynamics of gas-phase chemical reactions and in theories of surface-enhanced Raman spectroscopy and related phenomena.

Schatz pioneered the field of quantum reactive scattering, and was a leader

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in studies of state-to-state chemistry and of chemical reaction dynamics for reactions with four or more atoms. Schatz has developed important techniques for understanding collisional energy transfer involving highly excited polyatomic molecules.

Schatz is the Dow Professor of Chemistry at Northwestern University and senior editor of the *Journal of Physical Chemistry*. He is coauthor of a textbook for graduate-level quantum chemistry.

He has been the recipient of an Alfred P. Sloan Research Fellowship (1980), the Fresenius Award of Phi Lambda Upsilon (1983), and the Max Planck Research Award (1993). He is also a Fellow of the American Physical Society and has served as chair of the Division of Chemical Physics of the American Physical Society.

Born April 14, 1949, in Watertown, New York, Schatz received his B.S. (1971) from Clarkson University and Ph.D. (1976) from the California Institute of Technology, and was a postdoctoral fellow (1975-76) at the Massachusetts Institute of Technology.

Neil E. Schore

Neil E. Schore is an organic chemist who has explored applications of both organometallic and polymer chemistry to organic synthesis.

Schore was the first to carry out intramolecular versions of the now widely used Pauson-Khand cyclopentenone synthesis; he pioneered its use in the synthesis of angularly fused triquinane natural products. His current research in synthesis using polymer-supported organic substrates is attracting widespread interest as a basis for combinatorial synthesis strategies.

Schore has written several review articles on the Pauson-Khand cycloaddition reaction and is the coauthor of a textbook/study guide package in undergraduate organic chemistry that is widely used both in the U.S. and internationally.

A professor of chemistry at the University of California, Davis, Schore has been honored by receipt of the student-initiated Magnar Ronning Award for Teaching Excellence (1979) and the Distinguished Teaching Award of the University of California, Davis, Academic Senate (1989).

Born March 6, 1948, in Newark, New Jersey, Schore received his A.B. (1969) from the University of Pennsylvania and Ph.D. (1973) from Columbia University,

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and was a postdoctoral fellow (1974-76) at the California Institute of Technology.

Costas G. Vayenas

Costas G. Vayenas conducts research in the areas of heterogeneous catalysis, electrochemistry, and chemical reaction engineering.

His research group has discovered the effect of electrochemical promotion on non-Faradaic electrochemical modification of catalytic activity, in which electrochemistry is used to activate heterogeneous catalysis.

The author of more than 130 papers, two books, and 10 chapters in books, Vayenas has twice received (1979, 1981) the Massachusetts Institute of Technology's Outstanding Faculty Award for his teaching in the Department of Chemical Engineering.

A professor of chemical engineering at the University of Patras since 1981, Vayenas has received the Academy of Athens Award in Chemistry (1992), the Wason Medal for Materials Research of the American Concrete Institute (1992), and the High Temperature Materials Division Outstanding Achievement Award of the Electrochemical Society (1996).

Born September 22, 1950, in Athens, Greece, Vayenas received his B.S. (1973) from the National Technical University of Athens and Ph.D. (1976) from the University of Rochester.

Keith R. Yamamoto

Keith R. Yamamoto is a professor in the Department of Biochemistry and Biophysics at the University of California, San Francisco.

Born February 4, 1946, in Des Moines, Iowa, Yamamoto received his B.S. (1968) at Iowa State University and Ph.D. (1973) from Princeton University. He

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did postdoctoral work (1973-75) at the University of California, San Francisco.

Alan Campion

Alan Campion is a chemical physicist who has made important contributions to a number of areas of condensed-matter spectroscopy and surface science.

Campion is particularly well known for his development and application of surface Raman spectroscopy. His laboratory was the first to obtain spectra of adsorbed molecules without enhancement and has also made significant contributions to understanding surface-enhanced Raman spectroscopy.

The Dow Chemical Company Professor of Chemistry at The University of Texas at Austin, Campion has received several campus teaching honors including the College of Natural Sciences Teaching Excellence Award (1988) and the Jean Holloway Award (1989), one of the university's oldest and most prestigious awards. Campion has also received an Alfred P. Sloan Research Fellowship (1983) and the Coblentz Award in Spectroscopy (1987).

Born May 12, 1951, in Tampa, Florida, Campion received his B.A. (1972) from New College and Ph.D. (1977) from the University of California, Los Angeles, and was a postdoctoral fellow (1978-79) at the University of California, Berkeley.

F. Fleming Crim

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F. Fleming Crim, a physical chemist, is a leader in the study of molecular dynamics. He uses lasers to prepare vibrationally excited molecules to study their bimolecular reactions, photodissociation, unimolecular decomposition, and collisional energy transfer.

Crim's work produced the first example of laser control of a bimolecular reaction, and his research has the general theme of understanding the role of vibrational energy in chemical processes.

Crim is the John E. Willard Professor of Chemistry at the University of Wisconsin-Madison, where he serves as department chair. His teaching at both introductory and advanced levels has earned him the university-wide Chancellor's Award for Excellence in Teaching (1991) and the inaugural Department of Chemistry Upjohn Award for Teaching (1992).

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He has received an Alfred P. Sloan Research Fellowship (1981), an Alexander von Humboldt Foundation Research Award (1986), a Max Planck Research Award (1993), and a Japan Society for the Promotion of Science Fellowship (1995). He is a Fellow of the American Physical Society and the American Association for the Advancement of Science.

Born May 30, 1947, in Waco, Texas, Crim received his B.S. (1969) from Southwestern University in Georgetown, Texas, and Ph.D. (1974) from Cornell University, and was a postdoctoral fellow (1978-79) at the University of California, Berkeley.

G. William Daub

G. William Daub is a synthetic organic chemist whose interests include acyclic stereoselection in acid-catalyzed Claisen rearrangements and the application of these methods to the synthesis of molecules with physiological activity.

Daub has refined the transition-state model for the acid-catalyzed ortho-ester Claisen rearrangement to explain the *syn* and *anti* selectivity observed in the rearrangements of *E*- and *Z*-trisubstituted allylic alcohols, respectively. He has applied the former process to the synthesis of the mycotoxin botryo-diplodin. He has also examined the factors that control the regio- and stereo-chemical selection in ketal Claisen rearrangements involving the ketals of acyclic and alicyclic ketones. He was the first to demonstrate that the rate-determining step in the ketal Claisen rearrangements is the [3,3] sigmatropic process.

Daub is a professor of chemistry at Harvey Mudd College, where he serves as department chair. He has coauthored three editions of the popular textbook *Basic Chemistry* and two editions of the companion text *In Preparation for College Chemistry*.

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Born August 6, 1950, in Albuquerque, New Mexico, Daub received his B.A. (1972) from Pomona College and Ph.D. (1977) from Stanford University, and was a postdoctoral fellow (1977-78) at Stanford University.

John H. Dawson

John H. Dawson is a bioinorganic chemist who studies the mechanisms of action of heme iron-containing oxygenase and peroxidase enzymes and uses spectroscopic methods, especially magnetic circular dichroism, to identify the active site coordination structures of heme iron centers in proteins.

Dawson has made seminal contributions to the development of magnetic circular dichroism spectroscopy as a probe of the coordination structure of heme iron centers in proteins. His studies of cytochrome p450 have characterized its active site structure and helped explain the crucial role of the proximal cysteinate (anionic sulfur) ligand in the mechanism of oxygen activation by the enzyme.

Dawson is the Carolina Distinguished Professor at the University of South Carolina, where he has been recognized as Outstanding South Carolina Chemist (1988) and received the Russell Award for Research Excellence in Science and Engineering (1988) and the School of Medicine Basic Science Research Award (1993). He has also been awarded an Alfred P. Sloan Research Fellowship (1982) and a National Institutes of Health Research Career Development Award (1982), and has been elected a Fellow of the American Association for the Advancement of Science (1989).

Born September 19, 1950, in Englewood, New Jersey, Dawson received his A.B. (1972) from Columbia University and Ph.D. (1976) from Stanford University, and was a postdoctoral fellow (1976-78) at the California Institute of Technology.

Glenn T. Evans

Glenn T. Evans is a physical chemist whose research deals with the statistical mechanics of reactive and nonreactive fluids.

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His primary accomplishments of the last decade involve the application of a theoretical model that depicts molecules as rigid nonspherical bodies. Simplifications afforded by this model allowed Evans to address phase transitions (involving isotropic, nematic, and smectic liquid crystal phases), dynamics (self diffusion, viscosity, light scattering) of dense fluids, and reactions of aligned molecules in molecular beams.

Evans is a professor of chemistry at Oregon State University where his concern for undergraduate instruction has been recognized by the department and the university at large with various awards and commendations. He has also received an Alfred P. Sloan Research Fellowship (1981).

Born July 31, 1946, in Elizabeth, New Jersey, Evans received his B.S. (1968) from Seton Hall University and Ph.D. (1973) from Brown University, and was a postdoctoral fellow at Oxford University (1973-74) and at Yale University (1975-77).

Graham R. Fleming

Graham R. Fleming is a physical chemist who has developed and utilized techniques in ultrafast spectroscopy for studies of chemical and biological dynamics.

Fleming made the first direct measurements of the energy-transfer timescale in photosynthetic light-harvesting systems. New techniques developed in his laboratory include phase locking of femtosecond pulses and several new types of photon echo. His work has revealed the timescales and mechanism of dynamic solvation in polar liquids, such as water, and has shown that the motion of nuclei in reactive events can be followed in real time, even in condensed media.

Fleming is the author of *Chemical Applications of Ultrafast Spectroscopy.*

A professor of chemistry at the University of California, Berkeley, Fleming

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was previously the Arthur Holly Compton Distinguished Service Professor at The University of Chicago. He has received a Camille and Henry Dreyfus New Faculty Award (1979), and is a Fellow of the American Academy of Arts and Sciences (1991) and the Royal Society of London (1994).

Born December 3, 1949, in Barrow-in-Furness, England, Fleming received his B.Sc. (1971) from Bristol University and Ph.D. (1974) from the University of London/The Royal Institution, and was a postdoctoral fellow (1974-75) at the California Institute of Technology.

Evan R. Kantrowitz

Evan R. Kantrowitz is a biochemist who has combined functional and structural studies of enzymes in order to better understand how these enzymes function at the molecular level.

Using site-specific mutagenesis and X-ray crystallography, Kantrowitz provided the first model for a concerted transition in an allosteric enzyme aspartate transcarbamoylase. Using a similar approach, Kantrowitz has developed an understanding of the molecular basis for the differences in catalytic activity between bacterial and mammalian alkaline phosphatases.

Kantrowitz is also involved in the development of new laboratory experiments for undergraduate biochemistry majors, particularly those experiments that involve the direct collection of data by computer.

A professor of chemistry at Boston College, Kantrowitz has received an Alfred P. Sloan Research Fellowship (1983) and a National Institutes of Health Research Career Development Award (1985).

Born August 18, 1949, in Fall River, Massachusetts, Kantrowitz received his A.B. (1971) from Boston University and Ph.D. (1976) from Harvard University, where he was also a postdoctoral fellow (1976-77).

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J. Andrew McCammon

J. Andrew McCammon explores the statistical mechanics of macromolecules and liquids, the theory of protein and nucleic acid structure and function, and development and application of computer models and simulation methods for molecular systems.

McCammon developed the computer simulation approach for the study of motions in proteins and nucleic acids. He subsequently developed novel theoretical methods for accurately predicting and interpreting molecular recognition, the rates of diffusion-controlled reactions, and other properties of chemical systems. He is coauthor of *Dynamics of Proteins and Nucleic Acids.*

McCammon holds the Joseph E. Mayer Chair of Theoretical Chemistry at the University of California, San Diego, where he is a professor of pharmacology at the School of Medicine. He received the first George Herbert Hitchings Award for Innovative Methods in Drug Design from the Burroughs Wellcome Fund (1987) and the Computerworld-Smithsonian Information Technology Leadership Award for Breakthrough Computational Science (1995). His other awards include an Alfred P. Sloan Research Fellowship (1980) and a National Institutes of Health Research Career Development Award (1977). He is a Fellow of the American Physical Society.

Born February 8, 1947, in Lafayette, Indiana, McCammon received his A.B. (1969) from Pomona College and Ph.D. (1976) from Harvard University, where he was also a postdoctoral fellow (1976-78).

C. William McCurdy

C. William McCurdy, a chemical physicist, is the associate laboratory director for computing at Lawrence Berkeley National Laboratory in Berkeley, California,

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where he is responsible for all computing and telecommunications activities. McCurdy is also a professor in the Department of Applied Science at the University of California, Davis, and adjunct professor of chemistry at the University of California, Berkeley.

McCurdy developed new fundamental methods for the *ab initio* calculation of electron scattering and photoionization cross sections for large molecules and is the author of numerous publications in these areas. He also served as the founding director of the Ohio Supercomputer Center while on the faculty at The Ohio State University. From 1991 to 1995 he was the director of the National Energy Supercomputer Center at the Lawrence Livermore National Laboratory.

He has been the recipient of an Alfred P. Sloan Research Fellowship (1981) and is a Fellow of the American Physical Society.

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Born March 21, 1949, in Atlanta, Georgia, McCurdy received his B.S. (1971) from Tulane University and Ph.D. (1976) from the California Institute of Technology, and was a postdoctoral fellow at Cambridge University (1975) and at the University of California, Berkeley (1976-78).

Cheuk-Yiu Ng

Cheuk-Yiu Ng is a physical chemist who has developed new experimental methods for studies of vacuum ultraviolet photoionization (PI), photoelectron (PE), and photodissociation (PD) processes, and ion-molecule reaction dynamics.

Ng was the first to acquire PI spectra of van der Waals complexes, demonstrating the technique for preparation of collision complexes and for studying the reactivities of high Rydberg-state molecules and molecular ions in specific excited states. He has developed a pulsed PE-photoion coincidence method that allows the PE-spectroscopic measurement of a radical or a size-selected neutral cluster coexisting with other impurities, and has introduced a general PD-PI method for identifying the isomeric structures of nascent photoproducts.

Ng is the founding editor of the *Wiley Series in Ion Chemistry and Physics* and the *Advanced Series in Physical Chemistry*. He has also edited or coedited eight review monographs.

A Distinguished Professor of Liberal Arts and Sciences at Iowa State University, Ng has received an Iowa Regents Award for Faculty Excellence, for

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research and teaching (1994). He has been awarded an Alfred P. Sloan Research Fellowship (1982) and is an Honorary Professor of Chemistry, Zhengzhou University, China (1985), and a Fellow of the American Physical Society (1993).

Born December 4, 1947, in Canton, China, Ng received his B.S. (1971) from the Chinese University of Hong Kong and Ph.D. (1976) from the University of California, Berkeley, where he was also a postdoctoral fellow (1976-77).

Maria C. Pellegrini

Maria C. Pellegrini is a researcher whose interests have included studies of the structure-function relationships within ribosomes and the regulation of ribosomal gene expression.

Since 1977, Pellegrini has been a professor of biological sciences at the University of Southern California, where she is dean of research in the College of Letters, Arts, and Sciences. She has served as department chair (1988-93) and has taught a variety of courses in molecular biology and biochemistry at the undergraduate and graduate levels. In 1988, she was awarded the university's Raubenheimer Award for excellence in teaching, research, and service. Pellegrini has served on a number of National Science Foundation and National Institutes of Health grant review panels, including an assignment on the NIH Training Grant Study Section. She has been the recipient of an Alfred P. Sloan Research Fellowship (1980).

