

tural discoveries of the ribosomal machinery of peptide-bond formation and the light-driven primary processes in photosynthesis," according to the award citation. Feher's work has applications to biophysics and biochemistry, while Yonath has made notable achievements in protein crystallography.

The Wolf Foundation, based in Herzliya Pituach, Israel, will present the awards in May during a Jerusalem ceremony. Each prize carries a \$100 000 purse.

## Lawrence award winners are selected

Eight winners of the US Department of Energy's Ernest Orlando Lawrence Award have been named. They were honored during a March ceremony in Washington, DC, for exceptional contributions to R&D that support DOE and its mission to advance the US's national, economic, and energy security. The award in each of the seven categories carries a gold medal and a \$50 000 purse.

**Paul Alivisatos** and **Moungi Bawendi** jointly received the award in the materials research category "for chemical synthesis and characterization of functional semiconducting nanocrystals, also known as quantum dots." Alivisatos is the Larry and Diane Bock Professor of Nanotechnology at the University of California, Berkeley, where he also is a chemistry and materials science professor; he is the associate laboratory director for physical sciences at Lawrence Berkeley National Laboratory. Bawendi is a chemistry professor at MIT.

**Malcolm J. Andrews** took the honor in the national security category "for pioneering contributions in the area of fluid instabilities and turbulent mixing, with expertise spanning the realms of theory, numerical simulation, and experiment." Andrews is a national security fellow at Los Alamos National Laboratory (LANL) and a mechanical engineering professor at Texas A&M University, College Station.

Receiving the award in the life sciences category was **Arup K. Chakraborty**, cited "for his groundbreaking theoretical work leading to an understanding of the dynamics and function of the immunological synapse." Chakraborty is the Robert T. Haslam Professor of Chemical Engineering and a professor of chemistry and of biological engineering, all at MIT. His work integrates elements of

the physical sciences, engineering, and the life sciences, and he and his group also research cell membrane biophysics and biopolymers.

A chemist in the high explosive science and technology division at LANL, **My Hang V. Huynh** received the honor in the chemistry category "for her seminal contributions in the design of new materials using coordination chemistry, including green primary explosives that contain no lead, no mercury, and no perchlorate, and for the creation of a new class of polyazido compounds with no carbon-carbon bonds that transcend the carbon-carbon bond paradigm and can be used to prepare novel ultra-pure nanomaterials, such as carbon nanospheres and high-nitrogen carbon nitrides." Huynh's research was instrumental in the formation of new metal complexes that are considered ideal precursors for preparing metallic nanofoams.

**Marc Kamionkowski**, the Robinson Professor of Theoretical Physics and Astrophysics at Caltech, won in the physics category "for his theoretical analyses demonstrating that precise observations of the cosmic microwave background can lead to deep understanding of the origin and evolution of the universe, thereby motivating a series of increasingly precise cosmological experiments."

Receiving the award in the environmental science and technology category was **John Zachara**, a laboratory fellow in the chemical and materials science division of the fundamental science directorate at Pacific Northwest National Laboratory. Zachara was cited "for his seminal and continuing scientific contributions to understanding geochemical and microbiologic factors that are critical to the fate and transport of metals and radionuclides in the environment."

**Steven Zinkle** was honored in the nuclear technology category "for significant contributions to the scientific basis for understanding the effects of radiation on the properties of materials, and for applying this understanding to the establishment of performance limits of materials in radiation environments." Zinkle heads the materials science and technology division at Oak Ridge National Laboratory.

## New members, associates are elected to NAE

Honoring contributions to engineering research and new technology, the Na-

tional Academy of Engineering has elected 64 new members and 9 foreign associates, bringing its total US membership to 2217 and its foreign associates to 188. The new members and associates will be inducted this October during the academy's 42nd annual meeting in Washington, DC. Of the new members, 24 are involved in physics-related work:

**Asad Ali Abidi**, professor in the electrical engineering department at UCLA

**Nicolaos G. Alexopoulos**, dean of engineering at the University of California, Irvine

**Peter Michael Asbeck**, professor of electrical and computer engineering at UC San Diego

**William R. Brody**, president of the Johns Hopkins University in Baltimore, Maryland

**Edwin A. Chandross**, consultant at Materials Chemistry LLC in Murray Hill, New Jersey

**Stephen Y. Chou**, Joseph C. Elgin Professor of Engineering and an electrical engineering professor at Princeton University

**Harold Gene Craighead**, Charles W. Lake Jr Professor of Engineering at Cornell University

**John J. Dorning**, Whitney Stone Professor of Nuclear Science and Engineering, professor of engineering physics, and professor of applied mathematics at the University of Virginia in Charlottesville

**Robert M. Gray**, Lucent Technologies Professor in Communications and Networking at Stanford University

**Karl A. Gschneidner Jr**, Anson Marston Distinguished Professor in the department of materials science and engineering at Iowa State University in Ames

**Paul M. Horn**, senior vice president of research at IBM in Yorktown Heights, New York

**Larry J. Hornbeck**, TI Fellow, Texas Instruments Inc in Plano, Texas

**Stuart Dodge Jessup**, senior research scientist in the Carderock division of the Naval Surface Warfare Center in West Bethesda, Maryland

