ACS 1987 Award Winners

Following are vignettes of the fourth set of recipients of awards administered by the American Chemical Society. They will receive their awards during the April 1987 193rd ACS National Meeting in Denver. The awards will be presented during an awards banquet, at which time John D. Roberts will give the Priestley Medal Address.

Vignettes of the remaining awardees will appear in the next issue of C&EN.

Downloaded via Dustin Demoin on September 23, 2025 at 19:48:00 (UTC).
See https://pubs.acs.org/sharingguidelines for options on how to legitimately share published articles.

ACS Award for Distinguished Service in the Advancement of Inorganic Chemistry

sponsored by Mallinckrodt Inc.

DUWARD F. SHRIVER, professor of chemistry at Northwestern University, Evanston, Ill., has shown himself to be a leader in organometallic and solid electrolyte research, as well as a successful and respected teacher and a strong promoter of the advancement of inorganic chemistry through volunteer work.

His most important research contributions include demonstrating the first example of C- and O-bonded carbon monoxide, in 1969. This discovery led Shriver and others to many developments in organometallic chemistry such as the cleavage of carbon monoxide to form metal cluster carbide compounds and the promotion of alkyl migration onto carbon monoxide by molecular Lewis acids. Carbon monoxide bonding also appears to be important in the heterogeneous catalytic hydrogenation of carbon monoxide. In collaboration with colleagues at Northwestern Shriver has an active research program in this area. His research group also is exploring the transformation of ligands on metal clusters. Another research interest is the transport of ions in solids. In recent years his research has focused on the synthesis of new polymer electrolytes and the dynamics of ion motion in these polymers.

While conducting groundbreaking research he has also excelled in the area of teaching both as undergraduate teacher and research director of 34 graduate students, and he has been active in the profession. He has been chairman of the Division of Inorganic Chemistry of the American Chemical Society, is president of Inorganic Synthesis Inc., and has served on committees for various government agencies. Currently he is on the editorial board of six journals and book series, among them *Inorganic Chemistry.*

Shriver received his B.S. in chemistry from the University of California, Berkeley, in 1958 and his Ph.D. from the University of Michigan in 1961. He joined the faculty of Northwestern University, Evanston, Ill., in 1961 and was named full professor in 1971.

ACS Award in Polymer Chemistry

sponsored by Mobil Chemical Co.

VIVIAN T. STANNETT, Camille Dreyfus Professor of Chemical Engineering at North Carolina State University, has made many outstanding contributions to polymer chemistry. He was one of the first to recognize the unpaired ion nature of ionic polymerizations induced by high energy radiation and the effects of traces of water. His realization that emulsion polymerization systems offered unique opportunities to use radiation as the initiator led to extensive studies of vinyl acetate, styrene, acrylonitrile, butadiene, and vinyl chloride and copolymerizations.

In kinetic studies of vinyl polymerization with electron beams, Stannett and his colleagues used ingenious experimental techniques to overcome problems of low penetration and concurrent heat generation. The award winner was one of the first to analyze the radiation grafting process in detail and to utilize backbone polymers that could be hydrolyzed, thus isolating the grafted side chains. Stannett's studies with cellulose acetate have become models of similar investigations that have provided much new information. In addition a number of original contributions have been made in the field of the transport of small molecules in polymers.

The U.K.-born chemist, now a U.S. citizen, received his Ph.D. in physical chemistry from Polytechnic Institute of Brooklyn in 1950. Stannett spent one year at Koppers Co. and more than nine years at the State University of New York College of Forestry in Syracuse before coming to North Carolina as associate director of the Camille Dreyfus Laboratory at Research Triangle Institute. He took his present post in 1967.

Stannett has received many honors during his career, including, among others, the Silver Medal of the Technical Association of the Pulp & Paper Industry, ACS's Borden Award and Anselme Payen Award, Society of Plastics Engineers International Award and Gold Medal, and the North Carolina Science Award and Gold Medal. He is a fellow of the New York Academy of Sciences, TAPPI, and the Royal Society of Chemistry. He has published more than 350 papers and holds nine patents.

ACS Award for Nuclear Chemistry

sponsored by Amersham Corp.

