

*At a meeting of the FACULTY OF ARTS AND SCIENCES on February 7, 2023, the following tribute to the life and service of the late Richard Hadley Holm was spread upon the permanent records of the Faculty.*

## **RICHARD HADLEY HOLM**

BORN: September 24, 1933

DIED: February 15, 2021

Richard (“Dick”) H. Holm, Higgins Professor of Chemistry, *Emeritus*, at Harvard University and one of the key figures in twentieth-century inorganic chemistry, died in Lincoln, Massachusetts, on February 15, 2021. He was 87 years old.

Dick was a trailblazer of inorganic chemistry, whose work shaped our understanding of structure and function in the reaction centers of enzymes. He brought the art of synthetic inorganic chemistry to biology, creating metallocofactor active sites outside the protein milieu. He showed the synthetic pathway to, and structures of, many important metal-based cofactors adapted by nature to perform critical functions ranging from electron transfer to nitrogen fixation. In the area of small molecule analogues of enzyme active sites, the Holm Laboratory pioneered modern inorganic synthesis that laid the foundation for modern molecular architecture aesthetic. Among his numerous achievements, Dick is renowned for his development of a rational approach to the synthesis of biomimetic complexes that duplicate biological Fe-S centers and for his creation of the framework to explain their function.

Dick has influenced subsequent generations of chemists with his approach to modeling enzyme active sites, explaining how nature creates the metal-based cofactors in proteins that carry out the chemical reactions of life. He transformed the way inorganic chemists approach new synthetic problems and, in doing so, raised the standards for an entire field of chemistry.

Although Dick’s interests in inorganic chemistry were fundamentally focused on synthesis, he was active in numerous areas and his scientific rigor was unparalleled. He was early to adopt modern spectroscopic and electrochemical methods to understand complex electronic structure phenomena. His early work probed how transition metals and their supporting organic scaffolding could equally contribute to molecular redox events. His utilization of a breadth of analytical approaches allowed him to describe these complex electronic interactions with a clarity and sophistication that chemists have strived to emulate in the decades since. He also recognized that novel inorganic constructs have potential utility for

material science and medical imaging.

Richard Hadley Holm was born in Boston, Massachusetts, in September of 1933 and was adopted into the family of James Leslie and Leora Holm. Dick's extraordinary work ethic and humility were instilled from a young age, working on his family's dairy farm in Nantucket. Dick's towering academic excellence was matched by his formidable physicality, which allowed him to excel athletically as well. His passion for talking about baseball with colleagues and students was only rivaled by his zeal for talking about chemistry. He was an inexhaustible resource of knowledge in both domains.

Dick attended the University of Massachusetts at Amherst and graduated in 1955. Initially intending to major in English literature, he was drawn to the precision of chemistry, although his continued interest in language enabled him to write with elegance, wit, and exceptional clarity. While studying at UMass, Dick met the love of his life, Florence Jacintho, and the couple happily wed in June of 1958. After graduating, he entered the graduate program in chemistry at the Massachusetts Institute of Technology (MIT) and studied the magnetic properties of tetrahedral Co(II) complexes under F. Albert Cotton.

After receiving his doctorate in 1959, Dick came to Harvard University as an instructor of inorganic chemistry. During the 1960s and 70s he taught at the University of Wisconsin–Madison, MIT, and Stanford University. He returned to Harvard in 1980 as the Higgins Professor of Chemistry and served as the Chair of the Department of Chemistry from 1983 to 1986. He was synonymous with Harvard inorganic chemistry for the duration of his career. That Harvard was a premier destination for inorganic students despite Dick being the sole practitioner in this area was a testament to his impact and commanding presence in the field. Over his career, he authored one book and published more than 500 research papers on various aspects of inorganic chemistry.

Dick delivered over 90 named lectureships and was the recipient of numerous honors, including the John C. Bailar, Jr., Medal (1973), membership in the American Academy for Arts and Sciences (1971) and National Academy of Sciences (1975), the ACS Award in Inorganic Chemistry (1976), the Harrison Howe Award (1977), the Centenary Prize of the Royal Society of Chemistry (1979–1980), the Dwyer Memorial Lecture and Medal (1988), the Polyhedron Wilkinson Prize for Creativity in Inorganic Chemistry (1991), the National Academy of Sciences Award in Chemical Sciences (1993), the Theodore William Richards Medal (1994), the F. A. Cotton Medal for Excellence in Chemical Research (2005), the Joseph Chatt Award of the Royal Society (2005–2006), and the Welch Award in Chemistry (2016). Beyond his honors and accolades, Dick's scientific legacy has been solidified by his successful former students, postdoctoral scholars, and visiting scientists.

Dick's infectious enthusiasm for chemistry infused his teaching. He inspired a fierce sense of independence in his students, providing them with an environment safe to explore new ideas

and areas of research. He insisted that his laboratory members did not work for him but with him. In Dick, his students found a steadfast supporter and champion in their independent careers. His excitement and enthusiasm for chemistry never failed. In his later years he continued to work from home in Belmont, corresponding with fellow scientists and enjoying time with his family.

Dick was universally respected as a chemist and admired as a person by his students and colleagues. Most would agree on the core qualities that defined his life: a powerful intellect, great personal integrity and courage, extraordinary dedication to scientific discovery, and a deep concern for educating future generations of chemists. He leaves behind his devoted wife, Florence, as well as his children and their spouses and partners: Sharon Holm (and Kevin Killeen) of York, England; Eric (and Reiko) Holm of Kamakura, Japan; Christian Holm of Waltham; and Marg (and Michael) Short of Palm Harbor, Florida. He is also survived by five grandchildren, Amanda, Maya, Kiara, Molly Rose, and Benjamin, as well as many nieces and nephews.

Respectfully submitted,

Daniel Nocera  
George Whitesides  
Theodore Betley, Chair

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Portions of this Minute were previously published by: Alan Balch, Grover Everett, Philip P. Power, William H. Armstrong, Julie Kovacs, T. D. P. Stack, James P. Donahue, Thomas G. Gray, Stanislav Groysman, and Liang Deng, "Richard Hadley Holm: A Remembrance and A Tribute," *Comments on Inorganic Chemistry*, no.42:2 (December 24, 2021): 61–108, <https://doi.org/10.1080/02603594.2021.1971203>; Department of Chemistry and Chemical Biology, "CCB giant, Richard Holm, dies at age 87," *Harvard University*, February 18, 2021, <https://chemistry.harvard.edu/news/ccb-giant-richard-holm-dies-age-87>; Hagler Institute for Advanced Study, "Richard Holm: Class of 2015–16," *Texas A&M University*, October 1, 2020, <https://hias.tamu.edu/fellow/dr-richard-holm/>; Laura Jones, "The Welch Foundation Celebrates 2016 Welch Award Recipients," *The Welch Foundation*, October 25, 2016, <https://welch1.org/news-reports/news/the-welch-foundation-celebrates-2016-welch-award-recipients>; and Linda Wang, "Harvard chemist Richard Holm dies at age 87," *Chemical & Engineering News*, February 18, 2021, <https://cen.acs.org/people/obituaries/Harvard-chemist-Richard-Holm-dies/99/web/2021/02>.