THE USE OF INERT GAS MATRICES IN THE STUDY OF COOPERATIVE PHOTOCHEMICAL PROCESSES

SAMUEL A. ABRASH, AMY BURROUGHS, RUTH DANIELS, BRADEN GIORDANO, JANNINE HABERMAN and KAVITHA VEDHANAYAKAM, *Department of Chemistry, University of Richmond, Richmond, VA 23173*.

The photochemistry of weakly bound complexes has been show by a number of authors to sometimes result in anomalous product branching when compared to the product branching due to photochemistry of the uncomplexed reactants. Such anomalous product branching has been labeled cooperative chemistry. Recently, it has been observed that such cooperative chemistry can be observed even in systems where the chromophore in the complex is excited to a purely repulsive excited state. The phenomenon is illustrated by results on photochemistry of complexes of HI with acetylene. An ad-hoc model is presented to explain the results, and allow prediction of the presence or absence of cooperative chemistry. Preliminary tests of the predictions on the photochemistry of complexes of hydrogen sulfide with acetylene are reported.