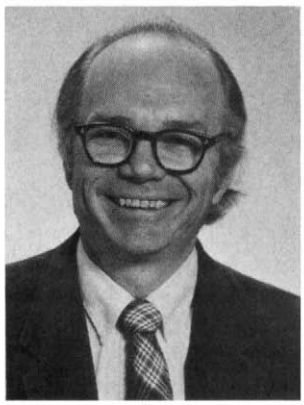
ELLIS P. STEINBERG, director of the chemistry division and currently acting associate laboratory director for physical research, Argonne National Laboratory, has had a long and distinguished career as a nuclear chemist. His contributions to an understanding of nuclear fission have been numerous and incisive.

He has identified and characterized the chemical and nuclear properties of many fission products. He described the effect of the sample environment on the self-absorption and back-scattering of β-particles. He showed how fission mass-yield distributions vary with incident neutron energy and the nature of the fissioning nucleus. Together with his associates B. D. Wilkins and R. R. Chasman, he developed a scission-point model of fission, which has been called the best static model of fission developed. It not only describes most observable fission phenomena but is useful for predictions as well as the interpretation of anomalies in the astrophysical *r*-process.

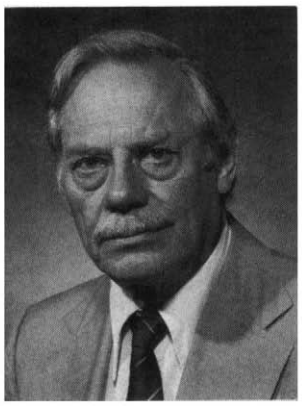
Steinberg's work in high-energy nuclear chemistry is also outstanding. He and his collaborators discovered the onset of a new reaction mechanism in proton bombardments of heavy elements between 1 and 11.5 GeV that is characterized by a change in the distribution of the reaction products from forward peaking to sideward peaking in laboratory coordinates.

Born in Chicago, Steinberg received an S.B. degree from the University of Chicago in 1941. Subsequently, he was employed for two years as an analytical chemist with the War Department at the Elwood Ordnance Plant near Joliet, Ill. In 1943 he joined the Metallurgical Laboratory at the University of Chicago. At the same time he continued graduate studies on a part-time basis. He received his Ph.D. in chemistry from the university in 1947; that year he joined Argonne National Laboratory, the successor to the Metallurgical Laboratory.

Steinberg was a Guggenheim Fellow at Neils Bohr Institute, Copenhagen (1957–58). His many professional affiliations have included member, scientific advisory committee to the Space Radiation Effects Laboratory (1971–73); and member, program advisory committee to the Los Alamos Meson Physics Facility (1977–80). He was chairman of the Division of Nuclear Chemistry & Technology of the American Chemical Society (1974) and was elected member-at-large of the executive committee of that division (1984).



Shriver



Stannett

Steinberg

Henry H. Storch Award in Fuel Chemistry

sponsored by Exxon Research & Engineering Co.

In 1977, **LEON M. STOCK** turned his attention to the elucidation of the constitution and reactions of coal. His investigations of reduction, alkylation, and reductive alkylation have constituted a fundamental contribution to coal science. Where other researchers had used the reactions individually, Stock and his colleagues used them in tandem, and thus were able to obtain information otherwise inaccessible.

His research on the factors governing the success of reductive alkylation reactions in tetrahydrofuran defined the role of the metal, the electron transfer agents, and the alkylation reagent in the reaction and established the reaction conditions that led to the maximum conversion to soluble products. Stock was the first to exploit isotopic labels in the solvents and reagents to enable a major simplification of the analysis of spectroscopic information. These contributions led, among other things, to new information on the character of the reactive oxygen and nitrogen atoms in bituminous coal as well as to new insight concerning reactive carbanionic components. Stock's latest research deals with coals with 89% carbon. These studies have confirmed previous theories that the enhanced solubility of coal is due to deformation that results from the loss of rigidity of the coal structure caused by the reduction of planar aromatic compounds and the breaking of weak interactions such as hydrogen bonds and van der Waals forces.

Stock has also conducted work on ruthenium(VIII) as a catalytic reagent for the selective oxidation of the aromatic structures in coal. He used this reagent to gain fundamental knowledge concerning the aliphatic structural elements.

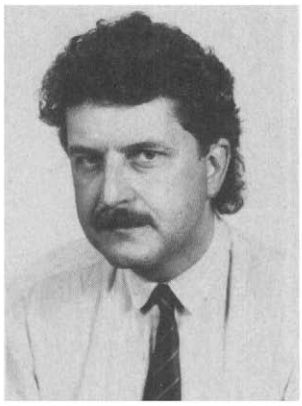
Stock, who obtained a B.S. in chemistry from the University of Michigan in 1952 and a Ph.D. from Purdue University in 1959, has spent his entire professional career at the University of Chicago. He joined the faculty in 1958 as an instructor and was promoted to full professor in 1970. He served as associate dean of the division of physical sciences and the college from 1976 to 1981, and has been chairman of the department of chemistry since 1985.

