

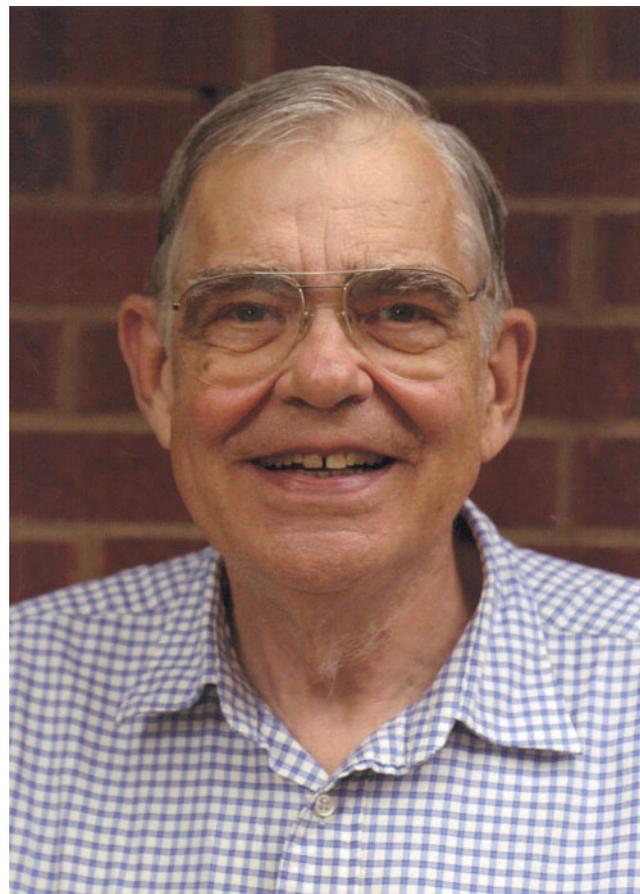
OBITUARY

Charles H. DePuy (1927–2013)

Charles H. DePuy, Professor Emeritus at the University of Colorado, passed away on March 14, 2013 at the age of 85. He was an eminent physical organic chemist, an acclaimed teacher, and an incomparable mentor and colleague.

Chuck was born in Detroit, Michigan, on September 10, 1927. Since his father was an architectural engineer who supervised the construction of government buildings throughout the United States and its territories, Chuck had the unique opportunity of living in many places during his youth, including two idyllic years in the Virgin Islands. In 1942, his father was transferred to Oakland, California, to fortify government buildings in anticipation of Japanese air and naval attacks. Chuck wrote about this era that “I spent a lot of time riding my bike out to the UC Berkeley campus, wandering in and out of the buildings, peeking into laboratories and imagining being a student there.” Indeed, upon his graduation from high school, Chuck enrolled at the University of California at Berkeley and began college as a chemistry major at the age of 16 years. His studies were later interrupted by the draft and 13 months of service as a hospital laboratory technician. However, he returned to school and graduated in the spring of 1948. Chuck then began graduate studies at Columbia University in the group of Professor William Doering, whom he described as “a young, charismatic chemist in the forefront of the new, emerging field of physical organic chemistry.” Chuck accompanied Bill in his move to Yale, and thus received a M.S. degree from Columbia in 1952 and a Ph.D. from Yale in 1953. After a year of post-doctoral work with Professor Donald Cram at UCLA, Chuck joined the faculty of Iowa State University, where he rose through the ranks to the position of Full Professor. In 1963, largely through the vision and encouragement of Professor Stanley Cristol, Chuck moved to the University of Colorado, where he was a pivotal figure in building the excellence of the Department of Chemistry and Biochemistry.

