

**MEMORIAL RESOLUTION OF THE FACULTY
OF THE UNIVERSITY OF WISCONSIN-MADISON**

ON THE DEATH OF PROFESSOR EMERITUS CHARLES FRANCIS CURTISS

Charles F. Curtiss was born April 4, 1921, in Chicago and died December 24, 2007, in Madison. He attended high school in Neenah, Wisconsin, where he met his future wife, Lois. In 1942, he received the degree "Bachelor of Science (Chemistry)" at the University of Wisconsin. From June 1942 to December 1945 he worked at the National Defense Research Committee Geophysical and Allegheny Ballistics Laboratories in Washington, D.C. and Maryland. In early 1946 he was a graduate student at the University of Minnesota. He returned to the University of Wisconsin in September 1946, working with Professor Joseph O. Hirschfelder in the Department of Chemistry and receiving his Ph.D. degree in June 1948. He continued at the UW Naval Research Laboratory for another year as a project associate.

Chuck began his faculty appointments at UW in 1949 and continued for forty years: assistant professor in chemistry and physics (1949-1954), associate professor of chemistry (1954-1960), and professor of chemistry (1960-1989). During much of this time he was associate director of the Theoretical Chemistry Institute. He taught undergraduate and graduate courses in physical chemistry. His courses were always carefully organized and his teaching was very lucid; he made no effort to be colorful or showy. He supervised three M.S. candidates and 26 Ph.D. candidates, and worked with 18 postdoctoral associates. After retiring he was professor emeritus of chemistry (1989-2007).

His research areas were kinetic theory of gases, nonequilibrium statistical mechanics of reacting gas mixtures, transport properties of dense gases, transport properties of polyatomic gases, molecular scattering phenomena, and molecular description of the rheology of polymer solutions and undiluted polymers. He published over 140 papers in refereed journals, including more than ten on work after his retirement, as well as several book chapters. Chuck was coauthor of the 1,200-page tome, *Molecular Theory of Gases and Liquids* (Hirschfelder, Curtiss and Bird), published in 1954 (corrected printing in 1964) and still in print, and of *Dynamics of Polymeric Liquids: Volume 2, Kinetic Theory*, 1977, (Bird, Hassager, Armstrong and Curtiss); second edition, 1987, (Bird, Curtiss, Armstrong and Hassager). Through these books he had a major impact on physical chemistry and chemical engineering. The book *Molecular Theory of Gases and Liquids* was listed as #4 in the list of most-cited books for 1961-1972, and #9 in the 1967 ranking of most-cited non-journal items. He showed care in writing, a passion for accuracy, and mastery of various parts of the subject and their interrelations.

Chuck was a member of the American Chemical Society, fellow of the American Physical Society and a member of the Society of Engineering Science, of which he had served as a director. Chuck was also a member of the Alpha Chi Sigma Fraternity. He served at various times on the editorial boards of *Journal of Chemical Physics*, *International Journal of Engineering Science*, *Physics of Fluids*, and *Physics and Chemistry of Liquids* and as consultant for various companies and government agencies. His work was recognized by the Bingham Award of the Society of Rheology, the Kurt Wohl Lecture of the University of Delaware, and the Eringen Award of the Society of Engineering Science.

Chuck was an exceptionally gifted applied mathematician. A 1952 paper with Hirschfelder on "The Integration of Stiff Equations" was listed in "13 Classic Papers in Applied Mathematics". Many of his colleagues were amazed at his talent for solving extremely complex physical problems by a combination of formal mathematics, uncanny intuition, and shrewd changes of variables. Comments were often made about the fact that Chuck usually wrote on 8½ x 11 paper in "landscape" mode, with the 11-inch sides at top and bottom, so as to be able to accommodate very long equations. Many of the graduate students and faculty members of the chemistry department came to his office to seek help on difficult mathematics and physics problems. Chuck was always willing to listen carefully to their problems and then work with them to find solutions.

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Chuck was very family-oriented. He knew a great deal about the Curtiss family genealogy and prepared this work for filing with the Wisconsin Historical Society. He had a nice collection of books and old family pictures. But most of all, he enjoyed going up to his summer cottage on a lake near Boulder Junction. He and his boys had built several buildings on their property, including an 8-sided outhouse, called the "octajohn," and a simple office structure where Chuck could work on any kinds of theoretical problems that he had brought along. The lakeshore did not have many cottages, but he and his family enjoyed interacting with the Duffies, Jack and Pat, of the chemical engineering department.

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