

WE HEAR THAT

Clinton Names 1998 National Medal of Science Winners

In December, President Clinton announced the nine recipients of the nation's highest scientific honor, the National Medal of Science. Administered by the National Science Foundation, the medal has been awarded to 362 individuals since it was established in 1959. Among the nine winners this year are six who have engaged in physics or physics-related research.

Don L. Anderson, the Eleanor and John R. McMillan Professor of Geophysics at Caltech, received a medal, according to the citation, "for advancing the understanding of the composition, structure and dynamics of the Earth and Earth-like planets, and for his national and international influence on the advancement of earth sciences over the past three decades."

Another medal went to **John N. Bahcall** for "his pioneering efforts in neutrino astrophysics and his contributions to the development and planning of the Hubble Space Telescope." Bahcall is the Richard Black Professor of Natural Sciences at the Institute for Advanced Study in Princeton, New Jersey.

John W. Cahn, a fellow at the National Institute of Standards and

Technology in Gaithersburg, Maryland, garnered a medal for "his profound influence on the course of materials and mathematics research, and his enormous contributions to three generations of materials scientists, solid-state physicists and mathematicians."

Cathleen S. Morawetz was recognized with a medal for "pioneering advances in partial differential equations and wave propagation resulting in application to aerodynamics, acoustics and optics." She is a professor emerita at New York University's Courant Institute of Mathematical Sciences.

Another recipient was **Eli Ruckenstein**, a distinguished professor of chemical engineering at the State University of New York at Buffalo. He was honored for "his world-class pioneering theories and experimental achievements in colloidal and surface phenomena, catalysts and advanced materials."

Finally, **George M. Whitesides** received a medal for "his innovative and far-ranging research in chemistry, biology, biochemistry and materials science that has brought breakthroughs to transition metal chemistry, heterogeneous reactions, organic surface chemistry and enzyme-mediated synthesis." Whitesides is the Mallinckrodt Professor of Chemistry at Harvard University.

APS to Honor Many at Its Centennial Meeting

On the occasion of its 100th birthday, the American Physical Society is throwing a big party in Atlanta this March to celebrate, and most of the society's disciplinary divisions are scheduled to participate (see the meeting preview on page 47). The 1999 awards associated with those divisions will be given at the March meeting, so that a total of 44 individuals will be honored.

APS prizes will go to 24 individuals for their outstanding research.

Thomas R. Anthony and **Eugene E. Haller** will share the James C. McGroddy Prize for New Materials. Anthony is a staff scientist at the General Electric Research and Development Center in Schenectady, New York, and Haller is a professor of materials science at the University of California, Berkeley, and a faculty senior scientist at Lawrence Berkeley National Laboratory. The two are being honored for their "innovations in growing diamond and germanium crystals with unprecedented control of chemical and isotopic purity and perfection, and for creative leadership and active participation in worldwide collaborations based on these extraordinary materials resulting in both fundamental discoveries and new technological applications."

The George E. Pake Prize will go to **Hendrik Brugt Gerhard Casimir**, who retired in 1972 from the Research Laboratories of the Philips Co. He had been a codirector of the labs and a member of its board of directors. The prize is recognizing him for his "excellence as a leader of industrial research at Royal Philips Electronics and for fundamental contributions to the foundations of quantum mechanics and solid state physics."

Charles C. Han, a NIST fellow at the National Institute of Standards and Technology in Gaithersburg, Maryland, will receive the High Polymer Physics Prize. He is being cited for "outstanding contributions in the application of light and neutron scattering to the physics of polymer phase separation."

Stephen W. Hawking will garner the Julius Edgar Lilienfeld Prize, which funds the recipient to give lectures at three different venues. Hawking, the Lucasian Professor of Mathematics at the University of Cambridge, is being cited for "boldness and crea-



ANDERSON



BAHCALL



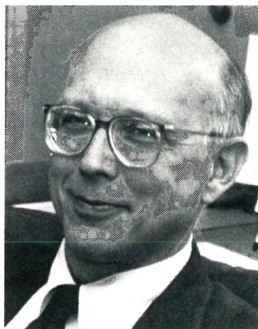
CAHN



MORAWETZ



RUCKENSTEIN



WHITESIDES

tivity in gravitational physics, best illustrated by the prediction that black holes should emit black body radiation and evaporate, and for the special gift of making abstract ideas accessible and exciting to experts, generalists and the public alike."

