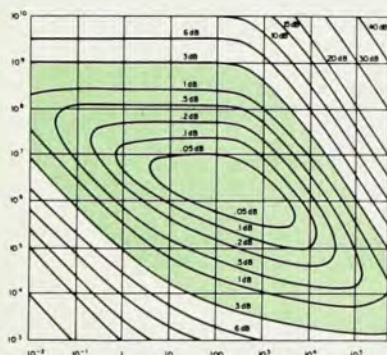


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we hear that

the University of Miami, the award cites Burnell's contributions to science for her role in the discovery of pulsars. She is the first woman to receive this distinction.

The Office of Nuclear Regulatory Research appointed **Gary L. Bennett** as chief of its Research Support Branch. Bennett

has most recently served as technical assistant to the director for water reactor safety research of the Nuclear Regulatory Commission.

Tom Gray, formerly associated with North Texas State University and **Christopher Sorenson** of the University of Colorado were appointed to the faculty of physics at Kansas State University.

obituaries

Hans Jaffe

Hans Jaffe, lifelong contributor to the physics of crystals, died of cancer 8 November at the age of 68. From 1940 until retirement in 1974 he directed research on piezoelectric crystals and ceramics at the Brush Development Company and its corporate successors, the Clevite Corporation and, later, Gould, Inc.

Born in Heidelberg, Germany and educated in Heidelberg, Berlin, and Göttingen, he began research under James Franck. His doctoral thesis, on solutions of lithium in ammonia, already shows a style that marked his entire career: a keen intuition of recognizing the essentials of the problem, a physicist's approach to chemistry and a phenomenal thoroughness.

Upon completing his doctorate in 1934, he left Nazi Germany and briefly taught school in Scotland. Arriving in the US in 1935, he became W. G. Cady's assistant at Wesleyan University in Connecticut. His principal task was collecting and organizing data for Cady's treatise *Piezoelectricity*. Forty years later he was to do a similar compilation for the Landolt-Börnstein tables. In the 1930's the star among piezoelectric crystals was Rochelle salt—strong piezoelectric coupling and high dielectric constant. From his understanding of ferroelectricity (in 1936!) Jaffe identified its crystal symmetry as monoclinic rather than orthorhombic between the two ferroelectric Curie points.

After a year at Allegheny College, he joined Cleveland's Brush Development Company in 1940. Task: To find a strongly piezoelectric crystal more rugged and more stable than Rochelle salt. His ADP crystals soon appeared in hydrophones for use in antisubmarine underwater-sound gear. In the 1950's and 1960's, when poled piezoelectric ceramics replaced single crystals, Jaffe's research group became the source of rapid innovation in understanding doped PZT (lead zirconate-titanate) and putting it to practical use in transducers, filters, and spark generators.

With its expertise in crystal growing, the group undertook to grow and study



JAFFE

crystals of the II-VI semiconductors, and optical-quality crystals for laser applications. As he approached retirement as a vice-president of Gould, Inc., several members of the group formed their own company, Cleveland Crystals, with Hans Jaffe an active consultant.

Jaffee held 27 patents, covering devices from electro-optic light modulators to piezoelectric-ceramic resonators. His greatest impact was on techniques of growing crystals from aqueous solution. Probably his most widely read article *Piezoelectricity* was published in the 1961 *Encyclopaedia Britannica*. Jaffe's last publication, an obituary for W. G. Cady, not only tells about his teacher and colleague, but gives us insights into ferroelectricity and its history.

STEFAN MACHLUP
Case Western Reserve University

Thomas G. Fox

Thomas G. Fox, professor of chemistry and polymer science at Carnegie-Mellon University, and editor of the *Journal of Polymer Science* (Polymer Physics Edition) since 1965, died suddenly in Pittsburgh, Pennsylvania on 28 November. He served at various times as chairman of The American Physical Society's Division of High Polymer Physics, of the Gordon

obituaries

Research Conference on Polymers, and of the American Chemical Society's Division of Polymer Chemistry.

At Carnegie-Mellon University, he held additional posts as special assistant to the president for public and community service, and as chairman of the Advisory Board of the Carnegie-Mellon Institute of Research.

Fox was born in Union Deposit in central Pennsylvania. He graduated from Lebanon Valley College in 1940 and from Columbia University in 1943 with a PhD in physical chemistry. In 1946, following service in the US Navy, he joined the Goodyear Tire and Rubber Company where he worked with Paul Flory (who was to receive the Nobel Prize for Chemistry in 1974). This association continued at Cornell University until Fox assumed a position as laboratory director at the Rohm & Haas Company in Philadelphia in 1950. In 1957, Fox joined the Mellon Institute as director of research and was given administrative responsibility for the fundamental research program in polymer science. In 1967 when Mellon Institute and Carnegie Institute of Technology were merged to form Carnegie-Mellon University, he became professor of chemistry and polymer science in the new university.

He was author or coauthor of some sixty articles on the physics and physical chemistry of polymers. His theoretical and experimental investigations with Flory put measurement of the viscosity of dilute polymer solutions on a firm scientific base. The data he obtained more than a quarter of a century ago with so much diligence and attention to detail (and without the advantage of modern instruments) are still today considered standards with which new theories and data are compared.

Beginning in 1965, he was the first and only Science Adviser to the Governor of Pennsylvania, a post to which he was reappointed by the three successive governors.

Tom Fox was continually teaching, and was particularly effective with new PhD's working with him in industry, in Mellon Institute and in the University. No matter what the stated objective of his group might be, Fox felt that its most important product was not the science, but the people. Jack B. Kinsinger, who worked for Tom Fox at Rohm and Haas, and is now associate provost at Michigan State University, put it this way: "Fox was warm and generous with his time, supportive in moments of despair and encouraging beyond what seemed reasonable. His own career, personality and high ethical standards provided an important role model. Tom left a legacy of many similar indelible contributions."

HERSHEL MARKOVITZ

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