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D. Wayne Goodman (1945–2012)

With great sadness we report that D. Wayne Goodman, Professor of Physical Chemistry at the Texas A&M University at College Station, died on Monday, February 27, 2012 at the age of 66, after a lengthy and difficult battle with cancer. His contributions to the understanding of catalysis and to the people who worked in this field were many in number and very deep in impact.

Wayne received his Ph.D. in Physical Chemistry in 1975 at the University of Texas, Austin, under the supervision of M. J. S. Dewar, where his research included some of the earliest measurements and full analysis of the photoelectron spectra of inorganic molecules. After completing his Ph.D., Wayne won a NATO fellowship. He spent a year between 1975 and 1976 at the TH Darmstadt as a postdoctoral fellow in Germany, where he learned to speak German. He then became an NRC Research Fellow at the National Bureau of Standards near Washington, DC. At the "Bureau" (now NIST), he worked under the supervision of two pioneers in the field of surface science, Ted Madey and John Yates. Among several important accomplishments during his tenure there, Wayne produced landmark publications on the metal-catalyzed CO methanation reaction. Using well-defined single-crystal model catalysts of Ni and Ru and a novel, UHV-attached "high" pressure catalytic reactor, his work provided conclusive evidence that CO methanation is a structure-insensitive reaction.

Wayne's scientific career took off in the 1980s; these were highly productive years that established him as a leading figure in surface science and heterogeneous catalysis. At Sandia National Laboratories in Albuquerque, New Mexico, he identified "long-range" effects of some surface modifiers giving new perspectives on phenomena associated with poisoning and promotion of catalytic reactions. Wayne also initiated research efforts focused on analyzing the hydrogenolysis of alkanes, cyclohexane dehydrogenation, methanol synthesis, CO oxidation, and NO reduction. His fundamental studies continued to explore links between surface structure and surface reactivity, and help to establish an approach followed by many research groups in subsequent years.

Wayne took a faculty position in the Department of Chemistry at Texas A&M University in 1988, where he remained, holding the Robert A. Welch Foundation Chair at the time of his death. The academic environment of Texas A&M added a new dimension to Wayne's life. It was a joy for him to teach general chemistry to undergraduates, and Prof. Goodman's lectures became very popular among the students. Within a few short years, he was also able to establish one of the best laboratories for surface science in the United States.

In the early 1990s, following work he initiated at Sandia, his group at A&M performed systematic studies of the physical and chemical properties of bimetallic surfaces and strained metal overlayers. Clear correlations were found between the electronic perturbations induced by bimetallic bonding and variations in the chemical and catalytic activity of the metals. After making many high-impact discoveries in this area, Wayne shifted his attention to the chemistry of oxide surfaces and the interaction of well-defined metal nanoparticles with oxide supports, where he elucidated key aspects of particle size effects in catalysis. His group developed models of metal/oxide interfaces that have become valuable tools for imaging and imagining the structure of supported heterogeneous catalysts. In the late 1990s, his studies of catalysis by supported Au nanoparticles received wide recognition, with many papers, citations, and invited lectures all over the world. He also led elegant kinetic and spectroscopic studies of vinyl acetate synthesis over metal alloys, unraveling key phenomena for the preparation of oxygenates.

Wayne published over 500 papers in surface science and heterogeneous catalysis. His work in these areas over the last 30 years has helped to transform catalysis from a primarily applications-oriented discipline to a highly sophisticated scientific enterprise. For these scientific accomplishments, Wayne received numerous awards and honors. From the American Chemical Society, he received the Ipatieff Prize in Catalysis (1983), the Kendall Award in Colloid and Surface Chemistry (1993), the Arthur W. Adamson Award for Distinguished Service in Advancement of Surface Chemistry (2002), and the Gabor A. Somorjai Award for Creative Research in Catalysis (2005). Wayne was a Robert Burwell Lecturer for the North American Catalysis Society (1997), and has been elected as a fellow of the American Chemical Society, and the American Vacuum Society. His work was also acknowledged internationally. He received the Yarwood medal from the British Vacuum Society and was elected Fellows of the Royal Society of Chemistry and of the Institute of Physics. In 1995 he won a Humboldt Senior Scientist Research Award from the German Humboldt Foundation, with which he spent time in Bochum and Berlin. He served as an Associate Editor of the *Journal of Catalysis*, and as a member of the Editorial Boards of *Surface Science*, *Applied Surface Science*, *Langmuir*, *Catalysis Letters*, *Journal of Molecular Catalysis A*, *Chemical Physics Letters* and the *Journal of Physics: Condensed Matter*. He also mentored a large number of graduate students and postdocs.

D. Wayne Goodman

On a personal note, we attest to Wayne's infectious enthusiasm for science and life, his natural tendency to forge deep friendships with almost everyone he knew, his incredible sense of humor, and his deep commitment to his family, friends and institutions. His successful efforts to reveal some of mother nature's closely guarded secrets were an inspiration to all who knew him. As importantly, Wayne was a friend to all, who could always be counted on to entertain, enlighten, support, and debate. Wayne is survived by his wife, his son, his father, a brother, and a sister.

Note: Some of the above material was adapted from the preface to the special issue of the Journal of Physical Chemistry C (*Vol. 114*, *No. 40*, **2010**) published in honor of Wayne Goodman's 65th birthday. In the same issue, there is an autobiography written by Wayne Goodman.

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