effect transistors. He was also one of the first to explore the advantages of ternary and quatenary III–V compounds based on indium for applications in fast switching and electro-optics. He is perhaps most distinguished for his range of interests in the field working in materials, film growth, interface properties, and device concepts.

After graduating from the University of California, Los Angeles, in 1949, Wieder joined the National Bureau of Standards to work on ferroelectric materials. In 1953 he came to the Navy as head of the Dielectrics and Semiconductors Branch of the Naval Weapons Center in Corona, California; he has served as head of the Semiconductor Physics Branch of the Naval Electronics Laboratory Center (in 1970) and as head of the Electronic Material Science Division of the Naval Oceans Systems Center (in 1973). In 1981 he retired from the Navy to join the faculty of the University of California, San Diego, in the electrical engineering and computer sciences department.

The Peter Mark Award is presented annually to a young scientist or engineer (no more than 35 years old) for outstanding theoretical or experimental work, some of which was published in the Journal of the Vacuum Society. Chadi is noted by the AVS "for innovative, accurate models and theoretical techniques applied to surface-structure determinations."

His studies of the atomic and electronic structure of semiconductor surfaces have provided considerable insights in the area. Chadi determined a model for the GaAs (110) surface structure that has increased our understanding of the photoemission data for GaAs. He has also contributed to our understanding of silicon surfaces, including the role of buckled dimers on the (100) face, a possible model for the 7×7 surface, the electronic states due to steps and the importance of spin and polarization to determining surface electronic properties.

Chadi obtained his PhD in physics from the University of California, Berkeley, in 1974. Since his graduation he has pursued his research interests at Xerox, Palo Alto.

obituaries

Werner Brandt

Werner Brandt, professor of physics at New York University and a pioneering investigator of the interaction between charged particles and condensed matter, died on New Years Day in Sweden following a prolonged illness. He was 57 years old.

Born in Kiel, Germany, on 19 May

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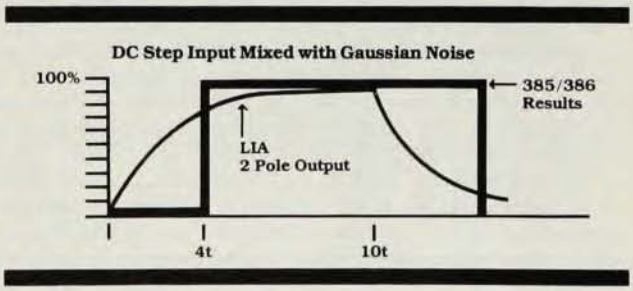

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1925, he was raised and educated in Heidelberg. He received an undergraduate degree in 1948 and a PhD in 1951. His thesis was on the physical principles underlying catalytic processes on metal surfaces. Upon completion of his thesis he spent two years working with Niels Bohr at the University of Copenhagen's Institute of Theoretical Physics. During those years he developed an interest in the interaction of charged particles with matter that he continued to investigate for the rest of his life. He came to the US in 1952 to develop a new radiation physics laboratory at DuPont. Under his direction, the laboratory developed radiation-based methods for creating antistatic and corrosion-resistant plastics. In 1961 he joined the New York University physics faculty and in 1967 he became the director of the Radiation and Solid State Laboratory at NYU.

Brandt was first and foremost a professor. He taught at many universities in addition to NYU: Pennsylvania, University of California at San Diego, Munich, Grenoble, Paris, Aarhus, and the Chalmers Technical University in Gothenburg, Sweden. He came by this pursuit naturally. Both his father and grandfather were professors at Heidelberg, and his mother was a descendant of a family of scientists, philosophers and physicians associated with the University of Copenhagen since the seventeenth century. Indeed, one of Brandt's first publications was a translation of a Latin treatise on Icelandic crystals written in 1669 by one of his ancestors, the mathematician Erasmus Bartholinus. The treatise is one of the earliest publications in solid-state physics.

