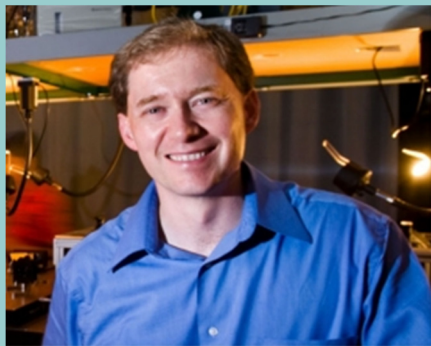


Analytical & Physical Seminar



Prof. Christopher Cheatum

University of Iowa

Thursday, October 8th

12:15 p.m. in room 1315 Chemistry

Enzyme Dynamics and their Role in Enzyme-catalyzed Reactions

2D IR spectroscopy is a powerful tool for probing the dynamics in the environment around a vibrational chromophore. Using selected vibrational chromophores that we can place in the active site of enzymes, we use 2D IR spectroscopy to probe the active site dynamics of enzymes at the femtosecond to picosecond timescale. We probe the changes in those dynamics and their temperature dependence as a result of active-site mutations that are known to have a significant impact on the enzyme kinetics and kinetic isotope effects. Our results provide a test of models for the kinetics of the enzyme-catalyzed reaction that invoke motions of the enzyme at femtosecond to picosecond timescales to explain the temperature (in)dependence of isotope effects in these systems.