Born June 3, 1947, in New Orleans, Louisiana, Pellegrini received her B.S. (1969) from Connecticut College and Ph.D. (1973) from Columbia University. She was a postdoctoral fellow (1973-75) at the California Institute of Technology.

Kevin S. Peters

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Kevin S. Peters is a professor of chemistry at the University of Colorado at Boulder.

Born May 5, 1949, Peters received his B.S. (1971) from the University of Oklahoma and Ph.D. (1975) from Yale University. He did postdoctoral work at Yale (1975-76) and at Bell Laboratories and Princeton University (1976-78).

Thomas B. Rauchfuss

Thomas B. Rauchfuss has contributed to many aspects of sulfur chemistry.

Rauchfuss' discovery of novel routes to metal polysulfides from their elements has uncovered the broad reactivity associated with the polysulfido ligands and has led to new families of organometallic and inorganic polymers. His work on metal-sulfido clusters has uncovered the phenomenon of mobile metal-metal bonds and has identified several key mechanistic aspects of hydrodesulfurization catalysis.

A professor of chemistry at the University of Illinois at Urbana-Champaign, Rauchfuss has held visiting positions at the Australian National University, the University of Auckland, the Universität Karlsruhe, and the Université Louis Pasteur, Strasbourg.

He has received Alfred P. Sloan Research (1983) and Guggenheim (1991) Fellowships.

Born September 11, 1949, in Baltimore, Maryland, Rauchfuss received his B.S. (1971) from the University of Puget Sound and Ph.D. (1975) from Washington State University.

Barry B. Snider

Barry B. Snider is a synthetic organic chemist who has developed new methods for Lewis acid-induced reactions, ketene cycloadditions, and oxidative free-radical cyclizations.

Snider has developed Mn(III)-based oxidative free radical cyclizations, intramolecular ketene cycloadditions, and Lewis acid-catalyzed and -induced reactions using alkylaluminum halides into general methods for the formation of carbon-carbon bonds starting from unfunctionalized alkenes. He has also

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accomplished the first syntheses of crambines A-C, the pentacyclic core of ptilomycalin A, ptilocaulin, reiswigin A, methyl cantabradienoate, leporin A, pyridoxatin, allocyathin B2, erinacine A, and a wide variety of other natural products.

A professor of chemistry at Brandeis University, Snider has been awarded an Alfred P. Sloan Research Fellowship (1979) and an American Chemical Society Arthur P. Cope Scholar Award (1995).

Born January 13, 1950, in Chicago, Illinois, Snider received his B.S. (1970) from the University of Michigan and Ph.D. (1973) from Harvard University, and was a postdoctoral fellow (1973-75) at Columbia University.

Gregory Stephanopoulos

Gregory Stephanopoulos conducts research that spans a broad spectrum of biotechnological applications.

His current efforts focus on the cultivation and physiology of mammalian cells, metabolic engineering and its applications to the production of amino acids and biochemicals, control and optimization of fermentation systems, and growth and differentiation of wild-type and recombinant *Bacillus* strains for enzyme or recombinant fermentations. Stephanopoulos's work has appeared in more than 138 publications and seven patents.

As a professor of chemical engineering at the Massachusetts Institute of Technology, Stephanopoulos has been honored with the Excellence in Teaching Award (1984) and the Technical Achievement Award (1984). He has been a National Science Foundation Presidential Young Investigator and chair of the Food Pharmaceutical & Bioengineering Division of the American Institute of Chemical Engineers (1992). In 1992, he was elected a Founding Fellow of the American Institute for Medical and Biological Engineering.

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Born March 10, 1950, in Kalamata, Greece, Stephanopoulos received his B.S. (1973) from the National Technical University of Athens and Ph.D. (1978) from the University of Minnesota.

Robert A. Brown

Robert A. Brown is a chemical engineer who has made numerous contributions to the modeling and simulation of materials processing, especially to the numerical simulation of the flow of viscoelastic liquids and the growth of crystals from the melts.

Brown has been a leader in the development of computational engineering and science at the Massachusetts Institute of Technology, where he is the Warren K. Lewis Professor of Chemical Engineering and dean of engineering.

Brown has received numerous awards and honors, including the Allan P. Colburn (1986) and Professional Progress (1996) Awards of the American Institute of Chemical Engineers. He has been elected to the National Academy of Engineering (1991) and to the American Academy of Arts and Sciences (1994).

Born July 22, 1951, in San Antonio, Texas, Brown received his B.S. (1974) from The University of Texas at Austin and Ph.D. (1979) from the University of Minnesota.

Andrew E. DePristo

Andrew E. DePristo is a theoretical physical chemist who has developed new theoretical and computational methods to describe the structure and dynamics of gas-phase and condensed-phase chemical systems.

Early in his career DePristo developed quantum number scaling relationships for gas-phase rotationally and vibrationally inelastic scattering processes. This work allowed both extraction of "state-to-state" rate constants from more averaged experimental data and evaluation of experimental and theoretical calculations for consistency and novelty. He developed a widely used model potential for the description of dissociative chemisorption reactions at solid surfaces, and applied this to elucidate the nature of these elementary molecule-solid sur-

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face reactions.

A professor of chemistry at Iowa State University and program director in the Ames Laboratory, DePristo has received Alfred P. Sloan Research (1984) and Guggenheim (1987) Fellowships, and has been elected a Fellow of the American Physical Society (1990). He has served as secretary/treasurer of the Division of Physical Chemistry of the American Chemical Society (1991-96).

Born November 3, 1951, in Newburgh, New York, DePristo received his B.A. (1972) from the State University of New York College at Oneonta and Ph.D. (1976) from the University of Maryland. He was a postdoctoral fellow (1976-79) at Princeton University.

Kenneth C. Janda

Kenneth C. Janda is a physical chemist who uses laser spectroscopy and quantum mechanics to understand the structure and dynamics of small molecules and clusters in the greatest possible detail. Janda's research group recently measured how the electronic wave function of the ICl molecule changes as the bond is stretched from its equilibrium value to near the dissociation limit.

A professor of chemistry at the University of California, Irvine, Janda has made considerable efforts to integrate modern numerical computation into the physical chemistry curriculum. His honors include an Alfred P. Sloan Research Fellowship (1982) and a Fulbright Fellowship (1985). He has also been named a Fellow of the American Physical Society (1994).

Born November 28, 1950, in Denver, Colorado, Janda received his A.B. (1973) from Hope College in Holland, Michigan, and Ph.D. (1977) from Harvard University. He was a postdoctoral fellow (1977-78) at The University of Chicago.

Frederick W. King

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Frederick W. King is a theoretical chemist and educator whose research interests are in theoretical atomic structure calculations of few-electron systems.

King has derived some upper- and lower-bound inequalities for the atomic electronic density. He has also contributed to the recent advances in high-precision calculations on the properties of the lithium atom.

A professor of chemistry at the University of Wisconsin-Eau Claire, King has been honored with the university's Excellence in Scholarship Award (1988). He has also received a Camille and Henry Dreyfus Scholar/Fellow Award for Undergraduate Institutions (1989) and the Outstanding Contributions to Chemistry Award of the American Chemical Society Central Wisconsin Section (1984).

Born April 15, 1947, in Sydney, Australia, King received his B.Sc. (1969) from The University of Sydney and Ph.D. (1975) from Queen's University, Ontario, Canada. He was a postdoctoral fellow (1975-78) at Oxford University.

Branka M. Ladanyi

Branka M. Ladanyi is a theoretical physical chemist whose main research interest has been in the applications of statistical mechanics to molecular fluids.

Ladanyi has made significant contributions to theoretical and computational methodology in liquid structure and dynamics. She is also noted for her work on applications of statistical mechanical theory and simulation to light scattering, nonlinear optical response, and dielectric relaxation in fluids and polymers, as well as to solvation and chemical reactions in the liquid phase.

Ladanyi is the author of approximately 70 research articles in major scientific journals, and of several review articles and a book chapter. She has been an associate editor for the *Journal of Chemical Physics* since 1994, and is a member of the editorial advisory board for the *Journal of Molecular Liquids*.

A professor of chemistry at Colorado State University, Ladanyi has received an Alfred P. Sloan Research Fellowship (1982) and a Visiting Fellowship at the Joint Institute for Laboratory Astrophysics in Boulder, Colorado (1992).

Born September 7, 1947, in Zagreb, Croatia, Ladanyi received her B.Sc. (1969) from McGill University and Ph.D. (1973) from Yale University, where she was a postdoctoral fellow (1974-79).

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Shaul Mukamel

Shaul Mukamel is involved in research that includes theoretical studies of ultrafast nonlinear optical spectroscopy in condensed phases, molecular and semiconductor nanostructures, optical materials, and biological electron and energy transfer.

Mukamel is the author of more than 300 publications and a graduate-level textbook, *Principles of Nonlinear Optical Spectroscopy.*

A professor of chemistry at the University of Rochester, Mukamel has received Fulbright (1976) and Alfred P. Sloan Research (1980) Fellowships. He is a Fellow of the American Physical Society and the Optical Society of America.

Born December 11, 1948, in Baghdad, Iraq, Mukamel received his Ph.D. (1976) from Tel Aviv University. He completed postdoctoral fellowships at the Massachusetts Institute of Technology (1976) and the University of California, Berkeley (1977).

Matthew S. Platz

Matthew S. Platz is a physical organic chemist whose research has deepened understanding of the chemistry of carbenes, nitrenes, and biradicals.

Platz discovered that carbenes react at low temperature by quantum mechanical tunneling mechanisms. He unraveled the complex photochemistry of phenylazide and developed the pyridine ylide method for the study of alkyl, dialkyl, and acylcarbenes.

He is the author of more than 140 publications, and edited the monograph *Kinetics and Spectroscopy of Carbenes and Biradicals.*

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Platz is the Melvin S. Newman Professor of Chemistry and department chair at The Ohio State University, where his honors include the campus' Ashland Award for Outstanding Junior Faculty (1986), the Distinguished Scholar Award (1987), and the Distinguished Teaching Award (1990).

Born July 22, 1951, in New York, New York, Platz received his B.S. (1973) from the State University of New York at Albany and Ph.D. (1977) from Yale University, and was a postdoctoral fellow (1977-78) at The University of Chicago.

James P. Reilly

James P. Reilly is an analytical and physical chemist who has contributed to the development of the fields of laser ionization mass spectrometry, laser photoelectron spectroscopy, and molecular overtone spectroscopy.

Reilly was the first to observe and analyze previously predicted Jahn-Teller splittings in the benzene cation and to interpret the rotational structure of a high-energy overtone transition of methane gas. He also developed the space-velocity correlation focusing algorithm that is popularly used in biomolecule time-of-flight mass spectrometry.

A professor of chemistry at Indiana University, Reilly has recently been applying mathematical software programs in a novel approach to teaching quantum chemistry.

Reilly has received a Camille and Henry Dreyfus New Faculty Award (1979) and an Alfred P. Sloan Research Fellowship (1982).

Born August 29, 1950, in Mount Vernon, New York, Reilly received his A.B. (1972) from Princeton University and Ph.D. (1977) from the University of California, Berkeley, and was a postdoctoral fellow (1978-79) at the Max Planck Institute, Garching, Germany.

Mark H. Thiemens

Mark H. Thiemens is professor and chair of the Department of Chemistry and Biochemistry at the University of California, San Diego.

Born January 6, 1950, in St. Louis, Missouri, Thiemens received his B.S.

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(1972) from the University of Miami and Ph.D. (1977) from Florida State University. He did postdoctoral work (1977-80) at The University of Chicago.

Craig A. Townsend

Craig A. Townsend is a bioorganic chemist whose research has centered on the biosynthesis of natural products, the mechanism of activation and DNA cleavage by the diynene antitumor antibiotics, and the design and synthesis of specific enzyme inactivators/inhibitors as therapeutics against cancer and fungal and mycobacterial infections.

Townsend and his group have carried out extensive experiments ranging from the total synthesis of intermediates in the aflatoxin biosynthetic pathway to cell-free experiments, purification of biosynthetic enzymes, and cloning of their respective genes. This breadth of methods has been applied to the β-lactam antibiotics, notably the nonclassical groups as clavulanic acid and related clavams, and the monocyclic nocardicins.

Townsend has served on the editorial advisory board of the *Journal of Organic Chemistry.*

A professor of chemistry at The Johns Hopkins University, Townsend has received an Alfred P. Sloan Research Fellowship (1982), the Stuart Pharmaceuticals Award in Chemistry (1986), the Maryland Chemist of the Year Award (1992), and an American Chemical Society Arthur C. Cope Scholar Award (1995).

Born August 19, 1947, in Chicago, Illinois, Townsend received his B.A. (1969) from Williams College and Ph.D. (1974) from Yale University, and was a postdoctoral fellow (1974-76) at ETH Zürich.

Veronica Vaida

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Veronica Vaida studies light-initiated reactions of molecules, radicals, and their complexes.

Vaida recently applied the tools and concepts of chemical physics to study light-initiated reactions in the atmosphere. The program she developed at the interface of chemical physics and atmospheric science provides the background and the context for the subject matter, and is aimed at solving outstanding questions in atmospheric science.

Vaida is a professor of chemistry at the University of Colorado where she initiated a graduate program in atmospheric chemistry that aims to benefit the careers of young scientists. She has received an Alfred P. Sloan Research Fellowship (1980) and an Erskine Fellowship, University of Canterbury (1994).

Born August 3, 1950, in Bucharest, Romania, Vaida received her B.Sc. (1973) from Brown University and Ph.D. (1977) from Yale University, and was a postdoctoral fellow (1978-82) at Harvard University.

David M. Walba

David M. Walba focuses his research and teaching on synthetic organic chemistry, with an emphasis on stereochemistry.

Walba reported the synthesis of the first molecular Möbius strip—work which led ultimately to the invention of modern topological stereochemistry.

He has also been instrumental in the development of a predictive molecular model for the unique polar supermolecular stereochemistry of ferroelectric liquid crystals, and is working toward extending the scope of applications of liquid crystals in collaboration with physicists and engineers.

At the University of Colorado he has twice received faculty fellowships (1984, 1988), and is developing innovative approaches for teaching organic stereochemistry at the undergraduate level using computer-generated animations.

Born June 29, 1949, in Oakland, California, Walba received his B.S. (1967) from the University of California, Berkeley, and Ph.D. (1971) from the California Institute of Technology, and completed postdoctoral studies (1975-77) at the University of California, Los Angeles.

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R. Stanley Williams

R. Stanley Williams received the Teacher-Scholar award when he was a member of the chemistry department at the University of California, Los Angeles.

Born October 27, 1951, in Kodiak, Alaska, Williams received his B.S. (1974) from Rice University and Ph.D. (1978) from the University of California, Berkeley.

Bruce E. Bursten

Bruce E. Bursten is an inorganic chemist who has focused on the use of theoretical and experimental electronic structure methods to elucidate the structure, bonding, and energetics of inorganic and organometallic compounds.

Bursten has made many significant contributions to current research in inorganic chemistry, including the development of his well-accepted model of ligand additivity, his pioneering theoretical work on the electronic structure of actinide complexes, his fundamental contributions to the relationships of electronic structure and reactivity in organotransition-metal complexes, and recent experimental work on the fundamental factors that govern organometallic photochemistry.

Bursten is a coauthor of *Chemistry: The Central Science*, which is one of the leading textbooks in general chemistry. He has also contributed more than 100 papers to the scientific literature.

A professor of chemistry at The Ohio State University, Bursten has been honored with the campus' Distinguished Teaching Award (1982, 1996), the Arts and Sciences Distinguished Teaching Award (1986), and the Distinguished Scholar Award (1990). He has also received an Alfred P. Sloan Research

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Fellowship (1985) and has served as secretary of the American Chemical Society Division of Inorganic Chemistry (1993-95).

