



Professor D. Wayne Goodman, 1945–2012

Dr. D. Wayne Goodman, an internationally recognized Texas A&M University Distinguished Professor, whose many pioneering career achievements helped to revolutionize our understanding of fundamental processes in the area of catalysis, died on February 27 after a long and difficult battle with cancer. He was 66.

Goodman was born in Glen Allen, Mississippi, on December 14, 1945. He attended Mississippi College in Clinton, Mississippi, where he earned a B.S. in Chemistry with Honors in 1968. After that, he moved to the University of Texas in Austin to obtain a Ph.D. in Physical Chemistry. In Austin, Goodman worked under the supervision of M. J. S. Dewar measuring and analyzing the photoelectron spectra of inorganic molecules. The work touched important areas in physical and inorganic chemistry. The capabilities of photoelectron spectroscopy to study the electronic properties of molecules were evaluated while examining the correlations between bonding and molecular structure in phosphines and arsines. The research papers

published from that work had a strong scientific impact in their field and are still cited nowadays, 30–35 years after appearing in the literature.

In 1975, Goodman won a NATO fellowship and then became a NRC Research Fellow at the National Bureau of Standards in Washington, DC. At the Bureau, he worked under the supervision of two pioneers in the field of surface science, Ted Madey and John Yates. In 1979–1980, Wayne, Madey, Yates, and Robert Kelley produced landmark articles in CO methanation. Using well-defined surfaces of Ni and Ru, they provided conclusive evidence that CO methanation is a structure-insensitive reaction. A layer of carbon, generated by the disproportionation of CO, controls the kinetics of the reaction on metals. This work highlighted the importance of surface modifiers in heterogeneous catalysis.

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The 1980s were very productive years for Goodman, who quickly became a leading figure in surface science and heterogeneous catalysis. At Sandia National Laboratories, he launched a research program to investigate the effects of electronegative (S, N, O) and electropositive (K, Cs) adatoms on the chemical and catalytic properties of metal surfaces. His data showed the long-range effect of some surface modifiers, giving new perspectives for phenomena associated with poisoning and promotion of catalytic reactions. These studies were made possible by the development of novel instrumentation that combined high-pressure reactors with ultrahigh-vacuum chambers for surface characterization. Wayne's fundamental studies explored links between surface structure and surface reactivity, helping to establish an approach followed by many research groups in subsequent years.

Goodman accepted an offer of a faculty position in the Department of Chemistry at Texas A&M University in 1988. The academic environment of Texas A&M added a new dimension to Goodman's life. The lectures of Professor Goodman became very popular among the students. He applied his drive for excellence to teaching, with outstanding results. Furthermore, in a few years, he was also able to set up at A&M one of the best surface science laboratories in the United States. In the last 20 years, his group at A&M has performed systematic studies examining correlations between the physical and chemical properties of bimetallic surfaces and metal/oxide interfaces. His studies on the chemical activation of supported Au nanoparticles received wide recognition, with many papers, citations and invited lectures all over the world.

Wayne Goodman published over 530 papers in surface science and heterogeneous catalysis, helping to transform the field into a much more rigorous scientific discipline. For his scientific efforts, he received many awards and honors. From the American Chemical Society, he received the Ipatieff Prize in catalysis (1983), the Kendall Award in surface chemistry (1993), the Arthur W. Adamson Award for distinguished service in 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). He was elected as a fellow of the Royal Society of Chemistry, the Institute of Physics, and the American Vacuum Society. 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*. In 2010, the ACS celebrated the many contributions of Wayne Goodman to science with a complete volume of its flagship physical chemistry publication, *The Journal of Physical Chemistry (J. Phys. Chem. C 2010, Vol. 114, Issue 40)*.

Goodman's infectious enthusiasm for catalysis and his incredible sense of humor touched all those who worked around him, making their lives brighter. After working with him and feeling his human side, listening to his stories and insights, many graduate students and postdoctoral associates moved into successful lives in academia and industry. This was his major satisfaction: "*For this, I am the proudest. The science has been incredibly amusing, but seeing students develop into seasoned scientists, moving on toward their career goals, and building successful lives is a supreme rush for me.*"

For those many scientists like us who so greatly benefitted from his engaging personal traits and his dedicated service to

science, to his mentees and to his friends, we say: "Thank you, old friend, we will greatly miss working with you!"

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