

AWARDS

Award for Distinguished Contribution in Mass Spectrometry

Award Lecture: Tuesday, 8:00 am



This Award recognizes a focused, singular achievement in, or contribution to, fundamental applied mass spectrometry. The 2003 award is presented to **Fred W. McLafferty** of Cornell University for his monumental contribution to the mechanistic definition of the 6-membered ring hydrogen rearrangement in the gas-phase ion chemistry of carbonyl compounds, now known as the "McLafferty Rearrangement". His landmark paper in the January, 1959 issue of *Analytical Chemistry* unified his and others' observations by defining an interpretative framework for this and other gas-phase ionic reactions. The importance of the McLafferty rearrangement goes beyond this interesting and structurally specific rearrangement. His work introduced a way of thinking about mass spectral fragmentation and showed that the principles of physical and physical organic chemistry are applicable to the fragmentation of ions in the gas phase.

Professor McLafferty's research over many years has touched and profoundly influenced nearly every aspect of organic, bioorganic, and analytical mass spectrometry. He has made important contributions to scientific instrumentation development: four-sector tandem mass spectrometry, neutralization/reionization mass spectrometry, biological Fourier-transform mass spectrometry, and electron capture dissociation. He is also the leader of the application of computers to the assignment and the interpretation of mass spectra, and has compiled the world's largest and most complete electron ionization mass spectral database. In all these areas, Professor McLafferty has not only made substantial scientific contributions of his own, but has also provided a vision of the potential of these methods for solving intractable problems, thus guiding the evolution and development of the field of mass spectrometry.

After receiving his Ph.D. from Cornell University and being a postdoctoral fellow at the University of Iowa, Fred McLafferty joined Dow Chemical Co. where he was in charge of mass spectrometry and gas chromatography. He was the first Director of Dow's Eastern Research Lab. for basic research. He became Professor of Chemistry in 1964 at Purdue University and in 1968 at Cornell University. Professor McLafferty has received numerous prestigious awards, including American Chemical Society awards in Chemical Instrumentation, the Fisher Award in Analytical Chemistry and the Field and Franklin Award in Mass Spectrometry. Currently, he is a Professor Emeritus at Cornell University.

The Biemann Medal

Award Lecture: Wednesday, 8:00 am



The Biemann Medal recognizes a significant achievement in basic or applied mass spectrometry made by an individual early in his or her career. The award is presented in honor of Professor Klaus Biemann and is endowed by contributions from his students, postdoctoral associates, and friends. The 2003 Medal is presented to **Carol V. Robinson** of Cambridge University for her achievements and contributions to the areas of protein mass spectrometry and structural biology.

Professor Robinson has pioneered the application of mass spectrometry to the understanding of the mechanism of protein folding and the investigation of protein-protein interactions by generating multi-molecular complexes in the gas phase. Of particular importance is her use of hydrogen-deuterium exchange monitored by mass spectrometry to elucidate pathways of protein folding and the development of similar approaches to probe the conformation of protein folding intermediates bound to GroEL. Her work provided completely new insight into the mechanism of molecular chaperone action in protein folding. Professor Robinson's contributions have made significant progress in addressing central problems of structural biology and in exploring the underlying mechanisms of amyloid diseases that are typically characterized by aberrant protein folding. She has also accomplished groundbreaking work in the mass spectrometry of large molecules exceeding one megadalton, including virus capsids and even intact ribosomes.

Professor Robinson received her Master of Science degree under Professor John Beynon at the University of Wales and her Ph.D. degree from Cambridge University under the supervision of Professor Dudley Williams. After a career break while her children were young, she received a Royal Society Research Fellowship in 1995 and assumed the position of Director of the Oxford Centre for Molecular Sciences. In 1999 she became one of the youngest professors and also one of only 17 women with the title of Professor within Oxford University. She has published over 80 papers, including two articles in *Nature* and one report in *Science*, and filed three patents for discoveries made at Oxford. She recently moved to Cambridge University and currently holds the rank of University Professor in the Department of Chemistry.