Memorial Resolution of the Faculty of the University of Wisconsin-Madison
On the Death of Professor Emeritus Howard W. Whitlock, Jr.

Howard W. Whitlock, Jr., Professor Emeritus of Chemistry, died at the age of 80 on January 27, 2017 in Madison, Wisconsin. He was born on May 2, 1936, to Glenn and Howard Whitlock in Washington, DC. Howard received a B.S. degree in Chemistry from the University of Maryland in 1957. He became a graduate student in organic chemistry at the University of Wisconsin, studying under the supervision of Professor William S. Johnson. Howard received his Ph.D. from Wisconsin in 1961, shortly after his mentor moved to Stanford.

Howard began his independent career as an Assistant Professor in the UW-Madison Department of Chemistry in 1961, was promoted to Associate Professor in 1965 and Professor in 1968, and was appointed Professor Emeritus upon his retirement in 2009. Howard mentored over 40 Ph.D. students during his career, in addition to a number of postdoctoral associates, M.S. and B.S. students. His graduate student classroom instruction included years of teaching the Physical Organic Chemistry course (641) and several special topics courses in organic chemistry. He taught thousands of undergraduate students in sophomore Organic Chemistry (343 and 345) as well as General Chemistry.

Howard's research covered broad areas in organic and organometallic chemistry. Early efforts were devoted to the synthesis of natural products (e.g. alkaloids like crinine) and theoretically interesting molecules (twistane, annulenes, proximal diacetylenes), and the biosynthesis of antibiotics and porphyrin-related molecules. His work on iron polyene complexes established the dynamic nature of such metal-pi bonds. He made major contributions to understanding the nature of backbone carbonium rearrangements in polycyclic compounds related to steroid biosynthesis. The largest impact of Howard's work on organic chemistry came out of his pioneering work on the design, synthesis and study of tweezer and container molecules (para- and metacyclophanes). His molecules were characterized by aromatic rings singly-, doubly- or triply-bridged by semi-rigid connectors (often acetylenes, but also para and meta-substituted aromatic and heteroaromatic rings). These molecules formed host-guest complexes with suitably sized and functionalized aromatic compounds, and allowed the study of the interactions that held such complexes together. In the later stages of this work, the bridges as well as the container aromatic rings were ingeniously fitted with functional groups to create enzyme-like cavities for catalytic reactions within the interior of the host. Many of the papers in this area were the result of a long-term collaboration with his wife Barbara Whitlock.

Howard's long term and passionate interest in all things computer made him a resource for computer and software-related questions for his colleagues and graduate students in the department. He was instrumental in bringing the first shared mainframe computer to the Chemistry Department (a retired military computer) to found what is now the Chemistry Computing Center. He also introduced computational exercises into the teaching of organic chemistry for graduate students, and taught a course on programming in the C language for chemists. He applied his programming skills to write and commercialize the first widely used program for computer-assisted drawing of high-quality chemical structures (WIMP, the Wisconsin Interactive Molecule Processor), which was used by organic chemists around the world. These interests resulted in a number of publications on the use of artificial intelligence to deal with organic structures, and computer algorithms to replicate the thinking of a synthetic organic chemist (computational organic synthesis).

(continued)

Howard loved spending time outdoors. Despite the demands of teaching and research, he was an avid biker and enjoyed long rides in the country. Vacations often involved camping and canoeing with his family in northern Wisconsin, or with the Boy Scouts in the Boundary Waters. In the summers, he spent many hours working in the garden, especially enjoying the homegrown tomatoes and peppers. He liked to joke that he was an organic gardener, since he only used organic chemicals in the garden. Howard, and neighbor Lee Holt, had the vision to initiate fund-raising to protect what is now known as Kettle Pond Conservation Park. Many in the community pledged support. Keeping the area in its natural state was a new concept for the City of Madison at the time.

The creativity that led to Howard's successful research career also extended to home. Howard enjoyed all sorts of arts and crafts, especially woodworking, and shared his enthusiasm and ingenuity with his children. Many of the projects that he made for his children many years ago are still enjoyed by his grandchildren today.

Howard is survived by his wife, Barbara; daughter, Barbara Whitlock, son-in-law Paul Groff, grandchildren, Andrew Groff and Emily Groff; sister, Anita Whitlock; brother, Rodger Whitlock; sister-in- law, Muriel Shortreed; sister-in law, Dorothy Shortreed and her daughters, Bev, Patty and Barb Shortreed. Howard was preceded in death by his son Robert, and brother-in-law, Robert Shortreed.

MEMORIAL COMMITTEE
Robert J. McMahon
Hans J. Reich, Chair