

every day. These machines were a source of great satisfaction to Ginzton, since his father had died of cancer, and since the very first medical electron linacs in the US had been designed and built at Stanford's Microwave Lab under his supervision in the 1950s.

As time passed, Ginzton eventually delegated some of his Varian duties to others, but he remained chairman of the board for many years. He finally gave up the CEO position when his health began to succumb to the progressive problems of Parkinson's disease. His mind remained clear, however, and his memory for detail persisted. His interest in SLAC continued throughout his life, and he often came to visit and to share in our achievements. More formally, he served as a special consultant to the president of Stanford to advise the president, if necessary, on the construction of SLAC from 1960 to 1966. And Ginzton was elected to Stanford's board of trustees for two consecutive terms (1977–1982, 1982–1985).

Ginzton possessed a rare combination of technical competence, managerial skills and leadership qualities. And for many of us in our early years as graduate students, he was not only a mentor but also a friend with a sincere concern for our well-being. He clearly remembered the difficult times that he had experienced in his youth and the friendship that he had received from Frederick Terman, Hansen, the Varian brothers and others in his own early career. He extended the same friendship to us. We shall all miss him.

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Robert Alfred Laudise

The materials science community has lost one of its strongest proponents, Robert Alfred Laudise, who died at Memorial Sloan-Kettering Cancer Center in New York City on 20 August 1998. Bob was active not only as a research scientist and a scientific leader, but also as an industrial research manager, an adviser on many national and university committees and member of several scientific societies.

Born in Amsterdam, New York, on 2 September 1930, Bob earned a BS from Union College in 1952 and a PhD in inorganic chemistry from MIT in 1956. He then joined Bell Laboratories, where he had a distinguished research and managerial career until his death.

Bob is best known as a leading authority on the growth of single crystals and is often credited with transforming the field from an art to a



ROBERT ALFRED LAUDISE

science. He wrote the first comprehensive book on crystal growth, *The Growth of Single Crystals* (Prentice Hall, 1970).

In particular, he is widely recognized for his work in the area of hydrothermal crystal growth. His interest in this topic was spurred by the goal of synthesizing quartz with properties more reproducible than those of natural quartz and doing so at a reasonable cost. At that time, in the mid-1950s, the properties of quartz used in electronics varied from crystal to crystal and from mine to mine. By transferring his research from the lab, through a pilot plant and then to successful commercial production, Bob laid the foundations for the commercial growth of quartz crystals. By tonnage, quartz now ranks behind only silicon as the most widely used single-crystal material in electronics. Quartz crystals became Bob's trademark, and he gave many of them as gifts to colleagues.

As a manager of materials-related research at Bell Labs, Bob championed technologies based on new materials, their processing and reliability. His early nurturing of optical fiber research and his managerial persistence helped establish optical fiber as the backbone of modern communications systems. In retrospect, we note admiringly that he was a crystal grower who championed materials in all forms, from glass and glass fibers to thin films and nanoparticles.

Bob led not by just by managing but also by unselfishly contributing insights and inputs to all sorts of materials problems. His own research continued both during and after his formal managerial responsibilities. Over the years, he played key leadership roles in developing the growth of high-quality crystals of a number of important

materials, including lithium niobate, potassium titanyl phosphate, neodymium yttrium aluminum garnet, other garnets, ferrites and cuprate superconductors. At the time of his death, the programs he had initiated were continuing to investigate ferroelectrics, gallium nitride and organic semiconductors.

Widely recognized for his scientific and technical accomplishments, Bob was elected to the National Academy of Sciences, the National Academy of Engineering and the American Academy of Arts and Science. He received numerous prizes and awards for his work, including the Orton Lecture Prize of the American Ceramic Society, the Sawyer Prize for contributions to piezoelectricity, the Applications to Practice Award of the Minerals, Metals and Materials Society and the Materials Chemistry Prize of the American Chemical Society. In 1984, he was awarded the first experimental award of the International Organization of Crystal Growth, which was renamed the Laudise Prize in his honor in 1989. Bob was just as delighted when his colleagues received accolades, and he hosted many impromptu wine and cheese parties to celebrate.