The Irving Langmuir Prize in Chemical Physics will honor **Daniel Kivelson**, a professor of chemistry at UCLA, for "his influential studies, theoretical and experimental, probing stability, structure and molecular motion in liquids, supercooled liquids and glasses."

Receiving the Aneesur Rahman Prize for Computational Physics will be **Michael L. Klein**, the Hepburn Professor of Physical Science, director of the laboratory for research on the structure of matter and director of the center for molecular modeling at the University of Pennsylvania. The citation states that he has made "ground-breaking contributions to computational physics by developing methods to carry out atomistic simulations of molecular systems, thereby generating novel insights into the structural and dynamical behavior of complex materials."

Steven G. Louie will garner the Davisson-Germer Prize in Atomic or Surface Physics for "his predictive theoretical studies of surfaces and interfaces." Louie is a professor of physics at the University of California, Berkeley, and a faculty senior scientist at Lawrence Berkeley National Laboratory.

The Dannie Heineman Prize for Mathematical Physics will be shared by three researchers for "their ground-breaking and penetrating work on classical statistical mechanics, integrable models and conformal field theories." The recipients will be **Barry M. McCoy**, a professor of physics at the State University of New York at Stony Brook and a member of the university's institute for theoretical physics; **Tai Tsun Wu**, a Gordon McKay Professor of Applied Physics and a professor of physics at Harvard University; and **Alexander B. Zamolodchikov**, a professor of physics at Rutgers University.

The recipient of the Herbert P. Broida Prize will be **Terry A. Miller**, who holds the Ohio Eminent Scholar Chair of Experimental Physical Chemistry at Ohio State University. He is being cited for "his far-ranging contributions to spectroscopy and chemical physics of diatomics and radicals, his development of methods for plasma diagnostics and for his stewardship of the Ohio State Spectroscopy Conference."

The Oliver E. Buckley Condensed Matter Physics Prize will be presented to **Sidney Nagel**, the Louis Block Professor in the James Franck Institute and the department of physics at the University of Chicago. He is being

honored for "his innovative studies of disordered systems ranging from structural glasses to granular materials."

Vijay Raghunath Pandharipande will receive the Tom W. Bonner Prize in Nuclear Physics for "fundamental contributions in determining the structure of light nuclei by solving the Schrödinger problem with more than three nucleons using realistic nucleon-nucleon interactions supplemented by three-body forces." Pandharipande is a professor of physics at the University of Illinois at Urbana-Champaign.

APS has selected **David Pratt** to receive the Earle K. Plyler Prize for Molecular Spectroscopy. Pratt, a professor of chemistry at the University of Pittsburgh, was chosen for "pioneering work in ultrahigh resolution ultraviolet spectroscopy of cold molecules in beams that elucidated the structure and isomerization dynamics of a wide range of large molecules, molecular vibrational dynamics, and hydrogen bonding."

Mark Raizen, an associate professor of physics at the University of Texas at Austin, will receive the I. I. Rabi Prize in Atomic, Molecular and Optical Physics, in recognition of "his pioneering advances in the experimental study of atom optics, and especially for the insightful connections he has developed between this discipline and studies of chaotic dynamics, condensed matter physics, and dissipative quantum systems."

APS has selected **Edwin E. Salpeter**, the J. G. White Distinguished Professor of Physical Sciences, emeritus, at Cornell University, to receive the Hans A. Bethe Prize. According to the award citation, Salpeter is being recognized for his "wide-ranging contributions to nuclear and atomic physics and astrophysics, including the triple-alpha reaction, electron screening of nuclear reactions, charged-current emission of neutrinos, and the form of the stellar initial mass function."

