

Carter Will Lead ACA in 2002

Charlie Carter, a professor of biochemistry and biophysics at the University of North Carolina at Chapel Hill, took office as vice president of the American Crystallographic Association this past January. He will become president in 2002, succeeding **William C. Stallings**, a researcher at Pharmacia in Chesterfield, Missouri.

"The coming decade will likely witness explosive growth of macromolecular structures," says Carter, because of the number of groups working on the human genome project. A new challenge for ACA, he adds, is balancing the needs of the growing number of biological crystallographers with materials science and small molecule groups.

Carter earned his BA in molecular biophysics from Yale in 1967, and went on to get an MS in chemistry and



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a PhD in biology from the University of California, San Diego. After a postdoctoral year at Cambridge University, he joined North Carolina's School of Medicine, where his research has focused on the enzyme mechanisms associated with protein and

ribonucleic acid (RNA) interactions.

In other ACA election results, **Doug Ohlendorf**, a professor of biochemistry at the University of Minnesota, Twin Cities, took office in January for a one-year term as ACA treasurer. On the communications committee, **John Sack** of Bristol-Myers Squibb and **Jeanette A. Krause-Bauer**, the director of crystallographic services at the University of Cincinnati, took office for three- and four-year terms respectively. And on the education committee, **Winnie Wong-Ng**, a research chemist at NIST's ceramics division, took office for three years, and **Phillip E. Fanwick**, a chemical crystallographer at Purdue University's West Lafayette campus, took office for four years.

IN BRIEF

In February, **Ants Leetmaa** became the director of the National Oceanic and Atmospheric Administration (NOAA) Geophysical Fluid Dynamics

Laboratory in Princeton, New Jersey. He had previously served as the director of the National Weather Service's Climate Prediction Center in Camp Springs, Maryland. Leetmaa replaced **Jerry Mahlman**, who retired as director last October. Mahlman had been the director since 1984 and had worked at the lab for exactly three decades—beginning his NOAA career the day the agency started and ending his career there on NOAA's official 30th anniversary. He currently is Lecturer with Rank of Professor at Princeton University.

Alex Zunger, an institute research fellow and scientist at the US Department of Energy's National Renewable Energy Laboratory, received the 2001 John Bardeen Award from the Minerals, Metals & Materials Society at its annual meeting in New Orleans, Louisiana, in February. The society acknowledged Zunger's "contributions to the theoretical understanding and prediction of 'spontaneous ordering,' phase stability, and electronic properties of semiconductor alloys." He was also recognized "for the impact that this work has had on experimental studies of electronic materials and for his continued leadership in the field."

Duncan Moore joined the Optical Society of America (OSA) in January as its part-time senior science adviser. He previously was the associate director of technology in the White House Office of Science and Technology Policy. In addition to his position with OSA, Moore works full-time as Rudolf and Hilda Kingslake Professor of Optical Engineering at the University of Rochester.

At a January ceremony at CIA headquarters in Langley, Virginia, Director of Central Intelligence George J. Tenet presented the National Intelligence Distinguished Service Medal—the highest award bestowed by the US Intelligence Community—to two winners, one of whom works in physics. **Sidney D. Drell** was recognized in part for bringing "White House and community attention to bear on a wide range of critical scientific and technical challenges confronting this nation." Drell, deputy director of SLAC until 1998, is an emeritus professor of theoretical physics at SLAC and a senior fellow at the Hoover Institution. The other winner was Senator Warren B. Rudman.

The University of Chicago named **Robert Zimmer** as the vice president for research and for Argonne National Laboratory last December. In addition to his new duties, Zimmer

will continue to serve as the university's deputy provost for research, a post he has held since 1988, and as Max Mason Distinguished Professor of Mathematics.

Last November, the European Science Foundation in Strasbourg, France, awarded the 2000 European Latsis Prize in the field of molecular structure to **Kenneth Charles Holmes**, director of the biophysics department at the Max Planck Institute for Medical Research in Heidelberg, Germany. The foundation recognized "his outstanding contributions to structural biology, studies of great scientific and social significance for European progress" and noted that he "was a pioneer in the development of both theoretical and experimental x-ray diffraction methods for elucidating the structures of biological macromolecules." The prize, financed by the Latsis Foundation, carries a cash award of 100 000 Swiss francs (about \$60 000).

Shuji Nakamura, a professor of materials at the University of California, Santa Barbara, received the 2000 Honda Prize, given by the Honda Foundation of Japan in November. The citation noted in part that Nakamura "undertook the challenging task of creating crystals by using gallium nitride as material—considered a particularly difficult process—and succeeded in the development of light-emitting diodes and laser diodes." These devices "can be used as a light source for high-density optical recording of optical disks. . . . Light-emitting bodies thus developed will consume very little power, will be environment friendly, and one of the most important energy-saving devices." Nakamura received a cash prize of ¥10 million (about \$85 000).

The Max Planck Society and Alexander von Humboldt Foundation last fall handed out the 2000 Max Planck Research Awards for various disciplines to 12 scientists, 6 of whom work in physics-related fields. **Simon D. M. White** and **Peter Wölfe** shared the award for physics. White is with the Max Planck Institute for Astrophysics in Garching, Germany, and Wölfe is with the University of Karlsruhe in Germany. Among the recipients of the biological sciences and medicine award were **George J. Augustine** of Duke University and **Wolfgang Baumeister** of the Max Planck Institute for Biochemistry in Martinsried near Munich, Germany. **Dieter Enders** of the Rhine-Westphalian Technical University of Aachen in Germany was honored

with the award for chemistry. **Jerrold E. Marsden** of Caltech received the award for mathematics and informatics.

