

## **The Alumni Distinguished Lectureship**

This Award has been created by Chemistry's friends and alumni to provide for the visits of prominent scientists to the Department. During their visit, these scientists will either present a series of lectures or participate in a regular instructional program in the Department and will interact with faculty and students in a collegial atmosphere.

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## **PREVIOUS DISTINGUISHED ALUMNI LECTURERS**

*Spring 1997*

**Professor Peter G. Schultz**

*Spring 1998*

**Professor Keith Woo**

*Fall 1998*

**Professor Peter Wipf**

*Spring 1999*

**Dr. Michael K. Bowman**

*Fall 1999*

**Professor Robert H. Grubbs**

*Fall 2000*

**Dr. Howard Katz**

*Spring 2001*

**Professor Joseph Francisco**

*Fall 2001*

**Dr. Phaedon Avouris**

*Spring 2002*

**Professor Alison Williams**

*Fall 2003*

**Professor Harry B. Gray**

## **THE ALUMNI DISTINGUISHED LECTURESHP**

Presents

**Professor  
Harry B. Gray**

**Arnold O. Beckman  
Professor of Chemistry  
Department of Chemistry  
California Institute of Technology**

Sponsored by

Friends and Alumni of the  
Department of Chemistry  
Michigan State University

**Thursday  
September 18, 2003**



**Lecture Topic for  
Thursday, Sept. 18, 2003**

*“The Currents of Life: Electron Tunneling  
through Iron and Copper Proteins”*

4:00 p.m., Room 136  
Chemistry Building – MSU

**Harry B. Gray** is the Arnold O. Beckman Professor of Chemistry and the founding director of the Beckman Institute at Caltech. He began his work in Inorganic Chemistry at Northwestern University,

earning his Ph.D. in 1960 with Fred Basolo. After a postdoctoral year with Carl Bellhansen at the University of Copenhagen, he joined the chemistry faculty at Columbia University. His main interests centered on the electronic structures and reactions of inorganic complexes. During the years 1958-64, he worked on ligand substitution mechanisms, establishing fundamental principles that were published in a book with C.H. Langford in 1966. This is just one of several texts authored by Professor Gray that have helped form the basis of modern education in inorganic chemistry. During this same time period, he pioneered the application of molecular orbital theory to describe the electronic structures of transition metal complexes. After moving to Caltech in 1966, he and co-workers began investigating the photochemistry of metal complexes, work that continues in various forms in his laboratories today. In the 1980's, Professor Gray turned his attention to the problem of electron transfer in biological systems. Working with his new trademark Ru-modified proteins, Professor Gray and his co-workers demonstrated that electrons can tunnel rapidly over long distances through folded polypeptide structures. With his colleague J. R. Winkler, Gray developed the “flash-quench” technique which enabled him to investigate the free energy and distance dependencies of electron tunneling through proteins and other

biological molecules. This led to seminal contributions in the area of biological electron transfer and the mapping of electron tunneling wires associated with the active sites of cytochrome P450 and other redox enzymes. Professor Gray's research accomplishments are equaled only by his commitment to education, which has been recently recognized through his receipt of the 2001 ACS George Pimentel Award for Chemical Education.

Harry Gray has received the National Medal of Science from President Ronald Reagan (1986); the Bailar Medal (1984); the Centenary Medal (1985); the Pauling Medal (1986); the Linderstrøm-Lang Prize (Copenhagen, 1991); the Basolo Medal (1994); the Gibbs Medal (1994); the Chandler Medal (1999); the Harvey Prize (Haifa, 2000); the Nichols Medal (2003); the Wheland Medal (2003); the Grollman Award (2003); the National Academy of Sciences Award in Chemical Sciences (2003); and six national awards from the American Chemical Society, including the Priestley Medal (1991). He is a member of the National Academy of Sciences; the American Academy of Arts and Sciences; and a foreign member of the Royal Danish Academy of Sciences and Letters, the Royal Swedish Academy of Sciences and the Royal Society of Great Britain. He was California Scientist of the Year in 1988.