



Kenneth T. Whitby

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1925-1983

BY SHELDON K. FRIEDLANDER

KENNETH T. WHITBY died at the University of Minnesota Hospital on November 14, 1983. At the time of his death he was Professor and Chief of the Environmental Division, Department of Mechanical Engineering, University of Minnesota. The Particle Technology Laboratory, which he established at the University of Minnesota, is an internationally known center for research on aerosols.

Professor Whitby's experimental skills, remarkable physical intuition, and knack with instrument design played a key role in making the study of the behavior of particles in gases (aerosols) into a science. Before his pioneering work little was known of aerosol particle size distributions in the range below a few micrometers. The instruments that he developed made it possible for the first time to measure particle size distributions from 0.01 to 3 micrometers on a continuous, almost real-time basis. He applied the instruments to the study of atmospheric aerosols, where they have become standard. Later, similar instrumentation was applied to the study of gasoline and diesel exhausts, power plant plumes, and coal combustion gases by Professor Whitby and co-workers and by other groups. The results of these studies have had much influence on air quality and emission standards for particulate matter.

Kenneth Whitby was born in Fond du Lac, Wisconsin, on February 6, 1925. He received his B.S. in naval technology in 1946 and his Ph.D. in mechanical engineering in 1954, both from the University of Minnesota. After a period as Research Associate, he was

appointed Assistant Professor of Mechanical Engineering in 1958, Associate Professor in 1962, and Professor in 1966. He became Chief of the Environmental Division in Mechanical Engineering in 1971.

Kenneth Whitby's interests in airborne particles were stimulated through contacts with local milling companies in Minneapolis in the late 1940s. His first archival publication was entitled "Measurement of Particle Size Distributions of Flour," and his interest in aerosol size distributions continued throughout his research career.

During the mid- to late 1950s he worked with other researchers in the Environmental Division of the Department of Mechanical Engineering on aerosol problems important in heating, ventilation, and air conditioning systems. Techniques for evaluating the performance of air cleaners and filters were developed. During this period he also completed a study of indoor aerosols.

During the 1960s Professor Whitby became interested in extending the measurement of aerosol size distributions into the submicrometer range. Studies on electrical charging and classification of aerosols were initiated, and this led to the development of the Whitby Aerosol Analyzer (the forerunner of a widely used commercial electrical aerosol analyzer).

The last major research effort in his career was a series of pioneering studies of atmospheric aerosols. He was a key participant in the 1969 Los Angeles Aerosol Characterization Study—the definitive study of photochemical smog aerosols. Innovations in this project involved the organization of an interdisciplinary team for an intensive smog aerosol study and the application of state-of-the-art instrumentation to measurements of ambient aerosols. This study served as a model for similar air pollution studies throughout the 1970s, in many of which Professor Whitby and his colleagues and students participated. Using the electrical aerosol analyzer in combination with other instruments, he and his students discovered the characteristic trimodal nature of ambient aerosols. The concepts of nuclei, accumulation, and coarse particle modes that he introduced have been adopted by many workers in the field.

Professor Whitby published widely. He held four patents and served on many national committees, including the Advisory Com-

mittee for the Chemistry and Physics Division of the U.S. Environmental Protection Agency (1974-1976), the Working Group 1 of a Bilateral Environmental Agreement between the United States and the USSR (1973-1976), among others. He was elected to membership in the National Academy of Engineering in 1978 and was a member of the National Research Council Committee on Chemical and Biological Sensor Technology at the time of his death.

Professor Whitby was deeply committed to his family and to his church activities. He had numerous personal interests and skills, including photography, woodworking, canoeing, and model airplane building. He lived a fruitful, happy life and will be missed by his many friends and colleagues here and throughout the world.