Three researchers will share the J. J. Sakurai Prize for Theoretical Particle Physics. Two of them work at the Theoretical Physics Institute at the University of Minnesota: **Mikhail Shifman**, a professor of physics, and **Arkady Vainshtein**, the Gloria Becker Lubkin Professor of Theoretical Physics. The third is **Valentin Zakharov**, a staff member at the Max Planck Institute for Physics in Munich, Germany. Collectively, the three are being honored for their "fundamental contributions to the understanding of non-perturbative QCD, non-leptonic weak decays, and the analytic properties of supersymmetric gauge theories."

The W. K. H. Panofsky Prize will be

given to **Edward H. Thorndyke**, a professor of physics at the University of Rochester. He is being honored for playing "a leading role in milestone advances in the study of the b quark with the CLEO collaboration; particularly the discovery and measurement of b semileptonic decay, the b to s Penguin decay process, and the b to u weak transition." According to the citation, his work has also "led to substantial improvements in understanding the flavor sector of the Standard Model and the Cabibbo-Kobayashi-Maskawa matrix of weak quark couplings."

The Prize to a Faculty Member for Research in an Undergraduate Institution will be given to **Robert E. Warner**, the Donald R. Longman Professor of Natural Science at Oberlin College. According to the citation, Warner has made research contributions "in experimental nuclear physics, including the precise measurement of reaction cross sections for exotic light nuclei." The citation also notes "his active and enthusiastic collaboration with Oberlin students."

Carl Wieman will be given the Arthur L. Shawlow Prize in Laser Science for "pioneering work on the production and study of Bose-Einstein condensation in a dilute atomic vapor, which has become a major testing ground for macroscopic quantum phenomena and quantum statistical mechanics." Wieman is a distinguished professor of physics and a fellow of JILA at the University of Colorado at Boulder.

The Lars Onsager Prize will go to **Chen N. Yang** for his "fundamental contributions to statistical mechanics and the theory of quantum fluids, including: the circle theorem, off-diagonal long-range order and flux quantization, Bose-Einstein condensation, and one- and two-dimensional statistical mechanical models." Yang is the Albert Einstein Professor of Physics, emeritus, at the State University of New York at Stony Brook and a distinguished professor at large of the Chinese University of Hong Kong.

Ten other individuals will receive APS awards during the centennial celebration:

Lynn Barker is slated to receive the Shock Compression Science Award. Barker, who is president of Valyn International in Albuquerque, New Mexico, is being recognized for "his outstanding contributions to the temporal measurement and interpretation of nonlinear physical process in shock-compressed matter."

The Leroy Apker Award recognizes outstanding achievement by undergraduate students both at institutions that grant PhD's and at those that do not. The award in the former category

goes this year to **Brian Richard D'Urso** for his research on coupled semiconductor cavities with two-dimensional photonic bandgap crystal mirrors. D'Urso did this work at Caltech under the tutelage of **Axel Scherer**, a professor of electrical engineering, applied physics and physics. D'Urso is now a graduate student at Harvard University. The Apker Award for research in a non-PhD-granting institution is going to **Gwendolyn Rae Bell**, who is now a graduate student in astronomy at Caltech, for work she did at Harvey Mudd College under **Alexander Rudolph**, an assistant professor of physics there. Bell is being honored for her research on the mass of the Milky Way and dwarf spheroidal stream membership.

The Joseph A. Burton Forum Award will be presented to **Freeman J. Dyson**, who is now retired from his long-time position as a professor of physics at the Institute of Advanced Study in Princeton, New Jersey. The citation praises "his thoughtful, elegant and widely published writings regarding the impact of diverse science and technology developments on critical societal issues and on fundamental questions for humankind."

Simon Foner has been selected to receive the Joseph F. Keithley Award for Advances in Measurement Science. Foner, who retired as associate director and chief scientist of MIT's Francis Bitter Magnet Laboratory in 1995 and is currently a visiting scientist there, is being recognized for "the invention and development of the vibrating sample magnetometer and many of its successful applications, and for the innovative development of very high field pulsed magnets."

The Maria Goeppert-Mayer Award recognizes women physicists early in their career. The recipient this year is **Andrea M. Ghez**, an associate professor of physics and astronomy at UCLA. The award citation praises her "use of speckle interferometry to obtain very high-resolution images with the Keck telescope and for her presentations to astronomers and the general public that sparkle with enthusiasm. Her research has shed new light on how stars form and on the nature of the massive black hole at the center of the Milky Way."