ACS Award in Organometallic Chemistry

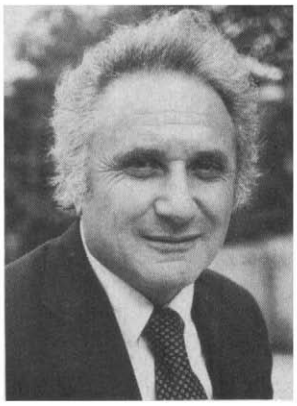
sponsored by Dow Chemical Co. Foundation

K. PETER C. VOLLHARDT's contributions to organometallic chemistry are wide ranging. He has pioneered in high-temperature, gas-phase thermal isomerizations of organometallic compounds, uncovering unique rearrangements, and using elegant stereochemical and isotope labeling techniques to elucidate their mechanisms. He also has contributed to organometallic cluster chemistry, developing routes to new dinuclear fulvalene and trinuclear biscarbyne complexes, exploring their thermal rearrangements, and studying their chemistry in the presence of nucleophiles and electrophiles, including the first insertion of nitric oxide into a transition metal cluster-carbonyl bond.

Stock



Vollhardt



Wasserman

Perhaps his major contributions, however, have been in exploiting cobalt catalysts capable of efficiently converting linear, organic molecules into complicated polycyclic organic ring systems of the type found in naturally occurring molecules such as steroids and alkaloids. Vollhardt's methodology is remarkably selective: It gives products in high yield, often with high stereo- and regioselectivity, and it has been demonstrated to lead to molecules of great synthetic utility as well as high theoretical interest. In the words of one colleague, "He has almost single-handedly awakened the organic synthesis community to the power of organometallic chemistry."

The award winner was born in Madrid in 1946. He received his early education in Buenos Aires and in West Germany, and obtained his chemistry degree from the University of Munich in 1967, his Ph.D. in organic chemistry from University College, London, in 1972. The awardee spent two years as a postdoctoral fellow at California Institute of Technology with R. G. Bergman before joining the University of California, Berkeley, faculty as assistant professor of chemistry; in 1978 he was appointed associate professor and in 1982 full professor.

Vollhardt has published more than 150 papers and is coholder of five patents. This busy lecturer, both in the U.S. and abroad, has been the recipient of many honors, among them the Adolf Windaus Medal of the German Chemical Society in 1983, and selection as one of the "100 Outstanding Young Scientists in America" by *Science Digest* in 1984.

ACS Award for Creative Work in Synthetic Organic Chemistry

sponsored by Aldrich Chemical Co.

The work of **HARRY H. WASSERMAN,** Eugene Higgins Professor of Chemistry at Yale University, has enriched the field of synthetic organic chemistry with new methodology based on the reactions of singlet oxygen, triplet oxygen, cyclopropanones, and azetidinones. His research on β-lactams ranges from the synthesis of homopenicillin in the 1950s to the well-known synthesis of 3-aminonocardicinic acid in the late 1970s, and his use of tricarbonyl chemistry to form the antibiotic PS-5, as well as the penem system.

Another long-term pursuit, in cyclopropanones and other strained structures, dates back to the 1960s with the formation of 1-substituted cyclopropanols and the synthesis of cyclobutane-1,3-dione using ethoxyacetylene. Wasserman's long-term involvement in singlet oxygen chemistry has led to varied applications of photooxidation reactions in synthesis as in the use of oxazoles for protection-activation in the synthesis of peptides and macrocyclic lactones.

More recently, the award winner has continued to pioneer new synthetic methodology, developing economical routes to the family of polyamine lactams in the spermine and spermidine alkaloid field by use of β-lactams and related synthons as reactive surrogates of β-aminopropionyl residues; applying new reactions of singlet oxygen to synthesis of natural products in the macrolide antibiotic field; completing the final phases in the total synthesis of tetracycline; and extending earlier work on the carbonyl-epoxide rearrangement to an elegant chiral synthesis of the mouse (*Mus musculus*) pheromone and to new methods for stereocontrolled synthesis of piperidine alkaloids.

