

Benjamin Yao-Hui Liu

1934 - 2025

Benjamin Yao-Hui Liu passed away peacefully on June 30, 2025, at the age of 90. He was a Regents Professor in the Department of Mechanical Engineering at the University of Minnesota, where he was highly respected worldwide by his peers for excellence in teaching and research on fundamental aerosol science and its multiple applications in air pollution control, air filtration, and particle micro-contamination control.

Professor Liu was a prolific inventor of instruments for measuring and controlling micro-airborne particles, holding over 200 patents throughout his distinguished career. His groundbreaking work earned him election to the National Academy of Engineering, one of the highest honors in the field of engineering.

His inventions and research contributions had a far-reaching impact across multiple fields:

- The understanding of the mechanism of smog formation and developing methods to improve air quality in cities worldwide.
- The control of particle contamination to increase semiconductor manufacturing yields, for environmental protection, and improvement of public health.
- The development of aerosol instruments that serve today as international standards for measuring and calibrating submicron and nanometer aerosols.

As a Regents Professor at the University of Minnesota, Professor Liu established himself as a world-renowned expert in aerosol science and particle technology. He served as Director of the Particle Technology Laboratory, transforming it into a globally recognized center for cutting-edge research. His academic career spanned over four decades, during which he mentored countless graduate students and postdoctoral researchers who went on to become leaders in their fields.

Professor Liu's commitment to excellence in both teaching and research made him a beloved figure in the academic community. Ever humble and generous with his talent and time, he was an exceptional mentor for his students and friends, always willing to share his knowledge and expertise.

Liu was a founding father of the aerosol research community in the United States with the creation of the American Association for Aerosol Research (AAAR) in 1982, where he served as editor-in-chief of its journal, *Aerosol Science and Technology* (1982-93), Board Member (1982-84), Vice President (1984-85), and President (1986-88). The Benjamin Y. H Liu award

was also established in 2002 by AAAR to honor his outstanding contributions to the development of aerosol instrumentation and experimental aerosol techniques.

Born in China in 1934, Benjamin came to the United States in 1954 to pursue his college degree, beginning a journey that would lead to extraordinary contributions to science and engineering. He married Helen Hai-Ling Cheng, and together they formed what many described as a model couple, demonstrating a truly caring and loving relationship that lasted throughout their lives.

Despite his demanding academic schedule, Benjamin always found time for Helen. They shared a love of travel and tennis and were known to be inseparable companions. Their partnership extended beyond their personal life to their philanthropic endeavors, where they were generous donors to both academic and arts causes.

Benjamin and Helen's generosity was well-regarded within the university community. They established over ten scholarship funds for engineering and arts studies. They would donate their legacy to charity, continuing their tradition of generosity even beyond their lifetimes.

Throughout his career, Professor Liu received numerous prestigious awards and honors, including: Election to the National Academy of Engineering and the Fuchs' Prize, the highest recognition in international aerosol research.

Benjamin was preceded in death by his beloved wife, Helen, and his cherished son, Larry. He is survived by his granddaughter, Amanda Liu Olson; grandson-in-law, Cory Olson; great-granddaughter, Elysia Liu Olson; and great-grandson, Cameron Thomas.