Born March 8, 1954, in Chicago, Illinois, Bursten received his B.S. (1974) from The University of Chicago and Ph.D. (1978) from the University of Wisconsin-Madison, and was a postdoctoral fellow (1978-80) at Texas A&M University.

Dennis A. Dougherty

Dennis A. Dougherty is an organic chemist interested in molecular recognition, molecular neurobiology, and organic magnetic materials.

Dougherty established the importance of the cation-π interaction in synthetic receptors and in a wide range of biological systems. He developed new methodology for specific modification of neuroreceptors and ion channels expressed in living cells, allowing detailed chemical studies of these important proteins. He prepared several new, prototypical high-spin molecules, and contributed new designs and paradigms in the quest for organic magnetic materials.

Dougherty is on the faculty of the California Institute of Technology, where he has won the Associated Students Teaching Award (1987) and the chemistry department's Richard M. Badger Prize for Teaching (1992). Other honors include a Camille and Henry Dreyfus New Faculty Award (1979), an Alfred P. Sloan Research Fellowship (1983), the Zeneca Pharmaceuticals Excellence in Chemistry Award (1991), and an American Chemical Society Arthur C. Cope Scholar Award (1992). He is a Fellow of the American Association for the Advancement of Science.

Born December 4, 1952, in Harrisburg Pennsylvania, Dougherty received his B.S. (1974) from Bucknell University and Ph.D. (1978) from Princeton University, and was a postdoctoral fellow (1979) at Yale University.

Barbara J. Garrison

Barbara J. Garrison is a theoretical chemist who has pioneered computational approaches to explore the basic mechanisms of surface chemical processes associated with reactions, growth, etching, and desorption that are amenable to experimental verification and exploration.

Garrison's contributions have been in the area of keV particle bombard-

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ment of solids, F atom etching of Si substrates, diamond film growth, time-dependent Monte Carlo methods, and interaction of lasers with solid surfaces.

A professor of chemistry at The Pennsylvania State University, Garrison was in the first group to receive a Camille and Henry Dreyfus Foundation New Faculty Award (1979). Subsequently, she has received an Alfred P. Sloan Research Fellowship (1980), the Peter Mark Memorial Award from the American Vacuum Society (1984), the Faculty Scholar Medal from The Pennsylvania State University (1990), the American Chemical Society Akron Section Award (1990), and the American Chemical Society Francis C. Garvan-John M. Olin Award (1994). She is a Fellow of the American Physical Society and the American Vacuum Society.

Born March 7, 1949, in Big Rapids, Michigan, Garrison received her B.S. (1971) from Arizona State University and Ph.D. (1975) from the University of California, Berkeley, and was a postdoctoral fellow (1975-77) at Purdue University.

Miklos Kertesz

Miklos Kertesz has done research focusing on the theory of complex repeat unit materials, exploring structure-property relationships.

Kertesz's accomplishments include the development of energy band theoretical techniques for polymers, and techniques for the calculation of vibrational spectra of polymers. He has established structure-property relations for conjugated polymers that helped in understanding and designing new materials with low-energy band gaps. His work has made it possible to extract structural information on polymers based on experimental and calculated vibrational spectra. His recent interests include property predictions of ladder-type polymers.

Kertesz has been a faculty member at Georgetown University since 1983 and a professor in the Department of Chemistry since 1990. He is the author or

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coauthor of 130 scientific publications, including two review articles.

Born July 15, 1948, in Budapest, Hungary, Kertesz was educated as a chemical physicist in Hungary, receiving a Ph.D.-equivalent (1978) from the Hungarian Academy of Sciences. He was a postdoctoral fellow at the University of Florida (1978), Cornell University (1979-80), and the University of Florida (1982-83).

Bruce H. Lipshutz

Bruce H. Lipshutz is a synthetic organic chemist who has developed several new reagents and methods applicable to the total synthesis of natural products.

Lipshutz is responsible for the introduction of the so-called "higher order cyanocuprates," reagents that are commonly used to effect a multitude of key carbon-carbon and carbon-heteroatom bonds. His work has helped shed light on the nature of these related important organometallics.

Lipshutz is a coauthor of several reviews on the field of organocopper chemistry, including the most comprehensive opus in this field, which appeared in *Organic Reactions* in 1992. He is the author of a new computer program, *Mechanisms in Motion*, which demonstrates in an interactive, animated fashion several basic mechanisms in organic chemistry for undergraduate use.

A professor of chemistry at the University of California, Santa Barbara, Lipshutz has been honored with the campus's Plous Memorial Teaching Award (1984). He has also received an Alfred P. Sloan Research Fellowship (1984) and the American Chemical Society Arthur C. Cope Scholar Award (1996).

Born December 10, 1951, in New York, New York, Lipshutz received his B.A. (1973) from the State University of New York at Binghamton and Ph.D. (1977) from Yale University. He did postdoctoral work (1977-79) at Harvard University.

David G. Lynn

David G. Lynn is a bioorganic chemist who has contributed to chemical and spectroscopic methods of structure assignment and has used these methods to better understand both biological and synthetic chemical information transfer.

He has expanded the use of two-dimensional nuclear magnetic resonance and mass spectroscopic/mass spectroscopic technologies in structure assign-

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ment, has defined the mechanism of recognition in both prokaryotic and eukaryotic pathogens, and has developed synthetic systems capable of high-fidelity information transfer.

A professor of chemistry at The University of Chicago, he has developed several courses including a core sequence for nonscience majors and a second-year bioorganic chemistry sequence for science majors.

Lynn has received an Alfred P. Sloan Research Fellowship (1985).

Born July 10, 1951, in Durham, North Carolina, Lynn received his A.B. (1973) from the University of North Carolina at Chapel Hill and Ph.D. (1977) from Duke University. He did postdoctoral work (1979) at Columbia University.

Alice C. Mignerey

Alice C. Mignerey is a nuclear chemist involved in research programs in basic nuclear science and in applications of the nuclear analytical technique of accelerator mass spectrometry (AMS).

Her basic research is centered on nuclear reaction mechanisms from intermediate energies to ultra-relativistic energies. She is a member of the PHOBOS collaboration, which is constructing a detector to measure central events in gold-on-gold collisions at the Relativistic Heavy Ion Collider (RHIC) scheduled to begin operation in 1999 at Brookhaven National Laboratory.

Her AMS work to date has concentrated on the uses of the cosmogenic radionuclides C-14 and Cl-36 in the study of groundwater systems.

A professor at the University of Maryland, Mignerey has been honored there as a Distinguished Scholar Teacher (1988). She was a member of the Nuclear Science Advisory Committee (1989-92) and is the vice chair of the Division of Nuclear Chemistry and Technology of the American Chemical Society.

Born November 6, 1949, in Brooklyn, New York, Mignerey received her B.S.

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(1971) and Ph.D. (1975) from the University of Rochester, and did postdoctoral work (1979) at Argonne National Laboratory.

Peter J. Rossky

Peter J. Rossky is a theoretical chemist focusing on development and application of new methods for the elucidation of the molecular-level basis for chemical behavior in liquids and solutions. Rossky has made pioneering advances in the realistic description of detailed models of solution chemistry via integral equation and simulation methods. His work has been broadly influential, ranging from chemical physics to biophysical chemistry.

The George W. Watt Centennial Professor of Chemistry at The University of Texas at Austin, Rossky has received an Alfred P. Sloan Research Fellowship (1982), a National Institutes of Health Research Career Development Award (1983), and a National Science Foundation Presidential Young Investigator Award (1984). He is a Fellow of the American Physical Society.

Born April 15, 1950, in Philadelphia, Pennsylvania, Rossky received his B.A. (1971) from Cornell University and Ph.D. (1978) from Harvard University. He was a postdoctoral fellow (1977-79) at the State University of New York at Stony Brook.

H. Bernhard Schlegel

H. Bernhard Schlegel is a theoretical physical chemist working on the development and application of molecular orbital (MO) calculations. His areas of research include algorithms for geometry optimization and reaction-path following, and applications of MO calculations to oxidation and chemical vapor deposition.

A professor of chemistry at Wayne State University, Schlegel has received an Alfred P. Sloan Research Fellowship (1981) and a WSU Career Development Award (1985).

Born September 24, 1951, in Frankfurt, Germany, Schlegel received his B.Sc. (1972) from the University of Waterloo, Ontario, Canada, and Ph.D. (1975) from

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Queen's University, Ontario. He was a postdoctoral fellow at Princeton University (1976-77) and Carnegie-Mellon University (1977-78).

Stuart L. Schreiber

Stuart L. Schreiber does research that integrates several disciplines, including synthetic organic chemistry, protein and structural biochemistry, and molecular and cellular biology.

In these studies, cell-permeable molecules have been synthesized and used to understand and control signal transduction pathways. Schreiber has developed a general approach to the preparation of conditional alleles of signaling proteins; this chemical approach has illuminated fundamental processes in cell biology and has promise in developmental biology and medicine, including human gene therapy.

Together with Kyriacos C. Nicolaou, he is a founder and editor of the new journal *Chemistry & Biology*.

Schreiber is an investigator at the Howard Hughes Medical Institute and a professor at Harvard University where he is a member of the Department of Chemistry and Chemical Biology and an associate member of the Department of Cellular and Molecular Biology.

Schreiber's honors and awards include a Camille and Henry Dreyfus New Faculty Award (1981), a Searle Scholars Program Award (1982), an Alfred P. Sloan Research Fellowship (1985), the National Science Foundation Presidential Young Investigator Award (1985), the Imperial Chemical Industries Pharmaceutical Group's Stuart Award for Excellence in Chemistry (1986), the Arun Guthikonda Memorial Award (1990), the Ciba-Geigy Drew Award for Biomedical Research (1992), and a Thieme-IUPAC Award in Synthetic Chemistry (1992). Other hon-

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ors include a National Institutes of Health MERIT Award (1992), the Royal Society of Chemistry Rhône-Poulenc Silver Medal (1992), the Leo Hendrik Baekeland Award of the American Chemical Society North Jersey Section (1993), the Paul Karrer Gold Medal, University of Zürich (1994), the Warren Triennial Prize (corecipient with Leland Hartwell), Massachusetts General Hospital (1995), the George Ledlie Biennial Prize, Harvard University (1995), and the DuPont Merck Young Investigator Award of the Protein Society (1995).

From the American Chemical Society, Schreiber has received the Arthur C. Cope Scholar Award (1986), the Award in Pure Chemistry (1989), the Eli Lilly Award in Biological Chemistry (1993), the Award for Creative Work in Synthetic Organic Chemistry (1994), and the Harrison Howe Award of the Rochester Section (1995). Schreiber was elected to the National Academy of Sciences in 1995.

Born February 6, 1956, in Fairfax, Virginia, Schreiber received his B.A. (1977) from the University of Virginia and Ph.D. (1981) from Harvard University.

James L. Skinner

James L. Skinner is a physical chemist working on theories of condensed phases. He has developed relaxation and spectroscopic theories appropriate for application to liquids, crystals, glasses, surfaces, and proteins.

The Joseph O. Hirschfelder Professor of Chemistry at the University of Wisconsin, Skinner is also director of the Theoretical Chemistry Institute. He has received a number of honors, including Alfred P. Sloan Research (1984) and Guggenheim (1993) Fellowships, an Alexander von Humboldt Foundation Research Award (1993), the Fresenius Award of Phi Lambda Upsilon (1989), and a National Science Foundation Presidential Young Investigator Award (1984).

Born August 17, 1953, in Ithaca, New York, Skinner received his A.B. (1975) from the University of California, Santa Cruz, and Ph.D. (1979) from Harvard University, and was a postdoctoral fellow (1980-81) at Stanford University.

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David S. Soane

David S. Soane is a polymer expert who has contributed significantly to the application of polymers to microelectronics, bioseparations, and ophthalmics.

Soane has developed a rapid, *in-situ*, direct polymerization technology to produce optical-quality objects without the need for grinding and polishing, a novel class of electrophoretic hydrogels for DNA and protein separation, and polymer systems for surface modification of transparent substrates.

Currently adjunct professor of chemical engineering at the University of California, Berkeley, he is cofounder of Soane Technologies, Inc., and Soane Bio-Sciences, Inc. He is the coauthor of two reference books, and has published some 180 technical papers. His name appears on more than 30 patents/applications.

Born August 22, 1951, in Taipei, Taiwan, Soane received his B.S. (1973) from National Taiwan University and Ph.D. (1978) from the University of California, Berkeley, where he was also a postdoctoral fellow (1979).

Krishnan Balasubramanian

Krishnan Balasubramanian is a theoretical chemist working on theoretical studies of molecules and clusters containing heavy atoms, chemical applications of group and graph theory, and chemical applications of artificial intelligence.

He is well known for applying relativity and quantum theory to chemical problems, and is the author of 375 publications in international journals, 10 chapters in books, and two books entitled *Relativistic Effects in Chemistry (Part A and Part B)*.

He has been on the editorial advisory board of the *Journal of Mathematical Chemistry* and the National Academy of Sciences advisory panel to the Chem-

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ical Sciences Division of the Air Force Office of Scientific Research.

A professor of chemistry at Arizona State University, Balasubramanian has been honored with the campus' Award for Distinction in Graduate Teaching (1991). He has also received an Alfred P. Sloan Research Fellowship (1984) and holds a Distinguished Professorship at the Indian Institute of Science in Bangalore.

Born April 10, 1956, in Bangalore, India, Balasubramanian graduated from the Birla Institute of Technology & Science, India, and received his Ph.D. (1980) from The Johns Hopkins University. He was a postdoctoral fellow (1980-83) at the University of California, Berkeley.

Gary W. Brudvig

Gary W. Brudvig is a biophysical chemist who has applied spectroscopic methods to probe the structure and function of redox-active sites in metalloproteins.

Brudvig is a leader in studies of the manganese cluster in photosystem II that catalyzes the oxidation of water in plant photosynthesis. His work has also contributed to the understanding of electron transfers in biological systems, especially those involving photosynthesis and metalloproteins.

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A professor of chemistry at Yale University, Brudvig has received a Camille and Henry Dreyfus New Faculty Award (1982), a Searle Scholars Program Award (1983), and an Alfred P. Sloan Research Fellowship (1986). He is a Fellow of the American Association for the Advancement of Science.

Born May 10, 1954, in Grand Forks, North Dakota, Brudvig received his B.S. (1976) from the University of Minnesota and Ph.D. (1980) from the California Institute of Technology, and was a postdoctoral fellow (1980-82) at the University of California, Berkeley.

Terrence J. Collins

Terrence J. Collins is an inorganic chemist who has pioneered the development of robust ligands for stabilizing high-valent transition-metal ions and for attain-

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ing long-lived oxidation catalysts.

Collins' work has profound implications for "green" chemistry. It has led to a set of rules for developing ligands that are robust toward oxidation, to a new generation of catalysts for activating hydrogen peroxide in aqueous solution, to numerous rare or unprecedented high-valent metal complexes, and to a likely principle for controlling exchange coupling in multimetallic ions.

Collins, a professor of chemistry at Carnegie Mellon University, has been an Alfred P. Sloan Research Fellow (1986).

Born October 12, 1952, in Auckland, New Zealand, Collins received his B.Sc. (1974) and Ph.D. (1978) from the University of Auckland, and was a postdoctoral fellow (1978-80) at Stanford University.

Dennis P. Curran

Dennis P. Curran is a synthetic organic chemist who has helped to pioneer the use of radical reactions in synthetic organic chemistry.

Curran is well known for his work in many areas of synthetic radical chemistry including the development of tandem radical cyclizations as a route to natural products, the study of atom-transfer reactions, and the study of stereoselectivity of radical reactions.