Bob unselfishly served the scientific community. He belonged to and participated in at least ten professional societies and edited the *Journal of Crystal Growth* for 15 years and then the *Journal of Materials Research* until his death. He advised several national laboratories, universities and National Research Council committees and chaired the National Materials Advisory Board. He held adjunct professorships at MIT (materials science) and Rutgers University (ceramics). He labored aggressively to get the different professional societies to work together to positively influence government action related to materials research and development.

In recent years, Bob was instrumental in advancing the concepts of industrial ecology as a critically important field. He championed the AT&T (later Lucent Technologies) Fellowships in Industrial Ecology, a program that will now be administered on a continuing basis by the National Science Foundation.

Bob's interest in crystals and ecology extended to his vacation home in the Poconos. Along with his wife Joyce and other friends, he published an extensive database on the water quality of Twin Lakes to help evaluate the effects of acid rain and chemical usage in the area. Bob and Joyce also studied and wrote a paper on the growth on the lakes of single crystals of ice, which sometimes reach over three feet in length.

Bob will be remembered by the tech-

nical community for his contributions to crystal growth and for his leadership, and by his many friends and colleagues for his extraordinary energy, sense of humor, loyalty and encouragement. For the two of us, he was a colleague who enhanced our lives with his clear thinking on critical issues, his relaxed manner and his always present infectious humor.

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John Paul Jakubovics

John Paul Jakubovics, a prominent magnetician and materials scientist, died on 21 January 1998 in Oxford, England, after a short fight with cancer of the pancreas.

Born on 13 July 1938 in Budapest, John went to the UK in 1956 as a refugee from Soviet oppression in Hungary. He received a BSc in physics from the University of Bristol in 1961 and a PhD from the University of Cambridge in 1965. His thesis was entitled "Electron Microscope Studies of Magnetic Domains in Crystals."

After holding postdoctoral fellowships at Cambridge, John moved in 1966 to the University of Oxford, where he remained for the rest of his professional career. At the time of his death, he was a reader in the department of materials and a fellow of St. Cross College.

John was an internationally recognized authority on magnetic materials and their characterization. In addition to being a generally outstanding materials scientist, he made pioneering contributions to the field of magnetic imaging of domains and spin distributions by electron optical techniques. From the late 1960s on, his research group was very active in correlating the magnetic and structural properties of a wide range of alloy, fine particle, thin film and multilayer materials.

John liked to work on problems that were both scientifically interesting and useful—or potentially useful—for practical applications. For instance, in 1989, John and his group successfully made use of a position-sensitive atom probe microanalyzer to discover very small copper-rich precipitates in the magnetic alloy alnico 2 that could improve the alloy's magnetic properties. John was also involved in developing the use of magnetoacoustic emission as a nondestructive testing technique for magnetic materials, such as structural steels.

John was a very important con-



JOHN PAUL JAKUBOVICS

tributor to the theory of micromagnetics, on which he worked in close collaboration with Amikam Aharoni. John published theoretical studies of the statics and dynamics of magnetic domain walls, including his famous definition of the width of a domain wall and his unique study of coupled walls. And in 1974, he worked out an analytic model for the structure of the two-dimensional LaBonte wall, which is the only analytic model published so far of any serious computational result in micromagnetics.

John collaborated in other wall studies and in checking the self-consistency of their computations, and in numerical computations of the magnetization structures in very small spheres, and of the effect of the tip in magnetic force microscopy.

His last paper, which appeared last year in *Journal de Physique (Paris)*, was on a fundamental problem having important practical implications, in this case for the dissipation of ferrites—namely, the calculation of the grain size at which bulk NiZn-ferrite becomes single domain.

In total, John published about 170 papers on all these problems, as well as his highly successful book *Magnetism and Magnetic Material* (Institute of Materials), whose second edition appeared in 1994.

John collaborated with numerous researchers all over the world, who regarded him as the gentlest of gentlemen and as an eminently authoritative scholar. We all remember him with great affection and will sorely miss him.

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