Chuck made major pioneering contributions in a number of distinct and important areas of physical organic chemistry. His early work on pyrolytic *cis*-eliminations clarified this field and his papers on this subject remain key references, as are his studies of cyclopentane ring systems that identified plausible mechanisms for *syn*-elimination. He and his students developed the synthesis of cyclopentenedione and cyclopentadienone,



studied the reactions of these interesting compounds, and developed ideas of “negative resonance energy” (now termed “antiaromaticity”). Chuck studied the chemistry of cyclopropanols and of cyclopropanes in general, and again his work has been seminal. His studies of electrophilic ring-opening reactions showed that these processes do not have strong stereochemical preferences, and his work on the cleavage of carbon–carbon bonds has been critical to our understanding of electrophilic displacement reactions. In addition, his research on the stereochemistry of solvolysis of cyclopropyl *p*-toluenesulfonates was a crucial study of an electrocyclic ring-opening reaction, which Chuck recognized as an initial test of the predictions of the newly proposed Woodward-Hoffmann rules.

Following this productive research career in solution organic chemistry, Chuck moved into the challenging new field of gas-phase organic ion-molecule reactions. His col-

leagues at the Boulder Aeronomy Laboratory had recently developed the flowing afterglow technique to characterize the chemistry of the earth's ionosphere. With his coworker Professor Robert Shapiro, Chuck recognized the incredible potential of this approach for exploring the intrinsic nature of organic ion chemistry in the absence of solvation. Over a period of more than three decades, Chuck carried out ingenious and wide-ranging studies of the ion chemistry and thermochemistry of organic species. These include the acidities of saturated hydrocarbons and the stability of the corresponding carbanions and carbene radical anions, benzyne, vinyl, acetyl, and acetic acid enolate anions. He studied the gas-phase chemistry of organosilanes and characterized novel boron anions and cations. He developed gas-phase hydrogen–deuterium exchange to probe anionic structure, and he examined chemistry relevant to the interstellar medium. Chuck carried out comprehensive studies of gas-phase substitution and elimination reactions of a wide variety of nucleophiles, with a series of substrates. These and other studies, when combined with solution data, provide important insights into the detailed nature of solvent effects in organic chemistry. Moreover, Chuck clearly demonstrated that the conceptual framework and underlying principles of organic chemistry are strikingly evident in the gas phase.

Chuck received several prestigious awards throughout his career. He was named an Alfred Sloan Fellow, an NIH Senior Postdoctoral Fellow, a Guggenheim Fellow, and an Alexander von Humboldt Fellow. He received the Colorado Section ACS Gold Medallion Award, the ACS James Flack Norris Award, and he was elected to the American Academy of Arts and Sciences and to the National Academy of Sciences. Chuck's research was supported by the National Science Foundation, the National Institutes of Health, the Petroleum Research Fund of the American Chemical Society, and the Army Research Office. He was active in professional organizations, including the American Society for Mass Spectrometry (ASMS), the

American Chemical Society (ACS), and the American Association for the Advancement of Science.

In addition to his illustrious research career, Chuck was renowned as an author, lecturer, and educator. His textbook "Introduction to Organic Chemistry" (with Applequist and Rinehart) was published in three editions and was translated into multiple languages. His "Exercises in Organic Spectroscopy" (with Shapiro) served as an invaluable workbook for a generation of students. Chuck also delivered invited seminars throughout the world and presentations at many meetings, including Gordon Conferences, Reaction Mechanism Conferences, Lake Arrowhead Meetings, Asilomar Conferences, as well as ASMS and ACS meetings. He was known for the clarity and pedagogy of his lectures, and stressed to his students the importance of telling an engaging and lucid "story." He enjoyed teaching both undergraduate and graduate formal courses, and mentored many post-docs, graduate students, and undergraduates over the years. His group meetings were legendary for their intensity and their exciting science, and he was very proud of his scientific "children" who moved on to productive careers in industry, government, and academe.

The richness and depth of Chuck's personal life was also exceptional. He and Eleanor, his wife of 63 years, had four children and six grandchildren, whom he adored. He greatly enjoyed travel, opera, bicycling, reading, good wine, skiing, and scuba diving trips with his family. On a personal note, working with Chuck and knowing him for almost 40 years has had a profound impact on my science and my life. He will be deeply missed, but he will live on through his wonderful family and through the legacy of his chemistry, his students, and his colleagues.

Veronica M. Bierbaum

*Department of Chemistry and Biochemistry
University of Colorado
Boulder, CO, USA*