

WE HEAR THAT

1998 Lawrence Awards Recognize Advances in Atomic Energy

A ceremony this month in Washington, DC, will honor the recipients of the 1998 E. O. Lawrence Awards. The awards are given annually by the US Department of Energy for outstanding contributions to the field of atomic energy in six areas: chemistry, environmental science and technology, life sciences, materials research, nuclear technology and physics. Each winner will be presented with a gold medal, a citation and \$15 000.

In the chemistry category, the recipient is **Ahmed Zewail**, the Linus Pauling Professor of Chemical Physics and a professor of physics at Caltech. A pioneer of the field of femtochemistry, Zewail is being honored for "discovering new ways to view molecular reactions using extremely short pulses of light."

Mark Thiemens is the winner in the environmental science and technology category for "his development and application of new isotope effects to the atmosphere and his discovery of a class of isotope effects that reveal the photochemical coupling of carbon dioxide to ozone in the stratosphere." Thiemens is the chairman of the department of chemistry and biochemistry at the University of California, San Diego.

The award in the life sciences category is going to **Joanna Fowler**, an organic chemist at Brookhaven National Laboratory. She is being recognized for "devising innovative ways to attach radioactive isotopes to molecules for research in biology and medicine." Through her work, Fowler has contributed substantially to the popularity of positron emission tomography (PET) throughout the world.

Laura H. Greene is being honored in the materials research category for "her pioneering experiments that clarify the behavior of electrons at the surfaces of low- and high-temperature superconductors, and what happens to the electrons when they travel into other materials." She is a professor of physics at the University of Illinois at Urbana-Champaign.

Dan G. Cacuci will receive the award in the nuclear technology category for "his methodology for measuring and analyzing the uncertainties of nonlinear mathematical models of processes and systems." Cacuci is the *Ordinarius* chaired professor and director of the Institute for Nuclear Tech-

nology and Reactor Safety at the University of Karlsruhe as well as director of the Institute for Reactor Safety at the Karlsruhe Research Center, a distinguished professor of engineering and applied science at the University of Virginia and a visiting professor of nuclear engineering and radiological science at the University of Michigan.

The physics award is to be presented to **Steven Koonin**, a professor of theoretical physics at Caltech, as well as the institute's vice president and provost. He is being honored for "his broad impact on nuclear and many-body physics." The award citation highlights Koonin's development of Monte Carlo techniques for modeling nuclei.

APS Plasma Physics Award Honors Four

Peter M. Celliers, **Gilbert W. Collins**, **Luiz B. Da Silva** and **Robert C. Cauble**, all at Lawrence Livermore National Laboratory, are the corecipients of the American Physical Society's 1998 Award for Excellence in Plasma Physics Research. The citation recognizes their "exquisite series of experiments using high intensity lasers to measure the high pressure properties of hydrogen across the molecular insulator to monatomic metal transition." They were presented with the award at the annual meeting of the society's division of plasma physics, held in New Orleans in November. Cauble is in the lab's physics and space technology directorate; the other three are in the laser programs directorate.

Ten Individuals Honored by ASA

At the fall meeting of the Acoustical Society of America, held in Norfolk, Virginia, in October, the following six individuals were recognized for their contributions to acoustics.

The von Békésy Medal, given for achievement in the area of psychological or physiological acoustics, went to **Murray B. Sachs**, Massey Professor and director of the department of biomedical engineering at Johns Hopkins University. Sachs received the medal, according to the citation, for his "contributions to understanding the neural representation of complex acoustic stimuli."

ASA presented its first Silver Medal in Animal Bioacoustics to **Whitlow W. L. Au**, "for contributions to the fun-

damental knowledge of the acoustics of dolphin sonar." Au is chief scientist of the Marine Mammal Research Program at the University of Hawaii's Hawaii Institute of Marine Biology.

Richard H. Lyon, a professor emeritus in the mechanical engineering department at MIT and founder of RH Lyon Corp in Cambridge, Massachusetts, received the Silver Medal in Engineering Acoustics for his contributions to "noise reduction of products through design and to statistical energy analysis."

The Silver Medal in Musical Acoustics was presented to **Neville H. Fletcher** for "contributions to understanding sound production, and especially the role of nonlinear processes, in string, wind, and percussion musical instruments." Fletcher is an emeritus professor of physics at Australia's University of New England and is currently a visiting fellow at the Australian National University.

"Time Reversed Acoustics," an article that appeared in PHYSICS TODAY in March 1997, garnered the ASA Science Writing Award for Professionals in Acoustics for **Mathias Fink**, director of the waves and acoustics laboratory at the Ecole Supérieure de Physique et de Chimie Industrielles de la Ville de Paris and a professor of physics at Denis Diderot University (University of Paris VII) and at the Institut Universitaire de France.

Jennifer Ouellette, a contributing editor of *The Industrial Physicist*, received the ASA Science Writing Award for Journalists for her article "Science and Art Converge in Concert Hall Acoustics," which appeared in the September 1997 issue of that magazine.

Four other individuals were similarly honored at the ASA spring meeting held in Seattle last June.

Floyd Dunn received ASA's highest honor, the Gold Medal, for his "creative contributions to fundamental knowledge of ultrasonic propagation in, and interactions with, biological media." The award citation also praised Dunn's "sustained leadership in biomedical ultrasound" over the last five decades. Dunn is an emeritus professor of electrical engineering at the University of Illinois at Urbana-Champaign and an adjunct professor of radiation oncology at the University of Arizona.

Robert L. Clark accepted the R. Bruce Lindsay Award, which recognizes achievements in acoustics by ASA members under the age of 35. Clark, an associate professor in the depart-

ment of mechanical engineering and materials science at Duke University, was cited for his "contributions to active adaptive noise control."