Paul Ching-Wu Chu, T. L. L. Temple Chair of Science, professor of physics, and director of the Texas Center for Superconductivity at the University of Houston, will become the president of the Hong Kong University of Science and Technology (HKUST) in July. He will still maintain his association

with the center as T. L. L. Temple Chair of Science and chief science adviser, without drawing a salary, to continue his research on high-temperature superconductivity. Chu will succeed outgoing HKUST president **Chia-Wei Woo**, who left the presidency at San Francisco State University in 1988 to plan the establishment of HKUST, which opened in 1991. Woo says he plans to “continue to engage in education, science, and technology activities, including US–China cooperation in this arena.”

OBITUARIES

Herbert Friedman

Herbert Friedman died of cancer at his home in Arlington, Virginia, on 9 September 2000. He was recognized as a pioneer in the space sciences for his contributions to solar physics, aeronomy, and astronomy. But he also made fundamental advances in the application of x rays to material analysis.

Friedman was born in Brooklyn, New York, on 21 June 1916. He entered Brooklyn College in 1932 with the intention of majoring in art, but ended up obtaining a bachelor's degree in physics in 1936. His graduate work involved the characterization of materials using x-ray diffraction techniques. He received his PhD in physics at Johns Hopkins University in 1940.

That same year, he joined the Naval Research Laboratory, where he spent his entire professional career. Until around 1950, his research at NRL was dedicated to laboratory x-ray analysis, much of it involving the application of x-ray-sensitive Geiger counters—for example, the characterization of thin films and the development of x-ray fluorescence analysis. He also developed the gamma-ray-sensitive Geiger counters that were used by NRL to detect the first Soviet nuclear explosion in 1949. In 1945, Friedman received the US Navy's Distinguished Civilian Service Award for the wartime development of a technique for cutting and tuning radio-frequency crystals using their Bragg reflection characteristics.

By 1950, he had switched to the newly emerging field of observations from space using sounding rockets. Friedman's first experiment, a V-2 rocket launched from the White Sands Missile Range in 1949, involved observing solar x-ray and ultraviolet radiation using Geiger



HERBERT FRIEDMAN

counters to reveal the source of the ionization of the upper atmosphere. During the next 10 years, Friedman continued his program of solar and atmospheric investigations. He arranged for campaigns of shipboard rocket launches to study solar x rays. He obtained the first x-ray image of the Sun with a pin-hole camera; flew the first Bragg spectrometer for measuring hard x rays; and developed and flew SOLRAD, the first satellite dedicated to long-term monitoring of the Sun.

In 1955, Friedman shifted his research to “nighttime” astronomy, as was evident in a rocket flight that used collimated Geiger counters sensitive in the mid-ultraviolet. These instruments revealed significant emission associated with the Milky Way.

Following the discovery in 1962 of cosmic x-ray sources, Friedman responded with a rocket flight in early 1963 that unambiguously confirmed the presence of discrete sources of x rays and of a diffuse x-ray background. In 1964, he conducted one of the more noteworthy experiments

involving the use of sounding rockets: the observation of the Crab Nebula as it was being occulted by the moon. This experiment demonstrated positively that the Crab Nebula was a source of x rays and that the emission was associated with the nebula itself. Actually, the result was a considerable disappointment to Friedman, who was hoping to observe emission from a pointlike feature near the center of the nebula that might have been the neutron-star remnant of the supernova explosion responsible for creating the nebula.

Friedman's genius as a scientist lay in devising simple experiments that resolved critical problems. It is difficult to find other individuals with his string of success over such a broad range of science, barely touched on here. He had little interest in large space missions, even though early in his career he had been involved with and directed major enterprises, such as the search for nuclear debris and his ship campaigns to launch rockets. But by the time such missions were becoming feasible in the 1960s, he was putting most of his energy into community service. In the 1970s, Friedman turned to writing. His first book was *Amazing Universe* (National Geographic Society, 1975), followed by *Sun and Earth* (Freeman, 1985) and *Astronomer's Universe: Stars, Galaxies, and Cosmos* (Norton, 1998).

Friedman was a great science statesman and spokesperson. During his lifetime, he garnered virtually every science award, including the Eddington Medal of the Royal Astronomical Society (1964), the National Medal of Science (1968), the William Bowie Medal of the American Geophysical Society (1981), the Henry Norris Russell Award of the American Astronomical Society (1983), and the Wolf Foundation Prize in Physics (1987). He was elected a member of the National Academy of Sciences in 1960. His service to science included membership on President Richard Nixon's Science Advisory Committee, the General Advisory Committee to the Atomic Energy Commission, and the Space Science and Governing Boards of NAS. In the spring of 2000, after the onset of his illness, he organized a symposium for the American Philosophical Society, “Ballistic Missile Defense, Space, and the Danger of Nuclear War,” that included talks by Richard Garwin, Gregory Canavan, Roald Sagdeev, and others.

HERBERT GURSKY

Naval Research Laboratory
Washington, DC