REACTION DYNAMICS OF THE BROMINE-BROMOFORM COMPLEX IN SOLUTION

THOMAS J. PRESTON, MAITREYA DUTTA and F. FLEMING CRIM, *The University of Wisconsin-Madison, Department of Chemistry, 1101 University Avenue, Madison, WI 53706.*

We have followed the evolution of the bromine species that arise from the photolysis of bromoform in the condensed phase. Solvent caging promotes the formation of iso-bromoform ($CHBr_2$-Br), which can then release a Br atom by breaking the newly formed Br-Br bond. This ejected Br can form a van der Waals complex (Br-$CHBr_3$) with a nearby un-photolyzed bromoform molecule, which is stable during our 1 ns time-window. Using the van der Waals complex as a reservoir for Br atoms, we now proceed to drive hydrogen abstraction from $CHBr_3$ by Br. Estimates indicate that the barrier to this reaction is a few thousand wavenumbers. Our goal is to introduce excitation into the C-H stretching motion of a nearby solvent $CHBr_3$ to access the activated complex region of the bimolecular potential energy surface.