He is the author of a recent book on stereoselective radical reactions, and has written several frequently cited review articles.

The Distinguished Service Professor of Chemistry at the University of Pittsburgh where he received the President's Research Award (1989), Curran has been University Visiting Professor, Kyushu University (1996), Fuson Visiting Professor, University of Illinois at Urbana-Champaign (1995), and Reichstein Visiting Professor, University of Basel (1994).

Other awards and honors include a Camille and Henry Dreyfus New

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Faculty Award (1981), an Eli Lilly Grantee Award (1985), an Alfred P. Sloan Research Fellowship (1985), a Merck Faculty Development Grant (1986), a National Institutes of Health Research Career Development Award (1987), the American Chemical Society Arthur C. Cope Scholar Award (1988), an Imperial Chemical Industries Award for Excellence in Chemistry (1990), and a Japan Society for the Promotion of Science Fellowship (1994).

Born June 10, 1953, in Easton, Pennsylvania, Curran received his B.S. (1975) from Boston College and Ph.D. (1980) from the University of Rochester. He was a postdoctoral fellow (1980-81) at the University of Wisconsin.

Klavs F. Jensen

Klavs F. Jensen's research interests revolve around chemistry and transport phenomena related to processing of micro- and nano-structured materials for electronic and optical applications, including organometallic chemical vapor deposition.

Jensen and his coworkers have made significant contributions to the quantitative understanding of transport processes in semiconductor processing equipment as well as gas-phase and surface-reaction pathways of organometallic precursors. He is the coauthor of more than 230 publications, including several edited volumes. He is also a member of the advisory editorial boards of *Chemistry of Materials* and Oxford University Press' *Topics in Chemical Engineering.*

A professor of chemical engineering and of materials science and engineering at the Massachusetts Institute of Technology, Jensen has been the recipient of the Electrochemical Society Young Authors' Award in Solid State Science and Technology (1983), a National Science Foundation Presidential Young Investigator Award (1984), a Guggenheim Fellowship (1987), and the Allan P. Colburn (1987) and Charles C. M. Stine (1995) Awards of the American Institute of Chemical Engineers.

Born August 5, 1952, in Cambridge, England, Jensen received his chemical engineering education at the Danish Technical University and Ph.D. (1980) from the University of Wisconsin-Madison.

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William D. Jones

William D. Jones is an organometallic chemist who has been a pioneer in the fields of carbon-hydrogen bond activation and carbon-sulfur bond cleavage.

Jones demonstrated for the first time with a single metal center that alkane C-H bond activation is kinetically competitive with arene C-H bond activation, but that the latter is strongly preferred thermodynamically. His work has stimulated work in dozens of laboratories around the world, and his published work on this subject has been among the 100 most-cited papers in a given year. Jones is also investigating new model reactions for the removal of sulfur from petroleum, an important contributor to control of air pollution and acid rain.

A professor of chemistry at the University of Rochester, Jones has received a Camille and Henry Dreyfus New Faculty Award (1980), an Alfred P. Sloan Research Fellowship (1984), an Exxon Education Foundation Award (1987), a Guggenheim Fellowship (1988), a Fulbright-Hays Scholarship (1988), and a Royal Society Guest Research Fellowship (1988).

Born October 26, 1953, in Folsom, Pennsylvania, Jones received his B.S. (1975) from the Massachusetts Institute of Technology and Ph.D. (1979) from the California Institute of Technology. Jones held a Lilly Postdoctoral Teaching Fellowship (1980) at the University of Wisconsin-Madison.

Nathan S. Lewis

Nathan S. Lewis is a physical inorganic chemist who is interested in the chemistry of semiconductor surfaces. He has also recently developed a conducting polymer-based electronic nose.

Lewis has demonstrated a mechanistic approach to semiconductor photo-

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electrochemistry, and has elucidated many of the basic mechanisms that underpin interfacial charge transfer events that are important in photoelectrochemical solar energy conversion devices. He is the author of more than 100 manuscripts on this topic.

A professor of chemistry at the California Institute of Technology and director of the Beckman Institute Molecular Materials Resource Center, Lewis has received a National Science Foundation Presidential Young Investigator Award (1984), an Alfred P. Sloan Research Fellowship (1985), the Fresenius Award of Phi Lambda Upsilon (1990), and the American Chemical Society Award in Pure Chemistry (1991).

Born October 20, 1955, in Los Angeles, California, Lewis received his B.S. (1977) from the California Institute of Technology and Ph.D. (1981) from the Massachusetts Institute of Technology.

Lanny S. Liebeskind

Lanny S. Liebeskind is a synthetic organic chemist with a particular interest in the application of organotransition-metal chemistry to problems in organic synthesis.

Liebeskind has developed novel methods for the construction of highly substituted aromatic and heteroaromatic molecules using cyclobutenediones. He has established the use of enantiomerically pure transition-metal π-complexes of unsaturated heterocyclic molecules as scaffolds for the construction of enantiomerically pure substituted oxygen and nitrogen heterocycles.

He serves as an associate editor of the American Chemical Society journal *Organometallics*, is the editor of *Advances in Metal-Organic Chemistry*, and was an associate editor of the *Encyclopedia of Reagents for Organic Synthesis*.

The Samuel Candler Dobbs Professor of Chemistry and department chair at Emory University, Liebeskind has received an Alfred P. Sloan Research Fellowship (1983), the Cyanamid Academic Excellence Award (1988), and an Alexander von Humboldt Foundation Research Award (1989).

Born September 5, 1950, in Buffalo, New York, Liebeskind received his B.S. (1972) from the State University of New York at Buffalo and Ph.D. (1976) from the University of Rochester. He did postdoctoral work (1977-78) at the

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Massachusetts Institute of Technology and at Stanford University.

David M. Ronis

David M. Ronis is a chemical physicist who has developed the tools of statistical mechanics to solve equilibrium and nonequilibrium problems in complex condensed systems.

Ronis' accomplishments include the discovery and elucidation of long-range correlations in nonequilibrium systems, a molecular theory of ion transport in biological membranes, and theories for the equilibrium and nonequilibrium behavior of colloidal solutions which add to the understanding of phase transitions in nonequilibrium systems, hydrodynamic turbulence, and interfacial phenomena.

Ronis is a professor of chemistry at McGill University. He has been a Miller Fellow (1978) at the University of California, Berkeley, and an Alfred P. Sloan Research Fellow (1985).

Born October 11, 1952, in Montreal, Quebec, Canada, Ronis received his B.Sc. (1974) from McGill University and Ph.D. (1978) from the Massachusetts Institute of Technology.

Ian P. Rothwell

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Ian P. Rothwell is a synthetic organometallic chemist who has developed the use of aryloxide ligation for carrying out stoichiometric and catalytic organic transformations.

Rothwell has produced a new generation of homogeneous arene hydrogenation catalysts that demonstrate high regio- and stereoselectivity and promise to make significant contributions in the area of organophosphorus chemistry.

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A professor of chemistry at Purdue University, Rothwell has received the Meldola (1984) and Corday-Morgan (1990) Medals of the Royal Society of Chemistry, an Alfred P. Sloan Research Fellowship (1986), and the Fresenius Award of Phi Lambda Upsilon (1987).

Born January 21, 1955, in Manchester, England, Rothwell received his B.Sc. (1976) and Ph.D. (1979) from University College, London, and was a postdoctoral fellow (1979-81) at Indiana University.

Ming-Daw Tsai

Ming-Daw Tsai is a bioorganic and biophysical chemist who has devoted his career to research at the interface between chemistry and biology.

Tsai accomplished syntheses of chiral inorganic thiophosphates and various phospholipids chirally labeled at phosphorus. He also developed nuclear magnetic resonance methods for analyzing the configurations of these compounds; the compounds have been used to study the mechanisms of various enzymatic reactions.

Tsai also provided insight into the structure-function relationship of adenylate kinase, phospholipase A2, and other phospholipases. His work has led to more than 100 research publications in journals including *Biochemistry* and the *Journal of the American Chemical Society.*

A professor of chemistry and biochemistry and director of the Campus Chemical Instrument Center at The Ohio State University, Tsai has received an Alfred P. Sloan Research Fellowship (1983) and is a Fellow of the American Association for the Advancement of Science.

Born September 1, 1950, in Chai-Yi, Taiwan, Tsai received his B.S. (1972) from National Taiwan University and Ph.D. (1978) from Purdue University, where he was also a postdoctoral fellow (1980).

Bonnie Ann Wallace

Bonnie Ann Wallace is a biophysicist who is examining the structure and function of membrane proteins using crystallographic, spectroscopic, modeling, and chemical techniques, and has developed widely used methods in circular

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dichroism spectroscopy of membrane proteins.

Wallace's crystallographic studies focus on "intermediate"-size polypeptides, for which nonstandard methods have been developed. Her other interests include rational drug design, especially with respect to proteins involved in signal transduction.

A reader in crystallography at Birkbeck College of the University of London, Wallace has received the Irma T. Hirschl Career Scientist Award (1980), the first Dayhoff Award of the Biophysical Society (1985), a Fogarty Senior Fellowship (1990), and the BSG Prize of the British Crystallographic Association (1994). She was selected by Fortune magazine as one of America's top young scientists (1990) and received a D.Sc. from the University of London (1995). She is a Fellow of the Royal Society of Chemistry.

Born August 10, 1951, in Greenwich, Connecticut, Wallace received her B.S. (1973) from Rensselaer Polytechnic Institute and Ph.D. (1977) from Yale University. She did postdoctoral work at Harvard University (1978) and at the MRC Laboratory of Molecular Biology, Cambridge, England (1979).

Jacqueline K. Barton

Jacqueline K. Barton is a bioinorganic chemist whose research is focused on designing transition-metal complexes which target and probe specific sites along DNA and RNA.

Barton's work has been important in exploring principles of molecular recognition, in developing mimics for gene regulatory proteins, in developing photophysical and photochemical probes of nucleic acids and, in particular, in exploring reactions on nucleic acids, such as electron transfer chemistry.

A professor of chemistry at the California Institute of Technology, Barton has received numerous awards including the National Science Foundation Alan

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T. Waterman Award (1985), the American Chemical Society Award in Pure Chemistry (1988), the Leo Hendrik Baekeland Award of the American Chemical Society North Jersey Section (1991), the Fresenius Award of Phi Lambda Upsilon (1986), the American Chemical Society Francis C. Garvan-John M. Olin Award (1992), the American Chemical Society Tolman Medal (1994), and the Mayor of New York's Award of Honor in Science and Technology (1988). She was a Fellow of the Alfred P. Sloan Foundation (1984) and a National Science Foundation Presidential Young Investigator (1984). Barton has been named a MacArthur Foundation Fellow (1991) and is a member of the American Academy of Arts and Sciences (1991).

Born May 7, 1952, in New York, New York, Barton received her A.B. (1974) from Barnard College and Ph.D. (1979) from Columbia University, and was a postdoctoral fellow (1979-80) at Bell Laboratories and Yale University.

John F. Brady

John F. Brady is a chemical engineer working on the dynamics of complex fluids and transport in disordered media.

Brady invented Stokesian Dynamics, a numerical simulation technique similar to molecular dynamics for studying the motion of hydrodynamically interacting particles suspended in a viscous fluid. This work created a new approach to the study of microstructured fluids and has greatly increased the understanding of the mechanical behavior of these materials.

Brady is a professor of and executive officer for chemical engineering at the California Institute of Technology. He has received a National Science Foundation Presidential Young Investigator Award (1985) and the American Society for Engineering Education Curtis W. McGraw Research Award (1993), and was the Joliot-Curie Professor at the École Supérieure de Physique et Chimie Industrielles, Paris (1988, 1996). He is a Fellow of the American Physical Society.

Born January 8, 1954, in Dunkirk, New York, Brady received his B.S. (1975) from the University of Pennsylvania and Ph.D. (1981) from Stanford University. He was a postdoctoral fellow (1980-81) at the École Supérieure de Physique et Chimie Industrielles.

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Sylvia T. Ceyer

Sylvia T. Ceyer is a physical chemist with research interests in the area of molecule-surface reaction dynamics as related to heterogeneous catalysis, chemical vapor deposition, and plasma etching chemistry.

Ceyer has demonstrated sources of the apparent lack of surface reactivity under ultrahigh vacuum conditions and subsequently simulated high-pressure heterogeneous catalytic reactions in an ultrahigh vacuum environment where microscopic reaction steps can be discerned.

The J. C. Sheehan Professor of Chemistry at the Massachusetts Institute of Technology, Ceyer has received the university-wide E. M. Baker Teaching Award (1988) and the School of Science Teaching Award (1995). Other honors include a Camille and Henry Dreyfus New Faculty Award (1981), an Alfred P. Sloan Research Fellowship (1986), the Edgerton Prize (1987), the American Association of University Women's Young Scholar Award (1988), the American Chemical Society Nobel Laureate Signature Award for Graduate Education in Chemistry (1993), and the Hope College Distinguished Alumni Award (1993). Ceyer has been the holder of several named lectureships, and is a Fellow of the American Academy of Arts and Sciences and the American Physical Society.

Born December 18, 1953, in Chicago, Illinois, Ceyer received her A.B. (1974) from Hope College and Ph.D. (1979) from the University of California, Berkeley, and was a postdoctoral fellow (1980-81) at the National Bureau of Standards.

Michael M. Cox

Michael M. Cox's areas of research include mechanisms of genetic recombination in eukaryotes and prokaryotes, *in vitro* recombination of the 2-micron plasmid of yeast, mechanism of action of recA protein, interaction of recA pro-

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tein with other proteins involved in homologous genetic recombination in *E. coli*, and DNA rearrangement involved in ciliate macronuclear development.

Cox helped elucidate the role of recA-mediated ATP hydrolysis, and helped define the molecular mechanism of FLP recombinase-mediated site-specific recombination.

He is a coauthor of the text *Principles in Biochemistry*.

A professor and assistant chair of biochemistry at the University of Wisconsin-Madison, Cox has received a Shaw Fellowship from the Milwaukee Foundation (1983), a National Institutes of Health Research Career Development Award (1984), a Basil O'Connor Starter Research Grant, March of Dimes (1984), and the American Chemical Society Eli Lilly Award in Biological Chemistry (1989). Cox was also awarded the Spitzer Teaching Award by the University of Wisconsin College of Agricultural and Life Sciences (1994).

Born May 19, 1952, in Wilmington, Delaware, Cox received his B.A. (1974) from the University of Delaware and Ph.D. (1979) from Brandeis University, and was a postdoctoral fellow (1978-82) at the Stanford University School of Medicine.

Richard A. Friesner

Richard A. Friesner is a theoretical chemist who has developed new algorithms and models in a wide range of areas: electronic structure theory, molecular modeling, protein folding, quantum dynamics, semiconductor clusters, and the photosynthetic reaction center.

Friesner's electronic structure methods allow high-level electron correlation calculations to be carried out on large systems, with a reduction in some cases of more than a factor of 100 in computational efficiency as compared to previous methods. He is currently applying this methodology to provide the first quantum chemical benchmark evaluation of the accuracy of the force fields used in molecular modeling of peptides using structures larger than a dipeptide.

Friesner is a professor of chemistry at Columbia University where he is director of the Center for Biomolecular Simulation, a research resource supported by the National Institutes of Health. He has received an Alfred P. Sloan

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Research Fellowship (1984) and a National Institutes of Health Research Career Development Award (1988).

Born August 9, 1952, in New York, New York, Friesner received his B.S. (1973) from The University of Chicago and Ph.D. (1979) from the University of California, Berkeley, and was a postdoctoral fellow (1979-82) at the Massachusetts Institute of Technology.