ASA awarded an honorary fellowship, given occasionally to individuals who have attained eminence in acoustics or have rendered outstanding service to acoustics, to **Carleen M. Hutchins** in recognition of "her unique role in combining the art of violin making with the science of acoustics." Hutchins is a violin maker and acoustics researcher who cofounded the Catgut Acoustical Society, based in Montclair, New Jersey.

David E. Weston received the Helmholtz-Rayleigh Interdisciplinary Silver Medal, given for contributions to acoustical oceanography and underwater acoustics, for his "seminal work on the physics of explosive sources, scattering and the horizontal refraction of sound." Weston formerly worked for the UK's Admiralty Research Laboratory in Teddington and is now a consultant with BAeSEMA in London.

Engineering Excellence Awards Given by OSA

At its annual meeting in Baltimore last October, the Optical Society of America presented its 1998 Engineering Excellence Awards to Lee Shiozawa and Kenneth Walker for their achievements in optical engineering.

Shiozawa, chairman and chief scientist for Cleveland Crystals Inc in Cleveland, Ohio, was recognized for his "45 years of research improving electro-optics and nonlinear optical crystals for applications from the ultraviolet to the far infrared."

Head of the optical fiber research department at Lucent Technologies, Walker was recognized for his contributions to optical fiber manufacturing. His work has resulted in "an improved understanding of optical fiber fabrication, improved production processes and new fiber designs."

IN BRIEF

On January 19, **J. Murray Gibson** will become the director of the materials science division of Argonne National Laboratory. He is replacing **Bobby Dunlap**, who will remain at Argonne for several months to ease the transition. Gibson was formerly a professor in the departments of physics and of materials science and engineering at the University of Illinois at Urbana-Champaign and associate di-

rector of the university's Frederick Seitz Materials Research Laboratory.

Riccardo Giacconi has been appointed president of Associated Universities, Inc, the nonprofit corporation that operates the National Radio Astronomy Observatory. Currently the director general of the European Southern Observatory, Giacconi will assume his new position in July 1999, replacing interim president **Martha P. Haynes**.

At the 20th International Free-Electron Laser Conference, held at Jefferson National Laboratory last August, **John Walsh**, a professor of physics at Dartmouth College, received the annual International Free-Electron Laser Prize in recognition of "his outstanding leadership in research and teaching in the field of free-electron lasers." The

award consisted of an engraved clock, a certificate and \$20 000.

Last September, **Carl Strawbridge** became the project manager for the Spallation Neutron Source at the Oak Ridge National Laboratory. He was previously the vice president for quality and information systems at VP Buildings Inc in Memphis.

At the 47th Annual Denver X-Ray Conference in Colorado Springs, Colorado, in August, the International Centre for Diffraction Data presented the J. D. Hanawalt Award to **Herbert E. Göbel**, a physicist working at Siemens AG in Munich, Germany. The award, consisting of a citation and \$1000, is given every three years for important recent contributions to the field of x-ray powder diffraction.

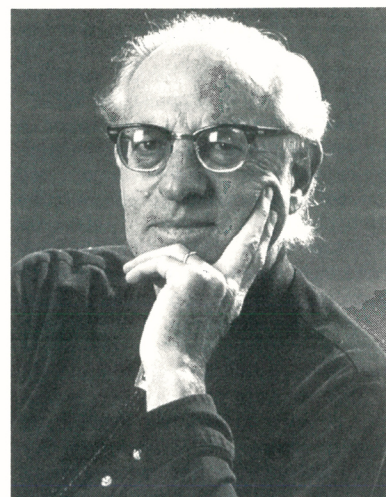
OBITUARIES

Frederick Reines

Frederick Reines, a pioneer in the field of neutrino physics and an ardent investigator of fundamental conservation laws, died on 26 August 1998 in Orange, California, after a long illness. By showing that it was possible to detect and study neutrinos experimentally, Reines opened the door to a new, fertile and exciting area of elementary particle physics. In 1995, Reines was a cowinner of the Nobel Prize in Physics for the first detection of the neutrino, accomplished in 1956 with his Los Alamos Scientific Laboratory colleague the late Clyde L. Cowan Jr.

Reines was born on 16 March 1918 in Paterson, New Jersey, of parents who had emigrated to the US from a small town in Russia. After receiving an undergraduate degree in engineering and an MSc in mathematical physics from Stevens Institute of Technology, in 1939 and 1941, respectively, Reines undertook graduate study in physics at New York University. There, he worked on experimental cosmic-ray physics under Serge A. Korff and eventually wrote a theory-based PhD thesis entitled "The Liquid Drop Model for Nuclear Fission" under Robert D. Present. The topic was timely, and, even before completing the thesis in 1944, he was recruited to work on the Manhattan Project in the theoretical division of the Los Alamos Scientific Laboratory under Richard Feynman.

A year later, he became a group leader in the division and embarked on a career at the scientific lab (the forerunner of Los Alamos National Laboratory) that spanned 15 years and included directing the Atomic Energy



FREDERICK REINES

Commission's Operation Greenhouse experiments on Eniwetok and studying bomb tests on Bikini and in Nevada. During that period, he wrote a study on the Mach effect and the height of bomb bursts with John von Neumann. Reines later served as a delegate to the 1958 Atoms for Peace Conference in Geneva.

Until its detection, the neutrino enjoyed an anomalous status. It was postulated by Wolfgang Pauli in 1930 to solve the problem of the apparent violation of conservation laws in nuclear beta decay, and was named by Enrico Fermi, who incorporated it into his 1934 theoretical formulation of the weak process. However, most physicists thought the neutrino interacted far too weakly to be detectable. To Reines, this situation was philosophically intolerable, for it endowed the