INFRARED TRIGGERED REACTION IN THE $SF_6^- \cdot$HCOOH COMPLEX

HOLGER SCHNEIDER, KAITO TAKAHASHI, REX T. SKODJE, J. MATHIAS WEBER, *JILA, NIST, and Department of Chemistry and Biochemistry, University of Colorado, Boulder, Colorado 80309*.

Formic acid binds to the SF_6^- anion in a single (OH-F) H bond, with the CH group weakly tethered to a neighboring F atom. Similar to the case of $SF_6^- \cdot H_2O$ complexes, the SF bond involved in the (OH-F) H bond is significantly stretched and weakened by the attachment of the HCOOH ligand. The complex undergoes a reaction upon infrared absorption of one quantum in the OH or CH stretching mode of the formic acid moiety, leading predominantly to the formation of SF_4^-, HF, and CO_2. The reaction can be inhibited by attachment of two Ar atoms. We present IR photodissociation spectroscopy results and theoretical data illustrating the reaction mechanism.