Jeffrey C. Kantor

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Jeffrey C. Kantor is a chemical engineer who has investigated process monitoring and fault detection, analysis of discrete event systems for process controls, design for robust multivariable control, and active control of structural motions.

Kantor is vice president and associate provost at the University of Notre Dame. His honors include a Camille and Henry Dreyfus New Faculty Award (1981) and a National Science Foundation Presidential Young Investigator Award (1985).

Born July 10, 1954, in International Falls, Minnesota, Kantor received his B.S. (1976) from the University of Minnesota and Ph.D. (1981) from Princeton University. He was a postdoctoral fellow (1980-81) at the University of Tel Aviv.

Marsha I. Lester

Marsha I. Lester is a physical chemist who has utilized a variety of laser-based spectroscopic techniques and theoretical methods to investigate the intermolecular potential energy surfaces between reactive free radicals and an atomic or

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molecular partner.

Lester has done pioneering spectroscopic studies using laser-induced fluorescence, stimulated emission, and fluorescence depletion techniques to determine the intermolecular interactions and reaction dynamics of open-shell complexes composed of a hydroxyl radical and a rare gas atom as well as reactive partners such as molecular hydrogen. Her work has enabled a greater understanding of the effects induced by an unpaired electron on intermolecular interactions.

Lester is a professor of chemistry at the University of Pennsylvania. She has received a Camille and Henry Dreyfus New Faculty Award (1982), an Alfred P. Sloan Research Fellowship (1987), a National Science Foundation Career Advancement Award (1988), and the Broida Prize from the International Symposium on Free Radicals (1995). She is a Fellow of the American Physical Society (1993).

Born January 28, 1955, in Sharon, Pennsylvania, Lester received her B.A. (1976) from Rutgers University and Ph.D. (1981) from Columbia University, and was a postdoctoral fellow (1981-82) at Bell Laboratories.

William J. McGinnis

William J. McGinnis is a molecular geneticist who studies the molecules that assign and maintain positional identity during early development of animal embryos.

With his collaborators, McGinnis discovered, characterized, and named the homeobox sequence motif. This led to the finding that the genetic circuitry that assigns different identities on the anterior-posterior axis is very similar in animals as diverse as flies and humans.

McGinnis is a professor of biology at the University of California, San Diego. He has received a Searle Scholars Program Award (1985) and a National Science Foundation Presidential Young Investigator Award (1987).

Born, June 10, 1952, in Warrensburg, Missouri, McGinnis received his B.S. (1978) from San Jose State University and Ph.D. (1982) from the University of California, Berkeley, and was a postdoctoral fellow (1982-84) at the University of Basel, Switzerland.

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Geraldine L. Richmond

Geraldine L. Richmond has made important contributions to the understanding of surface structure and reactivity through her pioneering work in the application of pulsed laser methods to studies of buried surfaces and interfaces.

Richmond has investigated the applicability of surface second-harmonic generation and surface sum-frequency generation to study interfaces between two condensed media such as the metal/liquid, semiconductor/liquid, and liquid/liquid interfaces. She has pioneered the use of surface vibrational spectroscopy to study molecules at the interface between two immiscible liquids. She is the author of approximately 80 publications.

Richmond is a professor of physical chemistry at the University of Oregon. She has received a National Science Foundation Presidential Young Investigator Award (1985), an Alfred P. Sloan Research Fellowship (1985), the Coblentz Award in Spectroscopy (1989), the National Science Foundation Faculty Award for Women Scientists and Engineers (1991), an American Physical Society Fellowship (1995), the Iota Sigma Pi Agnes Fay Morgan Award (1993), and the American Chemical Society Francis C. Garvan-John M. Olin Award (1996).

Born January 17, 1953, in Salina, Kansas, Richmond received her B.S. (1975) from Kansas State University and Ph.D. (1980) from the University of California, Berkeley.

Jasper Rine

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Jasper Rine is a geneticist who has pioneered new areas of research ranging from gene expression to cancer biology.

Rine's accomplishments include the discovery of transcriptional silencing and the first eukaryotic DNA replication initiator. His lab has also discovered a novel and important class of protein modifications in which intermediates in the cholesterol pathway are attached to proteins such as Ras. The pharmaceutical industry is now targeting this modification to produce a new class of anticancer compounds.

Rine is a professor of genetics at the University of California, Berkeley. He has served on numerous state and national committees and scientific review boards and has been a consultant to several pharmaceutical companies.

Born October 16, 1953, in Barton, New York, Rine received his B.S. (1975) from the State University of New York at Albany and Ph.D. (1979) from the University of Oregon, and was a postdoctoral fellow (1980-82) at Stanford University.

Richard H. Scheller

Richard H. Scheller is a molecular neurologist who has made pioneering contributions to the understanding of synaptic transmission and synapse development.

Scheller has characterized molecules responsible for the docking, activation, and fusion of synaptic vesicles. He is the author of more than 160 papers and is a member of several editorial boards.

A professor of molecular and cellular physiology at Stanford University and an investigator at the Howard Hughes Medical Institute, Scheller has received the National Science Foundation Alan T. Waterman Award (1989) and W. Alden Spencer Award (1993).

Born October 30, 1953, in Milwaukee, Wisconsin, Scheller received his B.S. (1975) from the University of Wisconsin and Ph.D. (1980) from the California Institute of Technology. He was a postdoctoral fellow (1981-82) at Columbia University, College of Physicians and Surgeons.

Patricia A. Thiel

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Patricia A. Thiel is a surface chemist who has contributed to the fundamental understanding of factors that control the reactions of water and other small molecules on surfaces, the structures and dynamics of thin metal films, and oxidation of metals.

Thiel discovered that hydrogen bonding governs the formation of well-ordered water structures on some metal surfaces, and that this tendency toward hydrogen bonding can influence the reactivity of water with other adsorbates. In the area of metal film dynamics, she discovered and characterized the diffusion of very large adatom clusters, and elucidated the way in which cluster diffusion contributes to the temporal evolution of film structure.

The author of a widely cited review on the interactions of water with solid surfaces, Thiel serves on the editorial advisory boards of several major journals.

A professor of chemistry at Iowa State University, Thiel has received an Alfred P. Sloan Research Fellowship (1984), a National Science Foundation Presidential Young Investigator Award (1985), and a National Science Foundation Faculty Award for Women Scientists and Engineers (1991).

Born February 20, 1953, in Adrian, Minnesota, Thiel received her B.A. (1975) from Macalester College and Ph.D. (1981) from the California Institute of Technology, and was a postdoctoral fellow (1981) at the University of Munich, Germany.

Peter B. Armentrout

Peter B. Armentrout is a physical/organometallic chemist who has developed guided ion-beam techniques for studying the thermochemistry and reaction dynamics of a variety of chemical systems.

Armentrout is well known for his development of guided ion-beam mass spectrometry as a workable and highly productive tool for studying chemical

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reactions and investigating the details of the kinetic energy dependence of ion-molecule reactions.

A professor of chemistry at the University of Utah, Armentrout has been recognized there with the Outstanding Undergraduate Teaching Award from the chemistry department (1989) and the university-wide Distinguished Research Award (1994). He has also received the Camille and Henry Dreyfus New Faculty Award (1981), a National Science Foundation Presidential Young Investigator Award (1984), an Alfred P. Sloan Research Fellowship (1986), and the Buck-Whitney Award of the American Chemical Society Eastern New York Section (1993). He is a Fellow of the American Association for the Advancement of Science and of the American Physical Society.

Born March 13, 1953, in Dayton, Ohio, Armentrout received his B.S. (1975) from Case Western Reserve University and Ph.D. (1980) from the California Institute of Technology, and was a postdoctoral fellow (1980) at Bell Laboratories.

Anthony G. M. Barrett

Anthony G. M. Barrett is a synthetic organic chemist who has developed novel methodology and undertaken total synthesis of a variety of metal-containing natural products and related materials.

Barrett has developed synthetic organic and organometallic methodology including dynamic protection, the use of iron vinylidenes and nitroalkenes in the synthesis of β-lactam antibiotics, organoboron and silicon chemistry in asymmetric synthesis, and redox glycosidation.

The Glaxo Professor of Organic Chemistry at Imperial College, University of London, and director of the Wolfson Centre for Organic Chemistry in Medical Science, Barrett has received the Royal Society of Chemistry Meldola Medal (1980), Harrison Medal (1982), Corday-Morgan Medal (1986), and Tilden Lectureship (1994). Other honors include the Imperial College Armstrong Medal (1981), the American Chemical Society Arthur C. Cope Scholar Award (1986), and a Japan Society for the Promotion of Science Fellowship (1989).

Born March 2, 1952, in Exeter, Devon, England, Barrett received his B.Sc. (1973) and Ph.D. (1975) from Imperial College, University of London, where he also did postdoctoral work (1975-82).

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Peter F. Bernath

Peter F. Bernath is a physical chemist who has studied the visible and infrared spectra of transient molecules.

Bernath has analyzed the laser-induced fluorescence spectra of many metal-containing molecules. In recent years, his interests have turned to infrared emission spectra of molecules at high temperatures recorded with a Fourier-transform spectrometer. His work has led to the discovery of many new molecular species and to the identification of new molecules in extraterrestrial sources.

He is the author of a widely adopted textbook on the spectra of atoms and molecules.

Bernath is a professor in both the physics and chemistry departments at the University of Waterloo, Ontario, where he is director of the Guelph-Waterloo Centre for Graduate Work in Chemistry. He also maintains an affiliation as a senior research scientist with the University of Arizona. He received an Alfred P. Sloan Research Fellowship in 1987.

Born December 7, 1953, in Ottawa, Ontario, Canada, Bernath received his B.Sc. (1976) from the University of Waterloo and Ph.D. (1980) from the Massachusetts Institute of Technology, and was a postdoctoral fellow (1980-82) at the National Research Council of Canada.

George Christou

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George Christou is an inorganic chemist specializing in the synthesis and spectroscopic/physical properties of transition-metal cluster compounds which are models of metal-containing proteins and enzymes and possess unusual structural and/or magnetic properties.

Christou has led the field in developing synthetic methodology to prepare tetranuclear manganese carboxylate complexes as models of the photosynthetic water oxidation system of green plants and cyanobacteria. He has also been part of a collaborative effort that has identified the first examples of single-molecule magnets, a novel magnetic phenomenon with vast scientific and technological potential.

A professor of chemistry at Indiana University, Christou has received an Alfred P. Sloan Research Fellowship (1987), a Wilsmore Fellowship (1993), the Royal Society of Chemistry Corday-Morgan Medal (1986), and the Dwyer Medal of the Australian Chemical Society (1993).

Born July 26, 1953, in Limassol, Cyprus, Christou received his B.Sc. (1974) and Ph.D. (1977) from Exeter University, England. He was a postdoctoral fellow (1978-79) at the University of Manchester, England.

Bruce F. Demple

Bruce F. Demple is a biochemist whose research centers on the enzymology and biology of DNA-repair enzymes, and on the molecular mechanisms that govern cellular responses to free radicals.

Demple's efforts have identified the key enzymes that initiate the repair of sites of base loss in DNA. His investigations have also established the SoxR protein as a redox-sensing transcription factor that contains [2Fe-2S] centers. His work helps define the biological mechanisms that cope with the reactive by-products of molecular oxygen. Some of these mechanisms may limit spontaneous cancers and the aging process.

Demple is a professor of toxicology at the Harvard School of Public Health.

Born November 16, 1953, in Sheridan, Wyoming, Demple received his B.A. (1976) from Wesleyan University and Ph.D. (1981) from the University of California, Berkeley. He was a Helen Hay Whitney postdoctoral fellow (1981-84)

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at the Imperial Cancer Research Fund, London.

François N. Diederich

François N. Diederich is well known for his molecular recognition studies with synthetic receptors in the liquid phase.

He showed that water correlates with the other solvents in promoting apolar complexation and that tight, selective binding is enthalpically controlled. Supramolecular catalysts with coenzymes activated at apolar recognition sites and dendritic metalloporphyrins as models for heme electron transfer proteins were prepared. The principles of molecular recognition, as revealed in the studies with synthetic receptors, are now successfully applied to the design of nonpeptidic lead compounds for medicinal chemistry.

Diederich is a professor of organic chemistry at ETH Zürich. He has, among other honors, been awarded the American Chemical Society Arthur C. Cope Scholar Award (1992) and the Otto Bayer Preis für Chemie (1993), and been named the Sammet-Stiftungsgastprofessor at the University of Frankfurt (1995).

Born July 9, 1952, in Ettelbruck in the Grand Duchy of Luxembourg, Diederich received his undergraduate (1977) and doctoral (1979) degrees from the University of Heidelberg, Germany, where he was also a postdoctoral fellow (1979-81).

Gary P. Drobny

Gary P. Drobny is a professor of chemistry at the University of Washington, Seattle.

Born May 20, 1951, in Vallejo, California, Drobny received his B.S. (1976)

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from San Francisco State University and Ph.D. (1981) from the University of California, Berkeley.

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Gregory S. Ezra

Gregory S. Ezra is a theoretical chemist whose research interests span a range of topics in chemical dynamics and the few-body problem.

Ezra has been active in the development of semiclassical descriptions of atomic and molecular phenomena. He accomplished (with Dieter Wintgen) the first successful semiclassical periodic orbit quantization of the doubly excited states of helium, a long-standing problem in few-body physics. Current efforts focus on new approaches for analysis of molecular spectra.

Ezra is the author of a monograph on the symmetry properties of rigid and nonrigid molecules.

A professor of chemistry at Cornell University, Ezra has received an Alfred P. Sloan Research Fellowship (1986) and the Medal of the International Academy of Quantum Molecular Sciences (1988).

Born September 16, 1953, in London, England, Ezra received his B.A. (1976) and D. Phil. (1980) from Oxford University, and was a postdoctoral fellow (1980-82) at The University of Chicago.

John W. Frost

John W. Frost is an organic chemist who creates microbial catalysts suitable for the environmentally benign synthesis of industrially important chemicals, and uses synthetic chemistry as a tool in mechanism-based enzymology.

Frost has created biocatalytic syntheses of molecules that enable nontoxic glucose to replace carcinogenic benzene as a starting material. For example, Frost's synthesis of adipic acid is the first synthesis of this Nylon 66 component that simultaneously addresses the problems of petroleum-based feedstocks,

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toxic starting materials/reagents, generation of environmentally incompatible products, and the use of forcing reaction conditions.

A professor in the Department of Chemistry at Michigan State University, Frost has been the recipient of a Searle Scholars Program Award (1985) and an Alfred P. Sloan Research Fellowship (1987).

Born December 9, 1955, in Peoria, Illinois, Frost received his B.S. (1977) from Purdue University and Ph.D. (1981) from the Massachusetts Institute of Technology. He was a postdoctoral fellow (1981-83) at Harvard University.

Keith P. Johnston

Keith P. Johnston has developed novel concepts in supercritical fluid science and technology in the areas of molecular thermodynamics, chemical kinetics, polymer science, and surface science.

Johnston's group discovered retrograde vitrification of polymers in the presence of supercritical fluids and formed the first water-in-CO_2 microemulsion droplets, which act as microreservoirs to dissolve proteins.

Johnston holds the Matthew van Winkle Regents Professorship in Chemical Engineering at The University of Texas at Austin. His teaching awards include the University of Texas Engineering Foundation Faculty Excellence Award (1990, 1995) and the Award of Excellence from the Halliburton Foundation (1995). He has also received the American Institute of Chemical Engineers Allan P. Colburn Award (1990).

Born October 20, 1955, in Chicago, Illinois, Johnston received his B.S. (1977) from the University of Michigan and Ph.D. (1981) from the University of Illinois at Urbana-Champaign.

