



SEMINAR

Watching the Protein Mambo: Fast Probes of Enzyme Dynamics

*Presented by
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ABSTRACT: Enzymes are involved in a wide range of human diseases and are the targets of nearly half of pharmaceuticals currently in use. A molecular understanding of how enzymes interact with substrates on their way to products is the foundation for rational drug design. There is an emerging view that enzyme dynamics play a role in some enzyme-catalyzed reactions, but this idea is a source of significant controversy. Enzyme dynamics have been invoked to explain experimental studies of kinetic isotope effects on hydride and hydrogen atom transfer reactions. Computational simulations of many of the same reactions suggest that motions at the femtosecond to picosecond time scale are most likely to contribute to the catalyzed reaction. Characterizing enzyme dynamics at this time scale is challenging. We are using recently developed two-dimensional infrared and photon echo spectroscopies to measure active-site fluctuations in enzymes and characterizing the nature of those dynamics and their potential functional relevance.

BIOGRAPHY: Dr. Cheatum is currently Assistant Professor of Chemistry at the University of Iowa in Iowa City Iowa. Chris earned his B.S. degree in Chemistry from the University of New Mexico in 1995 and his Ph.D in Physical Chemistry from the University of Wisconsin-Madison in 2001. In graduate school, Chris worked under the guidance of Fleming Crim and then completed two years of post-doctoral research with Andrei Tokmakoff at MIT before joining the faculty at Iowa in 2003.

Faculty, staff and students are cordially invited to attend