**Timothy Laurence Killeen**, director of the National Center for Atmospheric Research in Boulder, Colorado

**Stelios K. Kyriakides**, Temple Foundation Endowed Professor in the department of aerospace engineering and engineering mechanics at the University of Texas at Austin

**David B. Marshall**, principal scientist at Rockwell Scientific Co in Thousand Oaks, California

**Robin K. McGuire**, president and principal of Risk Engineering Inc in Boulder, Colorado

**John W. Morris Jr**, professor of metallurgy, materials science, and mineral engineering at UC Berkeley

**Lloyd N. Trefethen**, professor of numerical analysis at Oxford University

**James J. Truchard**, president, chief executive officer, and founder of National Instruments Corp in Austin, Texas

**Anil V. Virkar**, professor of materials science and engineering and chair of the department of materials science and engineering at the University of Utah in Salt Lake City

**David A. Whelan**, vice president, general manager, and deputy president of Boeing Phantom Works, Boeing Co, in Seal Beach, California

**James Clair Wyant**, dean of the College of Optical Sciences at the University of Arizona in Tucson

**Charles F. Zukoski**, William H. and Janet G. Lycan Professor and vice chancellor for research at the University of Illinois at Urbana-Champaign.

Below are the newly elected foreign associates involved in physics:

**Timothy Berners-Lee**, senior research scientist at MIT

**Joachim Heinzl**, president of Bayerische Forschungsförderung at the Technical University of Munich in Germany

**Kenichi Iga**, executive director of the Japan Society for the Promotion of Science in Tokyo

**Joseph (Yosi) Kost**, professor in the chemical engineering department at Ben Gurion University of the Negev in Beersheba, Israel

**Arnold Migus**, general director of CNRS in Paris

**Xi Yao**, professor and dean in the School of Electronic and Informatic Engineering at Jiaotong University in China.

**in brief**  
**Robert B. Kerr** has been appointed director of the Arecibo Observatory in Arecibo, Puerto Rico, succeeding **Timothy Hanks**, who had served as interim observatory director since September. In his new post, Kerr, whose most recent position was as a program director in aeronomy at NSF, is responsible for maintaining the observatory's scientific and technical program and developing new science and technology capabilities. He was named to the position in February by Cornell University's National Astronomy and Ionosphere Center, which manages the observatory for

competitive use by more than 250 telescope users annually.

NASA has named **S. Alan Stern** associate administrator for the agency's Science Mission Directorate, following the retirement in March of **Mary L. Cleave**. A planetary scientist, Stern joined NASA from the Southwest Research In-

stitute's space science and engineering division in Boulder, Colorado, where he served as executive director. Stern began this month in his new position, where he is responsible for all of the agency's space science, Earth science, astrophysics, and planetary science missions and research activities with an annual budget of \$5.3 billion.

## obituaries

To notify the community about a colleague's death, subscribers can visit <http://www.physicstoday.org/obits>, where they can submit obituaries (up to 750 words), comments, and reminiscences. Each month recently posted material will be summarized here, in print. Select online obituaries will later appear in print.

### Alan Graham MacDiarmid

Alan Graham MacDiarmid, who made important contributions to physics and chemistry, died in his home in Philadelphia on 7 February 2007. Despite being in poor health, he was about to depart on a long and arduous trip to New Zealand, his homeland, to see family and to visit the MacDiarmid Institute for Advanced Materials and Nanotechnology, the scientific organization created in his name. Weakened by myeloplastic syndrome, a leukemia-like disease, Alan fell down a flight of stairs just moments before the planned departure.

Born in Masterton, New Zealand, on 14 April 1927, Alan worked part-time and attended classes at Victoria University College, where he received his bachelor's and master's degrees in chemistry. He earned two PhDs in inorganic chemistry, one at the University of Wisconsin in 1953 and the second at Cambridge University in England in 1955. After a brief appointment at the University of St. Andrews in Scotland, he became a chemistry professor at the University of Pennsylvania.

Alan, Hideki Shirakawa, and I were awarded the Nobel Prize in Chemistry in 2000 for the discovery of conducting polymers. Three earlier Nobel Prizes in Chemistry had been presented for discoveries in polymer science: to Hermann Staudinger in 1953, to Karl Ziegler and Giulio Natta in 1963, and to Paul Flory in 1974. Their discoveries are associated with three generations of polymers: natural ones, such as leather, spider webs, and silk, that have been used by our ancestors for thousands of years; synthetic fibers; and the struc-



Alan Graham MacDiarmid

tural plastics that are so important in our society today.

None of the first three generations, however, is interesting in relation to electronic materials. They are insulators. The materials that Alan, Shirakawa, and I discovered in the late 1970s brought electronic function into the area of polymer science. Conducting polymers are the fourth generation of polymeric materials; they are electronically active and have the properties of semiconductors and metals.

Now, three decades later, our discovery is well known and often used as a highly successful example of the importance of interdisciplinary research. When we started this work, however, the basic concepts that define semiconducting and metallic polymers were not understood. Alan and I had previously worked on poly(sulfur-nitride), a