Steven K. Lamoreaux will garner the Francis M. Pipkin Award for research by a young scientist in precision measurement and fundamental constants. Lamoreaux, a staff member at Los Alamos National Laboratory, is being recognized for "extensive contributions to precision measurements science, especially searches for a permanent electric dipole moment of the neutron and

atoms, measurements of atomic parity violation, and tests of spatial symmetries and quantum mechanics, including observation of the vacuum Casimir Effect."

The John Wheatley Award recognizes an individual who has promoted the development of physics in countries of the third world. This year, it will go to **Ivan K. Schuller** for "his dedication to the development of physics at the frontier level in Latin America, China and India; for his efforts on organizing international events and building strong bridges to connect people, ideas, and resources from around the world; and for his results as an imaginative physicist and a close collaborator with young physicists in developing countries." Schuller is a professor of physics at the University of California, San Diego.

APS also plans to present some medals and lectureships at the Atlanta meeting. The lectureships provide funds for individuals to give a number of lectures over the course of the following year:

The David Adler Lectureship Award will go to **Leonard Feldman**, the Stevenson Professor of Physics at Vanderbilt University and a distinguished visiting scientist at Oak Ridge National Laboratory, for "distinguished research and lecturing on ion beam analysis, semiconductor surfaces and thin film growth."

Vitaly Lazarevich Ginzburg of the Russian Academy of Sciences has been named to receive the 1998 Nicholson Medal for Humanitarian Service. He is being praised for "courageously supporting democratic reforms in the former Soviet Union, and for leading the Soviet scientific community in humane directions."

The John H. Dillon Medal for outstanding research by young polymer physicists will go to **Anne Mayes**, an associate professor of polymer physics in the department of materials science and engineering at MIT. She is being recognized for "her unique combination of theoretical and experimental insight into polymer self-organization."

Alfred Z. Msezane, a professor of physics at Clark Atlanta University and director of the university's Center for Theoretical Studies of Physical Systems, will garner the Edward A. Bouchet Award, which provides funds for lectures at three academic institutions. Msezane is being recognized for his "continuing outstanding contributions to theoretical atomic physics and leadership in the creation and administration of a highly regarded research center of excellence."

The Leo Szilard Lectureship Award will be presented to **John Alexander**

Simpson, the Arthur H. Compton Distinguished Service Professor, emeritus, in the Enrico Fermi Institute and the department of physics at the University of Chicago. According to the citation, Simpson played a "leading role in educating scientists, members of Congress and the public on the importance of civilian control of nuclear policy." He is also being honored for "his critical efforts in the planning and execution of the International Geophysical Year, which established, in 1957, a successful model for today's global-scale scientific endeavors."

Also, as part of the centennial meeting, APS will present awards to three individuals for doctoral dissertations in specific areas:

The Award for a Dissertation in Nuclear Physics will go to **Eric Hawker**, who wrote his thesis under **Robert Tribble**, a professor of physics at Texas A&M University. Hawker is now a postdoctoral research associate at Los Alamos National Laboratory.

Luis Lehner will be the first recipient of the newly created Nicholas Metropolis Award for Outstanding Doctoral Thesis Work in Computational Physics. As a graduate student under **Jeffrey Winicour**, a professor of physics and astronomy at the University of Pittsburgh, Lehner developed a method "that significantly advances the capability for modeling gravitational radiation by making possible the stable numerical solution of Einstein's equation near moving black holes." Lehner currently holds a postdoctoral position at the University of Texas at Austin.

The APS division of atomic, molecular and optical physics will select the recipient of the Award for Outstanding Doctoral Thesis Research in Atomic, Molecular or Optical Physics. The selection committee will render its decision after hearing the presentations of five finalists at a special session during the centennial meeting.

AGU Presents Medals and Awards at Fall Meeting

The following individuals were honored at the fall meeting of the American Geophysical Union, held in San Francisco in December.

Lars P. Stixrude received the 1998 James B. Macelwane Medal, which recognizes significant contributions made by young geophysicists. According to the medal citation, Stixrude's "unique contributions to geophysics come from a masterful use of theoretical and computational methods in physics and