Wasserman received his B.S. in 1941 from Massachusetts Institute of Technology, his M.A. in 1942 and Ph.D. in 1949 from Harvard University. He spent 1943–45 as an Air Force captain in Africa and the Middle East. Wasserman joined the Yale faculty in 1948 and was named to his present position in 1982. He received the Chemical Manufacturers Association Catalyst Award and Yale College Outstanding Teacher Award in 1985. He is a member of the American Academy of Arts & Sciences and served as chairman of ACS's Division of Organic Chemistry in 1965-66. Since 1960 he has been American Editor of the *Journal of Tetrahedron Letters.*

ACS Award in Computers in Chemistry

sponsored by Digital Equipment Corp.

W. TODD WIPKE, professor of chemistry at the University of California at Santa Cruz, has played a pioneering role in the application of computational techniques to chemical research problems. In the early 1960s, he developed a program to generate all the unique tricyclic undecanes. Later, he began to develop a computer program to assist in the design of complex organic syntheses. Over the years, this software has evolved into two major research systems (LHASA and SECS) that are used worldwide.

In 1967, Wipke achieved several breakthroughs in interactive chemical computing. He developed the first fully interactive computer graphics system for direct graphical entry, visualization, and manipulation of chemical structures. Virtually all modern systems for molecular modeling, substructure searching, and database registry now use such techniques.

In 1969, Wipke began to explore the means by which interactive graphics could be coupled with mo-

lecular mechanics-based geometry optimization techniques. From his efforts came the first interactive energy minimization system, which is now used universally in small-molecule conformational analysis when the chemist does not have x-ray or solution NMR data with which to pin down initial geometries.

During the past decade, Wipke has been directing his research efforts toward the use of artificial intelligence techniques in chemical reactivity and structure-property analysis; a program to predict metabolism; a new approach to molecular model building that automatically identifies structural analogies between the target model and experimentally derived models; and the basic algorithms that led to the first graphics-based reaction search system (REACCS). In 1978, Wipke cofounded Molecular Design Ltd., a company that develops and markets software for chemical database management, molecular modeling, and structure-activity studies.

Wipke

Yates

ACS Award in Colloid or Surface Chemistry

sponsored by Kendall Co.

For the past 20 years, **JOHN T. YATES JR.** has been a key figure in the development of measurement techniques for solid surfaces and in applying them to a variety of surface chemistry problems. Perhaps the major contribution of the University of Pittsburgh professor is his ability to meld the surface physics and surface chemistry approaches into a single discipline.

He pioneered the use of mass spectrometry in temperature programed desorption to study molecular interaction and decomposition at surfaces. Working with others, Yates made some of the first x-ray photoelectron spectroscopic investigations of adsorbates at surfaces. In collaboration with Theodore Madey at the National Bureau of Standards, he participated in the discovery and development of ESDIAD (electron stimulated desorption ion angular distribution), which allows the bonding geometry of molecules at surfaces to be observed directly.

Yates was also among the first to use reflectance IR to study adsorbates on atomically clean surfaces. He continues to be a leader in the field of vibrational studies at surfaces using transmission and reflectance IR and high-resolution electron energy loss spectroscopy. His design of early work in reaction kinetics at elevated pressures or with molecular beams over metal single crystals has contributed to bridging the gap between traditional surface science and catalysis communities and has served as a springboard for new approaches to fundamental catalytic research.

Yates received his B.S. in chemistry from Juniata College in 1956, his Ph.D. in physical chemistry from Massachusetts Institute of Technology in 1960. He taught at Antioch College before joining NBS in 1963. In 1977–78 he was a Sherman Fairchild Distinguished Scholar at California Institute of Technology. He left NBS in 1982 when he was appointed Richard K. Mellon Professor of Chemistry and first director of the university's new Surface Science Center, positions that he holds today. Yates received the Department of Commerce's Silver Medal in 1974, its Gold Medal in 1981. In 1978 he was cowinner of NBS's Samuel Wesley Stratton Award for unusually significant research.

We Answer Your
Chemical Information Questions

- Patents (chemistry related)
- Markush
- substructures
- competitor's activity
- substance identification
- and more!

Fast service, reasonable
fees ($50 - $350), effective database searching.
Call Chemical Abstracts Service
We write the abstracts -- so we're expert at searching them!

Don Stickel
800-848-6538

CAS is a Division of the American Chemical Society.