Kevin K. Lehmann

Kevin K. Lehmann is a high-resolution laser spectroscopist who is interested in a wide range of problems in fundamental chemical physics.

Lehmann has advanced the understanding of intramolecular vibrational energy redistribution in molecules through a series of both experimental and

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theoretical studies on a wide range of molecules. He is particularly known for his work on hydrogen cyanide, acetylene, ammonia, and terminal acetylene compounds.

A professor of chemistry at Princeton University, Lehmann has been an innovator in the development of student tutorials using Mathcad software. He has developed and maintains the "Bad Chemistry" Web page at http://www.princeton.edu/~lehmann/BadChemistry.html, which is part of the "Bad Science" series that tries to correct some commonly mistaught concepts. He is also on the editorial committee of the *Journal of Molecular Spectroscopy* and the editorial board of *Molecular Physics*.

Lehmann has received a Camille and Henry Dreyfus New Faculty Award (1985) and a National Science Foundation Presidential Young Investigator Award (1986). He is a Fellow of the American Physical Society.

Born September 7, 1955, in Newark, New Jersey, Lehmann received his B.S. from Cook College, Rutgers University (1977), and Ph.D. (1983) from Harvard University.

Jeffrey A. Reimer

Jeffrey A. Reimer has pioneered the use of state-of-the-art techniques in experimental physical chemistry toward the study of organic and inorganic materials and materials processing.

Reimer is credited with the novel exploitation of magnetic resonance spectroscopy in elucidating structure-property-processing relationships in amorphous semiconductors; he has since broadened his contributions to include studies of adsorption and catalysis, liquid crystalline polymers, and transition-metal oxides. His work is helping to provide a scientific basis for the systematic

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engineering design of new materials and materials processing.

Reimer is a professor of chemical engineering at the University of California, Berkeley. He has received an IBM Faculty Development Award (1984) and a National Science Foundation Presidential Young Investigator Award (1985).

Born September 15, 1954, in Van Nuys, California, Reimer received his B.S. (1976) from the University of California, Santa Barbara, and Ph.D. (1981) from the California Institute of Technology, and was a postdoctoral fellow (1980-82) at the IBM T. J. Watson Research Laboratories.

Donald R. Bobbitt

Donald R. Bobbitt is a bioanalytical chemist involved in the development of new instrumental techniques for characterizing the primary structure and chirality of peptides, proteins, and other bioactive molecules.

Bobbitt's lab was the first to succeed in combining electrogenerated chemiluminescence (nanomolar detection limits) with capillary electrophoresis (nanoliter elution volumes) and apply it to protein sequencing. His work in the development and application of chiral-selective analytical techniques has permitted pharmaceutical manufacturers to characterize and control more precisely the enantiometric content of new and existing drug formulations.

He has developed, with funding from the Howard Hughes Medical Institute, a hands-on program for K-6 teachers to take student-directed demonstrations and laboratory exercises into the classroom.

A professor and currently vice chair in the Department of Chemistry and Biochemistry at the University of Arkansas, Bobbitt has been honored with the campus's prestigious Alumni Association Award in Teaching (1991). He has also been the recipient of the Johnson & Johnson Award in Chromatography (1992).

Born October 21, 1956, in Philadelphia, Pennsylvania, Bobbitt received his B.S. (1980) from the University of Arkansas and Ph.D. (1985) from Iowa State University.

Stephen L. Buchwald

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Stephen L. Buchwald is an organic chemist who specializes in the application of organometallic reagents and catalysts in organic synthesis.

Buchwald has developed a general synthetic route to zirconocene complexes of unsaturated organic molecules and has shown that these are effective precursors to a variety of carbocyclic and heterocyclic compounds. He has also developed a highly enantioselective catalyst system for the reduction of ketimines to amines. Recently, he has developed efficient technology for the preparation of substituted aniline derivatives from aryl halides.

The Camille Dreyfus Professor of Chemistry at the Massachusetts Institute of Technology, Buchwald has received the highest honor for junior faculty, the Harold Edgerton Faculty Achievement Award (1990). He has also received a Camille and Henry Dreyfus New Faculty Award (1984), an Alfred P. Sloan Research Fellowship (1988), and an American Chemical Society Arthur C. Cope Scholar Award (1991). He has been the Karl Ziegler Guest Professor at the Max Planck Institute, Mühlheim, Germany (1995).

Born October 16, 1955, in Bloomington, Indiana, Buchwald received his Sc.B. (1977) from Brown University and Ph.D. (1982) from Harvard University. He was a postdoctoral fellow (1982-84) at the California Institute of Technology.

Charles T. Campbell

Charles T. Campbell is an experimental physical chemist who has characterized the mechanisms and kinetics of surface reactions on transition-metal and bimetallic surfaces and on model oxide-supported metal catalysts, and has pioneered techniques for surface chemistry.

Campbell has also invented a new method for surface analysis based on surface derivatization in thermal desorption mass spectroscopy (BPTDS) and is the author of important reviews on bimetallic surfaces and model catalysts.

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A professor of chemistry and adjunct professor of physics at the University of Washington, Campbell has received an Alfred P. Sloan Research Fellowship (1986), a DuPont Young Faculty Award (1988), the Indiana University Outstanding Young Faculty Award (1988), the John Yarwood Memorial Award of the British Vacuum Council (1989), and an Overseas Visiting Scholar Fellowship from St. John's College, Cambridge University (1996).

Born April 30, 1953, in Beaumont, Texas, Campbell received his B.S. (1975) and Ph.D. (1979) from The University of Texas at Austin. He was a postdoctoral fellow (1978-81) at the Humboldt Institute.

Ken Feldman

Ken Feldman is an organic chemist who has made many contributions in the areas of natural and unnatural products chemistry.

His seminal work in the ellagitannin area has led to the first general method for the assembly of these complex plant metabolites. This synthesis work enables ongoing studies into the mechanism by which these natural products exert their therapeutically promising biological effects.

A professor of chemistry at Pennsylvania State University, Feldman has received a Searle Scholars Program Award (1986), a National Science Foundation Presidential Young Investigator Award (1987), an Alfred P. Sloan Research Fellowship (1989), and awards from Syntex (1984), Eli Lilly (1987), American Cyanamid (1988), and Hoffman La Roche (1990).

Born December 22, 1956, in Miami Beach, Florida, Feldman received his B.S. (1978) from Harvey Mudd College and Ph.D. (1984) from Stanford University, and was a postdoctoral fellow (1983-84) at E. I. duPont de Nemours & Company.

Paul L. Frattini

Paul L. Frattini has contributed to research on microstructural deformations in polymeric and colloidal liquids during flow.

Frattini serves as an independent consultant in fluid dynamics and rheology. He is the author of more than 80 papers and symposia presentations.

An associate professor of chemical engineering at San Jose State University,

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Frattini has received a National Science Foundation Presidential Young Investigator Award (1986).

Born October 27, 1958, in St. Louis, Missouri, Frattini received his B.S. (1981) from Rensselaer Polytechnic Institute and Ph.D. (1986) from Stanford University, and was a postdoctoral fellow (1985-86) at Technische Hochschule, Aachen, Germany.

Gregory S. Girolami

Gregory S. Girolami is an inorganic chemist with interests in alkene polymerization catalysis, chemical vapor deposition (CVD) of thin films, artificial models of photosynthesis, and the development of new magnetic solids from molecular starting materials.

Girolami synthesized the first titanium alkyl/alkene complexes which had been proposed for more than 30 years to serve as the key intermediates in the industrially important Ziegler-Natta process for the polymerization of alkenes. He also pioneered the use of organotransition-metal compounds as CVD precursors for the low-temperature deposition of metals and their binary phases.

He is an associate editor of *Dalton Transactions*.

A professor of chemistry at the University of Illinois at Urbana-Champaign, Girolami has received an Office of Naval Research Young Investigator Award (1986) and an Alfred P. Sloan Research Fellowship (1988).

Born October 16, 1956, in Honolulu, Hawaii, Girolami received his B.S. (1973) from The University of Texas at Austin and Ph.D. (1981) from the University of California, Berkeley. He was a NATO postdoctoral fellow (1982-83) at Imperial College, London.

Robert R. Lucchese

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Robert R. Lucchese is a theoretical/computational chemist who has developed new methods for studying electron-molecule scattering processes.

The methods developed by Lucchese have led to calculations on molecular photoionization of unprecedented accuracy and detail and have yielded new insights into the physical mechanisms for the one-electron resonant processes which are important in both molecular photoionization and electron-molecule scattering.

He has also been instrumental in incorporating modern electronic structure theory methods into both the graduate and undergraduate curricula.

Lucchese is a professor of chemistry at Texas A&M University. He has received a National Science Foundation Presidential Young Investigator Award (1984) and an Alfred P. Sloan Research Fellowship (1988).

Born November 18, 1956, in Oakland, California, Lucchese received his B.S. (1977) from the University of California, Berkeley, and Ph.D. (1982) from the California Institute of Technology. He did postdoctoral work (1981-82) at Princeton University.

R. J. Dwayne Miller

R. J. Dwayne Miller is a chemical physicist who has developed both new nonlinear spectroscopies and laser systems for ultrasensitive detection of femtosecond reaction dynamics at single crystal surfaces and in biological systems.

Miller's work has fully characterized the photophysics and photochemical processes operating at semiconductor liquid interfaces. His work in this area has essentially given a femtosecond approach to studying electrochemistry and has shown how truly fast electron transfer can be at surfaces.

Miller holds a National Science and Engineering Research Council Research Chair in Quantum Optics in the Departments of Chemistry and Physics at the University of Toronto. He has been the recipient of a National Science Foundation Presidential Young Investigator Award (1987), and Alfred P. Sloan Research (1988) and Guggenheim (1992) Fellowships.

Born April 18, 1956, in Winnipeg, Manitoba, Canada, Miller received his

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B.Sc. (1978) from the University of Manitoba and Ph.D. (1983) from Stanford University. He was a postdoctoral fellow (1984) at the Université de Joseph Fourier, Grenoble, France.

Jonathan L. Sessler

Jonathan L. Sessler is an organic chemist who has helped pioneer the chemistry of expanded porphyrins, a class of large pyrrole-containing macrocycles that bear structural analogy to the far better studied porphyrins.

Sessler is best known for his synthesis and study of texaphyrins, a class of aromatic expanded porphyrins which is of potential interest as a source of adjuvants for cancer therapy. He is also widely recognized for discovering that certain expanded porphyrins will bind anions—behavior that has ramifications in areas as diverse as drug delivery and separation science.

A professor of chemistry at The University of Texas at Austin, Sessler has received a Camille and Henry Dreyfus New Faculty Award (1984), a National Science Foundation Presidential Young Investigator Award (1986), an Alfred P. Sloan Research Fellowship (1989), and an American Chemical Society Arthur C. Cope Scholar Award (1991).

Born May 20, 1956, in Urbana, Illinois, Sessler received his B.S. (1977) from the University of California, Berkeley, and Ph.D. (1982) from Stanford University. He was a postdoctoral fellow (1982-83) at the Université Louis Pasteur, Paris.

Michael E. Silver

Michael E. Silver is a synthetic organometallic/polymer chemist. His work has led to the filing of several discovery disclosures and a patent. The projects involve quinone functionalization of siloxane polymers leading to photoactivated

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hydrosilation catalysts, photomodification of silicone surfactants, and the preparation of new copolymers for coating and adhesive applications.

Silver is the coauthor of a new introductory chemistry textbook, which is expected to be published in 1999.

A professor of chemistry at Hope College, he helped establish a teaching enhancement workshop for new faculty on the campus and has received a Camille and Henry Dreyfus Scholar/Fellow Award for Undergraduate Institutions (1990).

Born October 24, 1953, in New York, New York, Silver received his B.S. (1975) from Fairleigh Dickinson University and Ph.D. (1982) from Cornell University, and was a postdoctoral fellow (1982-83) at Northwestern University.

Angelica M. Stacy

Angelica M. Stacy is a solid-state chemist who has developed new synthetic routes to oxide materials and has studied the electronic properties of these materials.

Stacy has used molten hydroxides for the crystallization and film growth of oxide conductors and oxide superconductors. In addition, she has discovered a number of new materials, including new niobium oxide superconductors.

Stacy is also involved in research in chemical education and in the design of new curricula for introductory college chemistry.

A professor of chemistry at the University of California, Berkeley, Stacy's teaching honors include the university's Distinguished Teaching Award (1991), the President's Chair for Teaching (1993), the Chemical Manufacturers Association Catalyst Award (1995), and the Donald Sterling Noyce Prize for Excellence in Undergraduate Teaching (1996). She has also been the recipient of a National Science Foundation Presidential Young Investigator Award (1984), the American Chemical Society Exxon Faculty Fellowship in Solid State Chemistry (1987), an Alfred P. Sloan Research Fellowship (1988), a National Science Foundation Faculty Award for Women Scientists and Engineers (1991), the American Chemical Society Francis P. Garvan-John M. Olin Medal (1994), and the Iota Sigma Pi Award for Professional Excellence (1996).

Born March 2, 1955, in Philadelphia, Pennsylvania, Stacy received her B.A.

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(1977) from LaSalle College and Ph.D. (1981) from Cornell University. She was a postdoctoral fellow (1981-83) at Northwestern University.

Thomas D. Tullius

Thomas D. Tullius is a biological inorganic chemist who introduced the use of the hydroxyl radical as a high-resolution chemical probe for the study of the structure of DNA and DNA-protein complexes in solution.

Tullius' method, called hydroxyl radical footprinting, is now in wide use around the world. Tullius has used hydroxyl radical footprinting in several enterprising studies of nucleic acid structure to measure the helical twist of DNA in solution, to observe the structural changes that DNA undergoes when it binds to the histone octamer of the nucleosome, and to determine the symmetry of the Holliday junction, the four-stranded DNA molecule that is an intermediate in genetic recombination.

Tullius is a professor of chemistry, biophysics, and biology at The Johns Hopkins University, and is codirector of the university's Institute for Biophysical Research on Macromolecular Assemblies. He has received a Searle Scholars Program Award (1984) and an Alfred P. Sloan Research Fellowship (1988).

Born March 23, 1952, in Fontana, California, Tullius received his B.S. (1973) from the University of California, Los Angeles, and Ph.D. (1979) from Stanford University, and was a postdoctoral fellow (1979-82) at Columbia University.

Daniel P. Weitekamp

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Daniel P. Weitekamp develops methods, instrumentation, and theory to expand the applicability of nuclear magnetic resonance (NMR) to a wide range of materials.

Weitekamp initiated the use of nuclear spin symmetry species to enhance NMR sensitivity and has invented a variety of novel methods for exploiting the coupling of nuclear spin to nuclear motion and to optical spectroscopy.

He has authored monographs on time-domain multiple-quantum spectroscopy and the role of spin statistics in the NMR of reacting systems. His teaching interests center on operator methods in quantum and statistical physics.

An associate professor of chemical physics at the California Institute of Technology, Weitekamp has received an Alfred P. Sloan Research Fellowship (1986) and an IR-100 Award.

Born October 23, 1952, in Peoria, Illinois, Weitekamp received his B.A. (1974) from Harvard College and Ph.D. (1982) from the University of California, Berkeley, and was a postdoctoral fellow (1982-83) at the University of Groningen, the Netherlands.

Kurt W. Zilm

Kurt W. Zilm is a solid-state nuclear magnetic resonance (NMR) spectroscopist who has invented a variety of new NMR methods and pioneered their applications in studies of reactive intermediates, catalysis, geochemistry, and organometallic chemistry.

Zilm developed the use of NMR for direct observation of reactive intermediates, such as biradicals, providing the first direct spectroscopic probe of singlet ground-state open-shell species. He is perhaps best known for the discovery and explanation of quantum exchange, a tunneling-like phenomenon observed in transition-metal polyhydrides.

