



Duward F. Shriver

Duward F. Shriver (1934–2013)

Northwestern University Professor Duward F. Shriver passed away at the age of 78 on March 6, 2013. He was thought of as the quintessential gentleman and scholar by all who knew him. “Du” was quiet, patient, mild-mannered, and courteous yet commanded attention and respect because of his prodigious knowledge, his keen insight and creativity, and his unflinching fairness in praising the work of others. The rare combination of all of these traits in one person attracted the many students, postdocs, colleagues, and collaborators around the world who worked with him and thoroughly enjoyed doing so.

Du Shriver was born in 1934 in Glendale, CA and was raised on the island of Oahu in what was then the U.S. Territory of Hawaii. He received his bachelor's degree in chemistry in 1958 from the University of California at Berkeley, where he did research with William L. Jolly, and his Ph.D. in chemistry in 1961 from the University of Michigan, where he did his dissertation research with Robert W. Parry. He began his independent academic career immediately thereafter at Northwestern University, where he quickly rose through the ranks and established himself as a leader in many different areas of inorganic chemistry. He was named Morrison Professor of Chemistry in 1987 and served as Chair of the Department of Chemistry from 1992 to 1995.

Shriver's research resulted in over 400 scientific publications and involved more than 150 students and postdocs who went on to successful careers in industry, academia, national laboratories, and government service. He received many professional awards and recognitions, including an Alfred P. Sloan Research Fellowship, a Guggenheim Fellowship, the Royal Society of Chemistry Ludwig Mond Medal, the Materials Research Society Medal, and the American Chemical Society Award for Distinguished Service in Inorganic Chemistry. He was well-known to generations of inorganic and organometallic chemists who first learned the proper care and use of Schlenk flasks and frits, chemical high-vacuum lines, and inert-atmosphere gloveboxes from his classic book *The Manipulation of Air-Sensitive Compounds*, published in 1969 and updated with former graduate student Mark Drezdron in 1986. His highly successful undergraduate textbook *Inorganic Chemistry*, co-authored with Peter W. Atkins, has been translated into ten languages and is used to teach this very broad and important subject to students around the world.

Shriver edited Volume XIX of *Inorganic Syntheses* and co-edited *The Chemistry of Metal Cluster Compounds* with Herbert D. Kaesz and Richard D. Adams. His service on editorial boards included *Inorganic Chemistry*, *Organometallics*, and *Coordi-*

nation Chemistry. He chaired the ACS Division of Inorganic Chemistry, its Organometallics Subdivision, and the 1980 Gordon Research Conference on Inorganic Chemistry.

Only a few of Shriver's seminal contributions to various areas of inorganic chemistry can be described here. Beginning in the late 1970s, he began to extend his earlier concepts of transition-metal basicity to metal carbonyls, and investigated the possibility of cleaving the C–O bond of a coordinated carbonyl ligand using Lewis acids. He published a series of classic papers describing the stepwise protonation of metal carbonyl clusters to form methane. Another seminal discovery arising from his research in this area is the isolation and study of polynuclear metal cluster compounds containing coordinated ketenylidene ligands.

Shriver also made important contributions in the field of polymer electrolytes for lithium ion batteries. He worked closely with Northwestern colleague Mark A. Ratner, L'Université de Grenoble's Michel B. Armand, and Penn State's Harry R. Allcock to modify polyethylene oxide and polyphosphazenes. This work included the design and synthesis of new polymers containing lithium ions and their characterization by vibrational spectroscopy, electrochemical measurements, and the determination of their ionic diffusion and transport properties. It was a significant contribution to our understanding of the relationship between the structure and function of polymer electrolytes, an area of chemical science and engineering that has retained its importance over time because of our current need for efficient energy storage devices.

Shriver also used vibrational spectroscopy to study the non-heme oxygen-carrying protein hemerythrin, research that he carried out in collaboration with Northwestern colleague Irving M. Klotz. They identified the vibrational frequencies of several isotopologues of bound dioxygen, and used these results to establish the formal oxidation state of the bound dioxygen molecule and the Fe–O₂ coordination geometry.

Du Shriver will be remembered for his supportive and nurturing mentoring as well as for his scientific achievements and service to the community of scholars in chemistry. He was not only an advisor, a mentor, a collaborator, and a colleague to many; he was a positive role model for all. His cheerful, professional, and self-effacing style and grace will be sorely missed.

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