



Donald L Katz

Donald LaVerne Katz

1907-1989

Submitted by the Nae Home Secretary

Prepared with the assistance of
the Nae Membership Office

Dr. Donald L. Katz, the A. H. White Distinguished University Professor Emeritus of Chemical Engineering, The University of Michigan, died on May 29, 1989. In areas of reservoir engineering such as phase behavior, vapor-liquid equilibrium, retrograde condensation in gas condensate systems, solid gas hydrate formations from water-gas during flow, and arctic gas hydrate formation, Dr. Katz was beyond question the world leader.

He was born near Jackson, Michigan, on August 1, 1907, and attended the University of Michigan, where he received the B.S. (1931), M.S. (1932), and Ph.D. (1933) in chemical engineering. During his academic program, he was elected to five honorary fraternities, including Tau Beta Pi and Phi Kappa Phi, and held the Gemel and Donovan undergraduate scholarships, in succession.

His first professional affiliation was with the Phillips Petroleum Company in Bartlesville, Oklahoma. The three years spent with Phillips in initiating a production research program set the pattern for his principal lifelong research interests: phase behavior of hydrocarbon systems and reservoir engineering. His publications, numbering 294, are concentrated in the petroleum field, but have included additional topics such as heat transfer, fluid dynamics, and

the use of computers in engineering education. He is the author, together with former students, of nine books—the most significant, *Handbook of Natural Gas Engineering* (1959), was written with six former students. His most recently published book, *Natural Gas Engineering, Production and Storage*, with Robert L. Lee, was published by McGraw Hill in January 1990.

He returned to the Chemical Engineering Department of the University of Michigan in 1936, rose rapidly through the faculty ranks to professor, and was chairman of the department from 1951 to 1962. Forty-five doctoral students completed their theses under his supervision. Beginning in 1959 he directed two major national studies on the use of computers in engineering and engineering design education, with support from the Ford Foundation and the National Science Foundation. These projects involved participation of some two hundred engineering faculty members from more than fifty engineering schools. The reports, recommendations, and literature produced have had a national and international impact on engineering education.

Professor Katz travelled widely, contributing to improvement of graduate chemical engineering programs with seminars and workshops, particularly in the Far East, India, and Brazil (he spent a semester at the University of Brazil assisting in the inauguration of a new graduate program in 1963). He was awarded the University of Michigan's Distinguished Faculty Achievement Award in 1964 and was named the Alfred H. White Distinguished University Professor of Chemical Engineering in 1966. After his retirement in 1977, he remained very active as a consultant, lecturer, author, and member or leader of public service committees.

Throughout his career, Dr. Katz was a contributing member of many professional and technical societies. Dates of first membership and recognitions for his service and technical contributions are American Chemical Society (1932), E. V. Murphree Award in Industrial and Engineering Chemistry (1975); American Gas Association (1940), Gas Industry Research

Award (1977); American Institute of Chemical Engineers (1937), fellow, served on ten committees, president (1959), Founders Award (1964), Warren K. Lewis Award (1967), William H. Walker Award (1968), named one of twenty-nine eminent chemical engineers (1983); Society of Petroleum Engineers Inc. (SPE) of the American Institute of Mining, Metallurgical and Petroleum Engineers (AIME) (1936), served on six committees, SPE awards: one of the SPE Distinguished Lecturers (1962), John Franklin Carll Award (1964), one of first group of one hundred SPE Distinguished Members (1984); AIME awards: Mineral Industry Education Award (1970), Anthony F. Lucas Gold Medal (1979); American Association for Advancement of Science (1941), fellow; American Society for Engineering Education (1944), life member; American Association of Petroleum Geologists (1976-1988), associate member; American Society of Mechanical Engineers (1945), life member; American Nuclear Society (1956), fellow; National Society of Professional Engineers (1953), life member; and National Academy of Engineering (NAE) (1968). He also received the Hanlon Award (1950) from the Gas Processors Association, and the very special award—the National Medal of Science—in 1983, presented to him by President Reagan.

Dr. Katz was among a handful of scientific pioneers who created a new engineering discipline, petroleum reservoir engineering. Besides his research publications, he did intermittent consulting in oil production; but mainly he devoted his innovations to gas production and storage technology.

He assisted the management of three large midwestern companies to develop large underground gas storage systems during the period of 1950 to 1975. The ability to predict the storage capacity and delivery rates from reservoirs has contributed significantly to the efficient management of the nation's gas delivery system. By use of pressures above discovery pressures—a practice studied and recommended by Dr. Katz—the cost of gas storage has been significantly reduced, producing cost savings for both management and

user. Dr. Katz was very active as a consulting engineer during the past forty years, having served more than one hundred companies and governmental agencies.

In the field of public service, he served on fourteen committees, mostly through the National Academy of Sciences (NAS), the National Academy of Engineering, and the National Research Council (NRC). He was chairman of the NRC Committee on Hazardous Materials, Advisory to the U.S. Coast Guard, from 1964 to 1972. He organized the group that prepared many reports covering such topics as a classification system for the hazards involved in shipping a group of 160 chemicals; pressure relief valves for pressure vessels on barges with fires aboard; and liquefied natural gas (LNG) safety and the nature of the LNG water-superheat-limit-flameless-explosion. At the conclusion of his eight years of service on this committee, Dr. Katz was presented with the Distinguished Public Service Award by the U.S. Coast Guard. He was also chairman in 1974-1975 of the NRC Review Committee on Air Quality and Power Plant Emissions. This committee was organized at the request of Senator Muskie's subcommittee, under Senator Randolph's Public Works Committee. A thorough study on acid rain and health was documented. The committee's report recommended stack gas scrubbing for new high-sulphur coal plants and some retrofits. Testimony was given by Dr. Katz to the subcommittee, with Senator Randolph presiding.

As a part of his service to the engineering profession, he gave many special lectures at universities in the United States and in foreign countries, invited lectures for professional societies and companies, and continued to give his annual one-week course on gas storage until 1987. In recognition of his many research contributions, the College of Engineering of the University of Michigan established the Donald L. Katz Lectureship in Chemical Engineering in 1971. This lectureship is awarded annually to distinguished faculty researchers from other universities; the 20th Katz lectures were given in Ann Arbor in April 1990. In addition, the

Gas Processors Association honored Professor Katz by creating the new Donald L. Katz award in 1985.

In his home community of Ann Arbor, Michigan, he served from 1948 to 1957 on the Board of Education, including three years as president; several new public school buildings were built during his presidency. In 1944-1945 he was president of the Ann Arbor Council of Churches, and served in many positions including chairman of the Official Board and lay leader of the First United Methodist Church.

Professor Katz had a lifelong interest in history. After his retirement, he wrote a monograph on the early history of farm and community life in the Waterloo township in Jackson County, Michigan, for which he received a citation from the Michigan Historical Society. He also wrote several family histories that required significant study of European village archives. He is survived by his wife Elizabeth, five children, ten grandchildren, and two great grandchildren.