Kenneth B Bischoff

KENNETH B. BISCHOFF

1936–2006

Elected in 1988

"For excellence in research and education in chemical reaction engineering and in biomedical engineering."

BY MARK A. BARTEAU

KENNETH B. BISCHOFF died on August 27, 2006. Ken was born in Chicago on February 29, 1936, obviously a leap-year baby. Ken was proud of this accidental distinction, and when a leap-year day occurred, a special birthday celebration was held. Ken also described himself in his leap-year age; at the time of his death he was 17.373 (70 in conventional terms).

Ken enjoyed a distinguished academic and industrial career, both in the United States and internationally. He earned his B.S. in chemical engineering in 1957 at Illinois Institute of Technology (IIT) and remained there for his Ph.D. (1961) under the direction of Octave Levenspiel. His dissertation was on backmixing in chemical reactors. His 1960–1961 postdoctoral work was with Gilbert Froment at the Rijksuniversiteit Gent. This marked the beginning of a long collaboration and friendship. Ken was an assistant professor and an associate professor at the University of Texas at Austin from 1961 to 1967, where he was mentored by and collaborated with David Himmelblau. This collaboration produced a textbook, *Process Analysis and Simulation* (John Wiley & Sons, 1968). Ken then served as an associate professor and as a full professor at the University of Maryland from 1967 to 1970. There he enjoyed a very productive collaboration with Bob Dedrick of the National Institutes of Health (NIH), and together they

founded the topical area of pharmacokinetics. At age 34, Ken became the youngest person ever to hold an endowed chair at Cornell University—the Walter R. Read Professorship of Chemical Engineering. There he also was director of the School of Chemical Engineering (1970–1975). In 1976, Ken joined the University of Delaware as the Unidel Professor of Biomedical and Chemical Engineering. He remained at Delaware until, owing to health issues, he retired in 1997. He served as department chairman of chemical engineering (1978–1982) and as acting director of the Center for Catalytic Science and Technology (1983–1984).

Ken's primary research interests were in the areas of chemical reaction engineering and applications to pharmacology and toxicology, resulting in more than 100 journal articles and two textbooks. His scholarly productivity was recognized with many awards, including the IIT Distinguished Alumni Award (1996) and several American Institute of Chemical Engineers (AIChE) awards: fellow (1987), Professional Progress (1976), Institute Lecture (1982), and Wilhelm Award (1987). He received the Ebert Prize from the Academy of Pharmaceutical Sciences (1972), became a fellow of the American Association for the Advancement of Science (AAAS; 1980), and was elected to the National Academy of Engineering (1988). Ken was also active in professional service for the AIChE: he was elected director (1972–1974), selected as program committee chairman (1978), and was session chairman for many sessions. For the American Chemical Society he was on the Awards Committee and the editorial board of the Industrial & Engineering Chemistry Annual Research Review and was an associate editor of the Advances in Chemistry series. He also was associate editor of *Advances in Chemical Engineering* (Elsevier), volumes 12 (1982) through 23 (1996). He was chairman of the First and cochairman of the Ninth International Symposium on Reactor Engineering. He also served as chairman of the Council for Chemical Research (1985).

Ken's skills in mathematical model building led to significant and enduring consulting collaborations, particularly with Bob Dedrick at NIH and with many individuals at Exxon. His

consulting with Exxon was unique: Each summer he would stay at Exxon Research and Engineering for one month. At the beginning of the month he was given a loosely defined topic. He then read and mastered an assembly of open-literature and related company reports. By the end of the month he had this material cogently organized and broken into problems to be solved in collaboration with engineers at Exxon. At Ken's retirement Exxon honored his many consulting contributions with a plaque placed in the lobby of the Research and Engineering Center. He also had conventional consulting contracts with many other firms.

Ken's research neatly divided into two general areas: pharmacokinetics and reaction engineering. His pharmacokinetics work is exemplified by publications such as "Methotrexate Pharmacokinetics" (*Journal of Pharmaceutical Sciences*, 60, (*1128*) 1971), "Species Similarities in Pharmacokinetics" (Federation Proceedings, 39, (*54*) 1980), "Pharmacokinetics and Cancer Chemotherapy" (*Journal of Pharmacokinetics and Biopharmaceutics*, 1, (*465*) 1973), and many other specialized papers. This list of representative titles shows how Ken's efforts spanned the topic of pharmacokinetics—indeed, founded the topic and defined its scope.

Similarly, his work in reaction engineering was very broad. He began writing the book *Chemical Reactor Analysis and Design* in 1961; the first edition appeared in 1979 and the second in 1989. Ken's first publication modeled axial dispersion in reactors, and he continued writing about this topic through much of his career. He was concerned with the difficult topic of parameter identification in reacting systems and later with the implications of lumping the kinetics of systems with a large number of species into more easily understood blocks. He developed a generalized model for estimating the catalyst effectiveness factor in complex systems and on coke formation with catalyst deactivation.