



NEAL R. AMUNDSON

1916–2011

Elected in 1970

“For pioneering contributions to the fundamental analysis of chemical processes and leadership in chemical engineering education.”

BY DAN LUSS AND ARVIND VARMA

NEAL R. AMUNDSON, Cullen Professor Emeritus of Chemical and Biomolecular Engineering and professor of mathematics at the University of Houston, passed away peacefully on February 16, 2011, at the age of 95. He was a transformational figure, considered by many to be the most prominent and influential chemical engineering educator in the United States.

His contributions to the chemical engineering profession were both revolutionary and multifaceted. They included introducing science into a field that before his time was dominated by an empirical and qualitative approach. Amundson charted an innovative course that transformed the profession and led to the development of a science-based methodology guided by quantitative analysis. Starting in the 1950s, he repeatedly demonstrated the advantages of applying mathematical modeling and advanced solution techniques to predicting the behavior of complex chemical processes and systems. He pioneered the application of advanced mathematical techniques to understand the behavior of chemical processes, including chemical reactors, separation systems, polymerization, coal combustion, and atmospheric science. His research led to a deeper understanding of such systems and contributed to their better and safer design and operation. This approach is now widely followed all over the world in education, research, and practice.

Amundson made major contributions in research, education, and academic and professional leadership. He authored more than 200 articles in journals and five books. This research led to many advances in the design and operation of chemical processes. He guided the research of nearly 70 Ph.D. students. He was a most influential mentor, and many of his students achieved prominent positions in universities and industry, such as department chairs, deans, chief executive officer of Exxon Mobil, and members of the National Academies. He served as the U.S. editor of the journal *Chemical Engineering Science* during 1957–1972 and led its establishment as the foremost journal of the profession then. He also served as editor of the Prentice-Hall International Series in the Physical and Chemical Engineering Sciences, from its inception in 1961 until the year 2000.

Amundson had a major impact on changing the techniques and methodology used to tackle chemical engineering problems. His professional leadership roles included chairing the National Research Council committee that prepared the report titled *Frontiers in Chemical Engineering: Research Needs and Opportunities* (1988), which charted new directions and expansions for the profession, such as materials science and bioengineering. Amundson was also a most successful academic leader. He was appointed head of the Department of Chemical Engineering at the University of Minnesota in 1949, at the relatively young age of 33, and remained in that position for the next 25 years, until 1974. With his own brilliant research and the hiring of outstanding faculty members, he transformed the department from relative obscurity to the top-ranked program in the country. He had the vision to foresee that infusion of talent from other disciplines can enrich education and research in chemical engineering. Thus, among his early faculty hires were individuals with a background in microbiology, mathematics, and chemistry, who themselves made enormous contributions to the field. Thus, Amundson was the earliest proponent of interdisciplinary research, so common in universities today. The magnitude of his contributions was recognized by the University of Minnesota

when it named the building housing the chemical engineering department as Amundson Hall in 1979. Amundson joined the Department of Chemical Engineering at the University of Houston in 1977 and led to its prominence as well.

During his career, Amundson received a large number of prestigious awards from professional societies, such as the American Institute of Chemical Engineers, the American Society of Engineering Education, and the American Chemical Society. He was elected as a member of many prestigious societies, including the National Academy of Engineering (1970), the National Academy of Sciences (1992), and the American Academy of Arts and Sciences (1992). The International Symposia of Chemical Reaction Engineering named an award in his honor to recognize a pioneer in the field and made him the first recipient in 1996. He also received the NAE Founders Award (1990) and honorary doctorate degrees from the University of Minnesota, the University of Notre Dame, the University of Pennsylvania, the University of Guadalajara, and Northwestern University.

Neal Amundson was born on January 10, 1916, in St. Paul, Minnesota. He earned both a B.S. and an M.S. in chemical engineering from the University of Minnesota in 1937 and 1941, respectively, and a Ph.D. in mathematics from Minnesota in 1945. He married Shirley Dimond on September 25, 1941, who survives him along with their children, Gregg, Beth, and Erik as well as six grandchildren and four great-grandchildren. Among his hobbies was that of raising orchids, and at one time he held one of the largest private collections in the country.