A professor of chemistry at Yale University, where he is also the department's director of undergraduate studies, Zilm has been responsible for a total

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restructuring of the undergraduate curriculum and the adoption of computer-based instruction. He is also the director of the W. M. Keck High Field Magnetic Resonance Laboratory at Yale and past incumbent of the Milton Harris Associate Professor chair (1990-93).

Zilm has received a Camille and Henry Dreyfus New Faculty Award (1983), the R. A. Glenn Award of the American Chemical Society Division of Fuel Chemistry (1986), and the Franz-Vögt Prize of the Justus-Liebig University, Giessen, Germany (1987).

Born November 11, 1955, in Des Moines, Iowa, Zilm received both his B.S. (1976) and Ph.D. (1981) from the University of Utah, where he was also a postdoctoral fellow (1980-82). He was an IBM Postgraduate Fellow at the University of California, Berkeley (1982-83).

Scott L. Anderson

Scott L. Anderson is a physical chemist specializing in detailed studies of chemical reaction mechanisms for systems ranging from simple polyatomic molecules, through clusters, to solid interfaces.

Anderson is one of the leaders in the study of vibrational mode effects on chemical reactions, chemistry of isolated fullerenes, and structure-reactivity relationships in small metal and semi-metal clusters.

A professor of chemistry at the University of Utah, Anderson has received fellowships from the Alfred P. Sloan Foundation (1988) and the Japan Society for the Promotion of Science (1989), and a Camille and Henry Dreyfus Foundation New Faculty Award (1983). He has been a Professeur Invité at the Université de Paris-Sud (1990, 1991) and a Visiting Scientist at the University of Freiburg, Germany.

Born January 17, 1956, in Wilmington, Delaware, Anderson received his B.A.

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(1977) from Rice University and Ph.D. (1981) from the University of California, Berkeley, and was a postdoctoral fellow (1981-83) at Stanford University.

Laurie J. Butler

Laurie J. Butler is a physical chemist pursuing experiments designed to test and develop the ability to predict the rates and dynamics of chemical reactions.

Butler's spectroscopic and molecular beam photodissociation experiments probe the range of validity of one of the most fundamental assumptions in calculating the rates of and branching between energetically allowed chemical reaction pathways, the Born-Oppenheimer approximation.

A professor in the Department of Chemistry and The James Franck Institute at The University of Chicago, Butler has been named a National Science Foundation Presidential Young Investigator (1988), and has received a Camille and Henry Dreyfus New Faculty Award (1986) and an Alfred P. Sloan Research Fellowship (1992).

Born August 26, 1959, in Flushing, New York, Butler received her B.S. (1981) from the Massachusetts Institute of Technology and Ph.D. (1985) from the University of California, Berkeley. She was a postdoctoral fellow (1985-86) at the University of Wisconsin-Madison.

Rob D. Coalson

Rob D. Coalson is a theoretical chemist with research interests in quantum dynamics of condensed-phase systems, structure and dynamics of colloidal suspensions and crystals, and optical waveguide design.

Coalson has developed novel wavepacket and path-integral techniques for computing spectroscopic signatures of optical chromophores in condensed phases, and also electron transfer rates of molecular electron transfer complexes in polar solvents. With Anthony Duncan he has devised a lattice-field-theory approach to the interactions between macroions in electrolytic solutions. Recently, he has exploited analogies between the mathematical structure of quantum mechanics and optics to study the properties of semiconductor waveguides.

An associate professor of chemistry at the University of Pittsburgh, Coalson

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has received the Chancellor's Distinguished Research Award (1995). He has also been named a National Science Foundation Presidential Young Investigator (1986) and an Alfred P. Sloan Research Fellow (1988).

Born November 11, 1955, in Tucson, Arizona, Coalson received his A.B. (1977) and Ph.D. (1984) from Harvard University. He was a postdoctoral fellow (1984-86) at Los Alamos National Laboratory.

Anthony W. Czarnik

Anthony W. Czarnik has been heavily involved in shaping two fields of study: fluorescent chemosensors and combinatorial chemistry.

Czarnik is currently serving as an editor of the *Journal of Molecular Recognition*. He is on the editorial boards of *Organic Reactions* and *Combinatorial Chemistry* and on the editorial advisory board of *Accounts of Chemical Research.* He also edits the World Wide Web Fluorescent Chemosensors and Biosensors Database (http://biomednet.com/fluoro/).

Senior director of chemistry at IRORI Quantum Microchemistry, Czarnik has recently published his 100th scholarly paper. He has been named an Eli Lilly Grantee (1988) and an Alfred P. Sloan Research Fellow (1989).

Born November 21, 1957, in Appleton, Wisconsin, Czarnik received his B.S. (1977) from the University of Wisconsin-Madison and Ph.D. (1981) from the University of Illinois at Urbana-Champaign. He was a postdoctoral fellow (1981-83) at Columbia University.

Hai-Lung Dai

Hai-Lung Dai is an experimental physical chemist who has developed novel spectroscopic techniques for studying molecular reaction and energy-transfer

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dynamics, and has pioneered time-resolved studies of surface processes.

Dai was the first to apply the Stimulated Emission Pumping technique to detect intermolecular vibrational levels in a molecular complex and the excited vibrational levels of a transient radical. He was the first to demonstrate nanosecond time resolution in step-scan Fourier-transform emission spectroscopy and develop it into an efficient fluorescence spectroscopic technique.

The author of more than 80 research articles, Dai has also coedited two monographs for the *Advanced Series in Physical Chemistry*, one on vibrational molecular dynamics and the other on laser spectroscopy and photochemistry on metal surfaces.

A professor of chemistry at the University of Pennsylvania, Dai became department chair in 1996. He has received a Camille and Henry Dreyfus New Faculty Award (1985), an Alfred P. Sloan Research Fellowship (1988), the Coblentz Award in Spectroscopy (1990), the Morino Lectureship of Japan (1992), an Alexander von Humboldt Foundation Research Award (1994), and the American Chemical Society Philadelphia Section Award (1995). He is a Fellow of the American Physical Society.

Born February 25, 1954, in Taiwan, Dai received his B.S. (1974) from the National Taiwan University and Ph.D. (1981) from the University of California, Berkeley, and was a postdoctoral fellow (1981) at the Massachusetts Institute of Technology.

Pablo G. Debenedetti

Pablo G. Debenedetti is a thermodynamicist who studies the properties of liquids under extreme conditions of temperature and pressure. He has also pioneered the use of supercritical fluids for the formation of novel materials for biomedical applications.

Debenedetti was the first to use supercritical fluid antisolvents to produce biologically active protein powders suitable for long-term storage and controlled-release applications. He developed the widely used attractive-repulsive classification scheme for supercritical mixtures and pioneered the application of computer simulations to study solvation in supercritical fluids. His theoretical studies of supercooled and glassy water, and of liquids under tension, have

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provided important insights into the properties of glasses and metastable liquids under extremes of temperature and pressure. He is the author of the monograph *Metastable Liquids-Concepts and Principles*.

Debenedetti is a professor and chair of the Department of Chemical Engineering at Princeton University. He has received a National Science Foundation Presidential Young Investigator Award (1987) and a Guggenheim Fellowship (1991).

Born March 30, 1953, in Buenos Aires, Argentina, Debenedetti received his undergraduate degree (1978) from Buenos Aires University and Ph.D. (1985) from the Massachusetts Institute of Technology.

Andrew G. Ewing

Andrew G. Ewing is a professor of chemistry and adjunct professor of neuroscience and anatomy at The Pennsylvania State University.

He has received a National Science Foundation Presidential Young Investigator Award (1987), an Alfred P. Sloan Research Fellowship (1989), a Swedish Medical Council Visiting Scientist Fellowship (1991), and The Pennsylvania State University Faculty Scholar Medal in Physical Sciences and Engineering (1994).

Born January 19, 1957, in Huntington, New York, Ewing received his B.S. (1979) from St. Lawrence University and Ph.D. (1983) from Indiana University. He was a postdoctoral fellow (1983-84) at the University of North Carolina.

Alice P. Gast

Alice P. Gast is a chemical engineer studying the complex structure and dynamics occurring in multicomponent macromolecular systems.

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She provided the first conclusive neutron and X-ray diffraction study showing two types of ordered arrays in polymeric micelles. Her work combines fundamental aspects of colloid science, polymer physics, and statistical mechanics to understand these systems.

Gast is the author of more than 60 refereed journal articles and is coauthor of the sixth edition of *Physical Chemistry at Surfaces*.

A professor of chemical engineering at the Stanford Synchrotron Radiation Laboratory of Chemistry at Stanford University, Gast has received a National Science Foundation Presidential Young Investigator Award (1986), a Guggenheim Fellowship (1991), the National Academy of Sciences Award for Initiative in Research (1992), and the American Institute of Chemical Engineers Allan P. Colburn Award (1992).

Born May 25, 1958, in Houston, Texas, Gast received her B.S. (1980) from the University of Southern California and Ph.D. (1984) from Princeton University, and was a postdoctoral fellow (1984-85) at the École Supérieure de Physique et Chimie, Paris.

Marie E. Krafft

Marie E. Krafft is a synthetic chemist who has developed new organic synthetic methodology using transition metals.

Krafft has been working primarily in both the synthetic and mechanistic aspects of the cobalt-mediated Pauson-Khand reaction and has developed several controlling features of the process. Her work has allowed for a greater understanding of the Pauson-Khand reaction and contributed to its enhanced synthetic utility.

A professor of chemistry at Florida State University, Krafft has received an Alfred P. Sloan Research Fellowship (1989), a Florida State University Developing Scholar Award (1991), and an American Cyanamid Faculty Award (1994).

Born August 15, 1956, in Washington, D.C., Krafft received her B.A. (1979) and Ph.D. (1983) from Virginia Polytechnic Institute and State University. She was a postdoctoral fellow (1983-85) at Columbia University.

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Atsuo Kuki

Atsuo Kuki is a chemist with training in biophysical, computational, and theoretical chemistry targeting intelligently designed combinatorial chemistry libraries toward new pharmaceuticals in areas of unmet medical needs.

Kuki joined Alanex in 1995 to head a team developing a new computational strategy for integrating rational drug design with the formidable power of combinatorially based diversity chemistry. The senior director of discovery chemistry, Kuki coordinates teams of computational, medicinal, and combinatorial chemists to design, synthesize, and screen hundreds of thousands of compounds against half a dozen human G-protein coupled receptors.

While a member of the Department of Chemistry at Cornell University, Kuki has led an experimental and theoretical research team in molecular design, synthesis, and supercomputing.

He has received a National Science Foundation Presidential Young Investigator Award (1988).

Born October 21, 1957, in Chicago, Illinois, Kuki received his B.S. (1978) from Yale University and Ph.D. (1985) from Stanford University, and was a postdoctoral fellow (1985) at the University of Illinois at Urbana-Champaign.

Thomas E. Mallouk

Thomas E. Mallouk is a solid-state chemist who is best known for the adaptation of solid-state materials to a range of interesting problems in chemistry.

Mallouk is one of the pioneers in the area of inorganic self-assembly. He showed in 1988 that well-ordered monolayer and multilayer thin films can be

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grown from metal ions and phosphonic acids. Since then, his group and others have adapted inorganic self-assembly to the synthesis of numerous thin film and supramolecular structures. Mallouk is the editor of three books on solid-state synthesis, interfacial chemistry, and chemical sensors.

Mallouk is a professor of chemistry at The Pennsylvania State University, and has received the American Chemical Society Exxon Faculty Fellowship in Solid State Chemistry (1986), a National Science Foundation Presidential Young Investigator Award (1987), and an Alfred P. Sloan Research Fellowship (1988).

Born April 19, 1954, in Mineola, New York, Mallouk received his Sc.B. (1977) from Brown University and Ph.D. (1983) from the University of California, Berkeley, and was a postdoctoral fellow (1983-85) at the Massachusetts Institute of Technology.

John D. Simon

John D. Simon is a physical chemist who has developed time-resolved laser spectroscopic techniques for studying chemical and biochemical dynamics. His work has enabled a greater understanding of the role of liquid dynamics in solution chemical reactions.

Simon is a coauthor of *Braving the Elements*, a monograph aimed at generating interest in chemistry among nonscience majors. He has also coauthored *Physical Chemistry: A Molecular Approach*, a textbook in physical chemistry designed to bring many of the current areas of physical chemistry research into the undergraduate curriculum.

A professor of chemistry at the University of California, San Diego, Simon has received the National Science Foundation Presidential Young Investigator Award (1985), an Alfred P. Sloan Research Fellowship (1988), and the Fresenius Award of Phi Lambda Upsilon (1992).

Born February 11, 1957, in Cincinnati, Ohio, Simon received his B.A. (1979) from Williams College and Ph.D. (1983) from Harvard University, and was a

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postdoctoral fellow (1985) at the University of California, Los Angeles.

Michael Trenary

Michael Trenary is a physical chemist who has been active in expanding the use of Fourier-transform infrared spectroscopy for studying molecular interactions with metal surfaces.

Trenary, a professor of chemistry at the University of Illinois at Chicago, is also involved in pioneering efforts to understand the surface structure and chemistry of the boron-rich solids. His group was one of the first to demonstrate that vibrational spectra with high resolution and high sensitivity can be obtained for submonolayer coverages of hydrocarbon molecules adsorbed on small-area single-crystal surfaces in ultrahigh vacuum.

Trenary has used infrared spectroscopy to study the structure, physical interactions, and chemical reactions of a wide variety of both inorganic and organic molecules on metal surfaces. In a study of the (100) surface of lanthanum hexaboride, he and a student were the first to obtain atomically resolved images of a boron-rich solid with scanning tunneling microscopy.

Born July 8, 1956, in Los Angeles, California, Trenary received his B.S. (1978) from the University of California, Berkeley, and Ph.D. (1982) from the Massachusetts Institute of Technology. He was a postdoctoral fellow (1982-84) at the University of Pittsburgh.

Steven C. Zimmerman

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Steven C. Zimmerman is a bioorganic chemist who has made major contributions to understanding enzymatic catalysis and molecular recognition and self-assembly phenomena.

In the area of molecular recognition, Zimmerman developed a series of synthetic, cleft-like hosts, called "molecular tweezers," that are widely recognized for their structural innovation and versatility in complexing a range of guest molecules. In studies of self-assembly processes, he developed a class of dendrimers that form hexameric aggregates with sizes that rival those of small proteins.

A professor of chemistry at the University of Illinois at Urbana-Champaign, Zimmerman has received an American Cancer Society Junior Faculty Research Award (1986), a Presidential Young Investigator Award (1988), an Alfred P. Sloan Research Fellowship (1992), and the Buck-Whitney Award of the American Chemical Society Eastern New York Section (1995).

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Born October 8, 1957, in Chicago, Illinois, Zimmerman received his B.S. (1979) from the University of Wisconsin-Madison and Ph.D. (1983) from Columbia University. He was a postdoctoral fellow (1984-85) at Cambridge University.

Peter Chen

Peter Chen is a physical organic chemist specializing in the preparation and characterization of reactive intermediates such as radicals, biradicals, and carbenes.

Chen has pioneered laser spectroscopy of organic radicals in the gas phase, combining flash pyrolytic techniques for the clean production of reactive intermediates with supersonic jet expansions to cool the radicals to cryogenic temperatures. The subsequent spectroscopic studies have yielded structural and thermochemical data which serve to validate qualitative models for organic reactivity.