In addition to his teaching and research at NYU, Brandt was a consultant for DuPont, Grumman and Eka AB at Bohus, Sweden.

He will be most remembered for his notable contributions in using the positron and the positronium "atom" as a probe to study the structure of molecular substances, and for his studies of collective effects in atoms, of inner-shell excitation by swift ions, of the stopping power of matter for charged particles and of energy losses by swift ion clusters in solids. With R. Paulin of INSTN, Saclay, he obtained important information about defects in alkali halides and metals by measuring the lifetimes of positrons in these solids. He also carried out research on the stopping power of matter for charged particles with Rufus H. Ritchie of the Oak Ridge National Laboratory.

Brandt had a deep understanding of basic principles and his interests were very broad—he even wrote a paper on iridescent colors of hummingbird feathers. All who knew him recognized that he approached research with dedication, energy and elegance of style. He passionately believed in the interdependence of science and the humanities and public policy.

LEONARD O. ROELLIG
City College
City University of New York

Eugene F. Rybaczewski

Eugene F. Rybaczewski, a physicist at Texas Instruments Central Research Laboratories, died 10 February 1983 at the age of 37. He received his BS from the State University of New York at Albany in 1969 and his PhD from the University of Pennsylvania in 1975. Following a postdoctoral fellowship at Pennsylvania, he joined Texas Instruments where he remained until his death.

While at Pennsylvania, Rybaczewski was involved in the initial pioneering studies of quasi-one-dimensional organic conductors. His magnetic resonance measurements resulted in a deeper understanding of the inherent instabilities associated with one-dimensional metals.

His work at Texas Instruments was primarily directed towards the research and development of charge-coupled devices for both memory and imaging applications. He was directly responsible for the design and fabrication of prototype devices for the present family of linear imagers available from the optoelectronics department at Texas Instruments as well as for area array imagers used in high-performance medical imaging equipment currently under development.

MARSHALL J. COHEN
Chevron Research Company
ALAN J. HEEGER
University of California at Santa Barbara

William M. Woodward

William M. Woodward, professor emeritus at Cornell University, died 22 April at his home in Ithaca.

Born in 1916, Woodward received his undergraduate education at MIT and Columbia, from which he was graduated in 1938. He received his PhD at Princeton in 1941, having written his thesis on infrared spectroscopy. During World War II he worked at Princeton on a project to separate uranium isotopes, then joined the first contingent of scientists at Los Alamos, where he worked in the cyclotron group. Immediately after the bombing of Hiroshima and Nagasaki, he became involved in the efforts of scientists to establish international control of atomic weapons. He contributed significantly to a program developed by scientists from the Manhattan Project to educate members of Congress about these problems. He also played an important role

WOODWARD

in creating the Federation of Atomic Scientists.

Woodward served briefly on the faculty of MIT, then joined the Cornell faculty in 1948. He became professor of physics in 1960. At Cornell, he applied his considerable talent and understanding to teaching and to research in the Laboratory of Nuclear Studies. His research was carried out primarily at the electron synchrotron, where he studied the photodisintegration of the deuteron and the photoproduction of mesons. He also devised "table-top-scale" experiments to study the scattering of electrons by electrons.

In the mid 1960s Woodward suffered a series of serious physical ailments that necessarily curtailed his activities. Under circumstances that would have hopelessly discouraged most people, he performed the primary survey for the half-mile magnet ring of the Cornell 10-GeV synchtrotron, pushing to the limits of precision the classical techniques of optical surveying. He later transfered his intellectual interests to microbiology.

In 1976 Woodward felt that he could no longer carry out an effective program of teaching and research, and he was granted a medical disability leave.

Woodward's research and teaching were noted for their originality and creativity. During his entire career he gave generously of his time and energy to foster a better understanding of the impact of science on society. He was devoted to science as an intellectual pursuit and as a force for the betterment of life.

JOHN W. DEWIRE
PETER C. STEIN
Cornell University
ROBERT R. WILSON
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