



IN MEMORIAM

Traugott Heinrich Karl Frederking
Professor of Chemical Engineering, Emeritus
Los Angeles
1926–2001

Traugott Heinrich Karl Frederking, a world-renowned expert in the field of cryogenics and professor emeritus of chemical engineering at UCLA's Henry Samueli School of Engineering and Applied Science died June 2 in Los Angeles. He was 74.

Cryogenics is the study of how liquids behave at extremely low temperatures. At these temperatures, liquids often act quite differently than they do at ordinary temperatures.

"He was an internationally-known authority in the field who received requests from all over the world to come work in his laboratory," according to Vijay Dhir, acting dean of the UCLA Henry Samueli School of Engineering and Applied Science and professor in the Mechanical and Aerospace Engineering Department.

"His work was seminal in his field. He was responsible for a large fraction of the relevant experimental work" in cryogenics, according to Steven W. Van Sciver, American Editor of Cryogenics Journal and distinguished research professor for Florida State University. Despite his prominence, Dhir said, "he was very humble and modest and hesitant to take credit for his accomplishments."

Born in Rhoden, Germany, Frederking received a Master of Science degree from the University of Hannover in 1954. In 1960, he received his Ph.D. in mechanical engineering from the Swiss Institute of Technology in Zurich. During that time he first began low temperature work at the ETH Zurich Helium Lab.

In 1962, he was appointed acting assistant professor at the engineering school. He retired in July of 1999.

Frederking and his wife Dorothea were extremely active in the engineering school, even after his retirement. In December 1998, they founded the Endowed Fund for Cryogenics Research at UCLA with the goal of establishing an endowed chair in cryogenics to fund continued research in that area.

William Van Vorst, also a professor emeritus in chemical engineering, remembered Frederking's "willingness to share his expertise with others not directly in the (cryogenics) field, but facing problems working with chemicals at extremely low temperatures." For example, Van Vorst said, he sought Frederking's assistance in working with liquid hydrogen as an automotive fuel. For that purpose, Van Vorst said, the liquid hydrogen needed to be cooled to temperatures near -253 degrees Centigrade.

"His help was invaluable in educating us in the handling and storage of hydrogen at such extreme conditions," Van Vorst said, "and no doubt saved us from embarrassing accidents."

More profound, however, was his work in the area of miniaturized heat exchangers. His work contributed significantly to the design and performance of these devices, according to Van Vorst.

Recently, Frederking had turned his attention to super conducting magnets at temperatures sufficiently low to result in a "lossless" operation. This portion of his work had important implications in both medicine and power applications.

Frederking organized both the first and second joint seminars between the U.S. and Japan on Magnet Stability- Related Head Transfer in 1988 and 1991. He was a fellow of the American Institute of Chemical Engineers, a member of the American Physical Society and the International Institute of Refrigeration.

A recipient of the R.B. Scott Memorial Award in 1971 for his cryogenic research, he received a distinguished service award from the Cryogenic Engineering Conference in 1991. The First Fellow of the American Cryogenics Society, Frederking's work in this field had an impact on a wide range of areas, including space and medical research, and energy costs.

Cryogenics has been applied to space research, first gaining wide attention with the Apollo 11 moon landing in 1969. It has also been applied to improving magnetic resonance imaging (MRI) techniques.

The UCLA Cryogenics Laboratory has been involved in collaborative studies with industry and government, including NASA and JPL.

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