A professor of physical organic chemistry at ETH Zürich, Chen has received a Camille and Henry Dreyfus New Faculty Award (1987), a David and Lucile Packard Fellowship for Science and Engineering (1988), a National Science Foundation Presidential Young Investigator Award (1989), an Alfred P. Sloan Research Fellowship (1991), and an American Chemical Society Arthur C. Cope Scholar Award (1993).

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Born April 27, 1960, in Salt Lake City, Utah, Chen received his B.S. (1982) from The University of Chicago and Ph.D. (1987) from Yale University, where he was also a postdoctoral fellow (1987).

Kim R. Dunbar

Kim R. Dunbar is a synthetic/structural inorganic chemist who has discovered unprecedented binding modes for metals with DNA and established relationships between the interactions of cisplatin and dimetal complexes to guanine purines.

Dunbar crystallized the first oligomers and simple three-dimensional polymers of paramagnetic metal complexes with the acceptor molecule tetracyanoquinodimethane and related their structures to their magnetic and electronic properties. She authored a review of cyanide chemistry that details the frontier areas in the field and has synthesized a novel cubic octacyanodimetallate that serves as a building block for new structural archetypes in solid-state cyanide chemistry.

A member of the editorial board of *Accounts of Chemical Research*, Dunbar has also served as an American Chemical Society Minority Mentor and Minority Scholarship panelist.

Dunbar is a professor of chemistry at Michigan State University, where she has received a university Teacher-Scholar Award (1989) for her teaching of freshman chemistry. She has also been honored with an Alfred P. Sloan Research Fellowship (1993).

Born August 29, 1958, in Mount Pleasant, Pennsylvania, Dunbar received her B.S. (1980) from Westminster College and Ph.D. (1984) from Purdue University. She was a postdoctoral fellow (1985-86) at Texas A&M University.

Juli Feigon

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Juli Feigon is a biochemist and structural biologist who has pioneered the application of modern multidimensional nuclear magnetic resonance methods to the study and structure determination of nucleic acids.

Feigon's laboratory determined the first solution structures of a DNA triplex, DNA quadruplexes, and a DNA aptamer which binds to and inhibits thrombin. Her laboratory has also determined the structures of a number of drug-DNA complexes. Her most recent work has focused on the determination of RNA structures, including RNAs essential for the life cycle of the AIDS virus.

Feigon is a professor of biochemistry in the Department of Chemistry and Biochemistry at the University of California, Los Angeles. She has received a National Science Foundation Presidential Young Investigator Award (1989), the Glenn T. Seaborg Research Award (1992), and the Herbert Newby McCoy Research Award (1993).

Born January 6, 1954, in Chicago, Illinois, Feigon received her B.A. (1976) from Occidental College and Ph.D. (1982) from the University of California, San Diego, and was a postdoctoral fellow (1982-85) at the Massachusetts Institute of Technology.

Joseph S. Francisco

Joseph S. Francisco is a physical/atmospheric chemist who is interested in the application of computational chemistry and lasers to atmospheric chemical problems. He is particularly interested in those applications that enable understanding of the degradation mechanisms of chlorofluorocarbons and their alternatives.

Francisco was among the first to map out the detailed degradation pathways of alternative halocarbons which led to their timely environmental acceptability. His current work focuses on understanding halogen partitioning in the stratosphere.

Francisco is coauthor of a widely regarded textbook on chemical kinetics and dynamics and has been a leader in developing new teaching methods at the undergraduate level. His efforts to retain minority undergraduates in the sciences have been recognized by the American Association for the Advancement of Science Mentor Award (1994). He has also received an Outstanding Teacher Award (1992) from the National Organization for the Professional Advancement

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of Black Chemists and Chemical Engineers.

Francisco is a professor of chemistry and earth and atmospheric sciences at Purdue University. He has received a National Science Foundation Presidential Young Investigator Award (1988), an Alfred P. Sloan Research Fellowship (1990), a Guggenheim Fellowship (1993), a Percy Julian Research Award (1995), and a Sigma Xi National Lectureship (1995).

Born March 26, 1955, in New Orleans, Louisiana, Francisco received his B.S. (1977) from The University of Texas at Austin and Ph.D. (1983) from the Massachusetts Institute of Technology. He was a postdoctoral fellow at Cambridge University (1983-85) and at the Massachusetts Institute of Technology (1985-86).

Mark A. Johnson

Mark A. Johnson is a physical chemist who has developed cluster-ion techniques to determine how specific numbers of solvent molecules affect the photochemistry and chemical properties of a solute ion.

Johnson obtained the first ultraviolet photoelectron spectra of mass-selected negative ions, and used this capability to establish how homogeneous solvents such as water rearrange when they are charged. He has also discovered a general class of photochemistry, unique to negative ions, which occurs upon photoexcitation near the electron-binding energy of an aggregate. Johnson has been instrumental in the introduction of a self-paced physical chemistry laboratory designed to simulate a basic research environment.

A professor of chemistry at Yale University, Johnson has received a Camille and Henry Dreyfus New Faculty Award (1985) and a National Science Foundation Presidential Young Investigator Award (1987).

Born December 12, 1954, in Oakland, California, Johnson received his B.S.

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(1977) from the University of California, Berkeley, and Ph.D. (1983) from Stanford University, and was a postdoctoral fellow (1986) at the University of Colorado.

Michael Kahn

Michael Kahn is interested in utilizing chemically synthesized, secondary structure mimetics to dissect and understand biology, applying this information to design novel pharmaceuticals.

Kahn is the chief scientific officer and scientific founder of Molecumetics Ltd. in Bellevue, Washington. He has a concurrent appointment as research associate professor with the Department of Pathobiology, University of Washington, and mentors graduate students from that department.

Kahn's numerous honors include a Camille and Henry Dreyfus New Faculty Award (1985), a Searle Scholars Program Award (1986), a National Science Foundation Presidential Young Investigator Award (1987), an American Cancer Society Junior Faculty Research Award (1987), an American Cyanamid Faculty Award (1989), a University Scholar Award (1989), and an American Heart Association Established Investigator Award (1990).

Born May 17, 1957, in New York, New York, Kahn received his B.A. (1978) from Columbia University and Ph.D. (1983) from Yale University, and was a postdoctoral fellow (1984) at Columbia.

Charles M. Lieber

Charles M. Lieber has opened new frontiers in the chemical physics of materials through the creative synthesis and development of ideas from chemistry and physics.

Lieber developed a new molecular approach to understanding materials by combining scanning tunneling microscopy and chemical synthesis. He has been a leader in preparing new materials, including novel carbon-nitride solids with

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diamond-like properties and new one-dimensional carbide nanomaterials. Lieber has also developed a new microscopy technique, chemical force microscopy, that has been used to quantify interactions between basic chemical moieties and spatially map functional groups for the first time.

A professor of chemistry at Harvard University, Lieber has received the Camille and Henry Dreyfus New Faculty Award (1987), a National Science Foundation Presidential Young Investigator Award (1988), a David and Lucile Packard Fellowship for Science and Engineering (1988), an Alfred P. Sloan Research Fellowship (1990), the Wilson Prize (1990), the Dinkewalter Prize (1992), the American Chemical Society Award in Pure Chemistry (1992), the Materials Research Society Outstanding Young Investigator Award (1993), the George Ledlie Biennial Prize, Harvard University (1994), and the Leo Hendrik Baekeland Award of the American Chemical Society North Jersey Section (1995). He is a Fellow of the American Physical Society.

Born April 9, 1959, in Philadelphia, Pennsylvania, Lieber received his B.A. (1981) from Franklin & Marshall College and Ph.D. (1985) from Stanford University. He was a postdoctoral fellow (1987) at the California Institute of Technology.

Andrew G. Myers

Andrew G. Myers' research interests involve the synthesis and study of complex molecules important to biology and human medicine.

Myers and coworkers developed the first synthetic routes to dynemicin A, neocarzinostatin chromophore aglycone, and epoxybasmenone. They also estab-

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lished an enantioselective, convergent synthesis of the tunicamycin antibiotics, and have helped to elucidate the mechanism of action of the "enediyne" natural products neocarzinostatin chromophore, dynemicin A, and calicheamicin.

A professor of chemistry at the California Institute of Technology, Myers has received a Camille and Henry Dreyfus New Faculty Award (1986), an Eli Lilly Grantee Award (1989), a National Science Foundation Presidential Young Investigator Award (1989), a David and Lucile Packard Fellowship for Science and Engineering (1990), an Alfred P. Sloan Research Fellowship (1990), the Imperial Chemical Industries Award for Excellence in Chemistry (1990), the American Cyanamid Award in Organic Chemistry (1991), a Pfizer Award in Synthetic Organic Chemistry (1992), and the American Chemical Society Arthur C. Cope Scholar Award (1993).

Born August 14, 1959, Myers received his B.S. (1981) from the Massachusetts Institute of Technology and Ph.D. (1985) from Harvard University, where he was also a postdoctoral fellow (1986).

Scott D. Rychnovsky

Scott D. Rychnovsky is a synthetic organic chemist with an interest in polyene macrolide antibiotics.

Rychnovsky introduced the ^{13}C acetonide method for determining the configuration of polyol chains, and developed cyanohydrin acetonides as intermediates for the convergent synthesis of polyene macrolide antibiotics. He prepared the unnatural enantiomer of cholesterol as a biochemical probe and used it to show that the clinical antifungal agent amphotericin B binds to cholesterol when it forms ion channels.

A professor of chemistry at the University of California, Irvine, Rychnovsky has received a National Science Foundation Presidential Young Investigator Award (1991), a Searle Scholars Program Award (1989), a Pfizer Award in Synthetic Organic Chemistry (1992), an Eli Lilly Grantee Award (1991), an Alfred P.

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Sloan Research Fellowship (1992), and a Zeneca Pharmaceuticals Excellence in Chemistry Award (1994).

Born May 26, 1959, in Albuquerque, New Mexico, Rychnovsky received his B.S. (1981) from the University of California, Berkeley, and Ph.D. (1986) from Columbia University. He was a postdoctoral fellow at Harvard University (1986-87) and at Yale University (1987-88).

W. Mark Saltzman

W. Mark Saltzman is a bioengineer who has developed creative new strategies for the use of synthetic polymers in drug delivery and tissue engineering.

Saltzman has published papers on many different aspects of polymeric biomaterials including the use of polymers as reservoirs or carriers for macromolecular drugs, drug and protein transport in polymers, and cell migration through polymer gels. His work has established several of the fundamental principles that govern the interactions of polymers with biological tissues.

Saltzman is a professor of chemical engineering at The Johns Hopkins University; he also holds a joint appointment in the Department of Biomedical Engineering at The Johns Hopkins School of Medicine. Saltzman was awarded the Distinguished Faculty Award for Excellence in Undergraduate Education by the university's Student Council in 1995, the same year he received the Allan C. Davis Medal, awarded annually to Maryland's Outstanding Young Engineer.

Born September 8, 1959, in Des Moines, Iowa, Saltzman received his B.S. (1981) from Iowa State University and Ph.D. (1987) from the Massachusetts Institute of Technology, where he was also a postdoctoral fellow (1987).

Devarajan Thirumalai

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Devarajan Thirumalai is a theoretical chemist who has developed novel theories to understand the dynamics of the liquid-to-glass transition, folding of biomolecules, quantum dynamics of the solvated electron, and the nature of polymer-colloid interactions.

Thirumalai has recently developed a conceptual theoretical framework for understanding how biomolecules (proteins and RNA) fold *in vitro* and *in vivo*. He is the author of more than 100 scientific articles covering a broad range of topics, from scattering of electrons from atoms and molecules to kinetic processes in complex systems.

A professor of chemistry at the University of Maryland, Thirumalai has received a Camille and Henry Dreyfus New Faculty Award (1985), a National Science Foundation Presidential Young Investigator Award (1987), an Alfred P. Sloan Research Fellowship (1986), and Maryland's Outstanding Young Scientist Award (1995).

Born June 6, 1956, in Madras, India, he received his undergraduate education in India and received his Ph.D. (1982) from the University of Maryland. He was a postdoctoral fellow (1982-85) at Columbia University.

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Nancy L. Thompson

Nancy L. Thompson is a biophysical chemist with research interests in fluorescence microscopy and cell-surface immunochemistry.

Thompson has contributed significantly to the development and application of several methods for quantitatively examining the motions and interactions of immunological molecules in or on model cell membrane surfaces. These methods include total internal reflection fluorescence microscopy, which probes the behavior of molecules weakly bound to membrane surfaces; fluorescence correlation spectroscopy, which examines the nature of the fluctuations in the fluorescence arising from small open areas containing only a small number of molecules, and the construction of model cell membranes on transparent planar supports for use with microscopic techniques.

A professor of chemistry at the University of North Carolina at Chapel Hill, Thompson has been honored with the campus' Francis Stuart Chapin Professorship (1993) and the Hettleman Prize (1991). She has also received a National Science Foundation Faculty Award for Women Scientists and Engineers (1991), a National Science Foundation Presidential Young Investigator Award (1986), an Alumni Excellence Award from Guilford College (1991), and the Dayhoff Award from the Biophysical Society (1989).

Born September 28, 1956, in Charlotte, North Carolina, Thompson received her B.S. (1977) from Guilford College and Ph.D. (1982) from the University of Michigan. She was a Damon Runyon-Walter Winchell Cancer Fund Postdoctoral Fellow (1982-90) at Stanford University.

Victoria Buch

Victoria Buch is a computational physical chemist specializing in simulations of weakly bonded molecular systems: clusters, surfaces, and solids.

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Buch developed a new computational scheme, Rigid Body Diffusion Monte Carlo, for studying weak bonding in molecular clusters. Her more recent studies focused on the ice surface structure and on the surface of ice—topics which play an important role in both atmospheric and space chemistry.

An associate professor of chemistry at the Hebrew University of Jerusalem, Buch was formerly on the faculty of the University of Illinois at Chicago.

Born June 22, 1954, in Vilnius, Lithuania, Buch received her B.S. (1974) and Ph.D. (1984) from Hebrew University. She was a postdoctoral fellow (1987) at the Harvard-Smithsonian Center for Astrophysics.

Jeffrey A. Cina

Jeffrey A. Cina is a theoretical physical chemist with interests in ultrafast nonlinear optical spectroscopy and control of condensed-phase molecular dynamics.

Cina has given a first-principles description of the interplay between the optical and nuclear processes involved in time-resolved fluorescence Stokes shift measurements. He has also contributed to the understanding of Impulsive Stimulated Raman excitation in molecular crystals, and of wave packet interferometry.

Cina is an associate professor at the University of Oregon and a member of the Chemical Physics Institute. He was the organizer of the 1997 American Physical Society symposium on Optical Dynamics and Control in Molecular Solids.

Born March 6, 1956, in Milwaukee, Wisconsin, Cina received his B.S. (1979) from the University of Wisconsin-Madison and Ph.D. (1985) from the University of California, Berkeley, and was a postdoctoral fellow (1985) at the Massachusetts Institute of Technology.

Ariel Fernández

Ariel Fernández is a theoretical chemist who has discovered the variational or least-action principle governing biopolymer folding.

His research led to an understanding of a process whose expediency is neither the result of a random exploration of conformation space nor of a downhill series of events. He has published 182 articles in professional journals covering various areas in the field of statistical mechanics.

A professor of mathematics at the Universidad Nacional del Sur, Argentina, Fernández is also a principal investigator of the Argentinian National Research Council. He has received a Camille and Henry Dreyfus New Faculty Award (1989) and a Guggenheim Fellowship (1995).

Born April 8, 1957, in Bah'a Blanca, Argentina, Fernández received his B.S. from the Universidad Nacional del Sur and Ph.D. (1983) from Yale University. He was a postdoctoral fellow at the Weizman Institute (1984) and at Princeton University (1986).

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