

obituaries

To notify the community about a colleague's death, subscribers can visit <http://www.physicstoday.org/obits>, where they can submit obituaries (up to 750 words), comments, and reminiscences. Each month recently posted material will be summarized here, in print. Select online obituaries will later appear in print.

Theodore Eugene Madey

Theodore Eugene Madey, a professor in the departments of physics and chemistry at Rutgers University, died on 27 July 2008 at his home in Somerset, New Jersey, following a battle with lung cancer. He will be remembered for his foundational work in surface science, at the interface between surface physics and surface chemistry.

Ted was born on 24 October 1937 in Wilmington, Delaware, and spent most of his early life in Baltimore, Maryland. He obtained a BS degree in physics from Loyola College in Baltimore in 1959. For his PhD in physics from the University of Notre Dame in 1963, he worked with Alex Petruskas and Edward Coomes on field-emission studies of the surface diffusion of strontium on tungsten. That same year he joined the National Bureau of Standards (now NIST) as a National Research Council postdoctoral fellow; he worked in the physical chemistry division there for 25 years.

At NBS, I had the privilege of working with Ted for 19 years on a number of surface phenomena related to adsorbed molecules, mainly on single-crystal surfaces. Those studies involved both thermal and electron-stimulated desorption. We found that the electronic excitation of small molecules



AMERICAN VACUUM SOCIETY/AIP/ESVA

Theodore Eugene Madey

chemisorbed on single-crystal surfaces produced ions that escaped in sharp beams—the ESDIAD (electron-stimulated desorption ion angular distribution) phenomenon. The ion emission direction was closely related to the direction of the chemical bond being broken in the adsorbate, which made ESDIAD a powerful surface-structure tool. Our first ESDIAD paper was initially rejected by *Physical Review Letters* because a five-letter maximum for acronyms was then in effect.

We also used x-ray photoelectron spectroscopy for the first studies of adsorbed molecules on atomically clean surfaces and showed that the new XPS method gave meaningful chemical information about species in the surface monolayer as well as quantitative surface coverage information. During the 1970s much of the interest in the nature of chemisorbed species was derived from the desire to accurately characterize the chemisorbed molecules involved in heterogeneous catalysis.

Ted received many awards for his scientific work at NBS and attained the position of NBS fellow in 1983. In a conversation with Paul Redhead about our early review article on electron-stimulated desorption, which had achieved distinction in citation indices as a "citation classic," Ted remarked, "We would have written it in Latin if

we had known it was to be a classic."

In 1988 Ted moved to Rutgers University, where he was appointed State of New Jersey Professor of Surface Science and director of the Laboratory for Surface Modification. Under his leadership, the lab became internationally recognized for its surface-science research. There he pioneered the production of faceted single-crystal metal surfaces and studied their application as models for heterogeneous catalysis research. He also used photon-stimulated desorption to do laboratory investigations into the mode of production of sodium clouds on the Moon and Mercury. With Robert Johnson and Thom Orlando he wrote the memorable paper "Far-out Surface Science: Radiation-induced Surface Processes in the Solar System," which was published in 2002 in *Surface Science* (volume 500, page 838). While at Rutgers, Ted became interested in the surface chemistry induced by photons in the extreme UV region and in the radiation-induced contamination of first-surface mirrors used in high-resolution lithography for semiconductor device fabrication.

Ted was an outstanding member of the scientific community who served actively on many US and international advisory boards. From 1990 to 1995, he was on the American Institute of Physics's PHYSICS TODAY advisory committee. In the American Vacuum Society, he held several leadership positions, including its presidency in 1981, and was known as Mr. AVS. From 1992 to 1995, he also was president of the International Union for Vacuum Science, Technique, and Application. His great interest in helping develop surface science internationally was rooted in his Polish ancestry, and in 2004 the University of Wrocław recognized his long scientific connection to Poland. I was able to attend the ceremony; it was especially moving to witness and to hear the orchestra play the Academic Festival Overture during the colorful procession: Johannes Brahms had composed the music as a thank-you for receiving the same honorary doctorate in 1879.

Ted published more than 400 papers covering a broad range of surface phenomena. He was an extraordinary scientist with the highest standards in measurement and interpretation. His deep scientific insight, accompanied by his personal warmth, kindness, and humor, will be missed by a great many friends and colleagues fortunate to have known and worked with him.

John T. Yates Jr
University of Virginia
Charlottesville

Recently posted death notices at <http://www.physicstoday.org/obits>:

William C. Kelly

18 March 1922 – 14 November 2008

Paul Pogust Kisliuk

22 February 1922 – 5 November 2008

Henry Loomis

19 April 1919 – 2 November 2008

Leon J. Kosofsky

1920 – 10 October 2008

Donald G. Coyne

1936 – 1 October 2008

Bob Siemann

3 December 1942 – 16 September 2008

Nikolai Borisovich Delone

22 May 1926 – 11 September 2008

Yehoshua Levinson

22 March 1932 – 28 July 2008