K_A-BAND ROTATIONAL SPECTROSCOPY OF N-HALOSUCCINIMIDES

CHISOM ADAOBI DIM, *Department of Chemistry, University of California, Davis, Davis, CA, USA*; CAROLINE SORRELLS, *Department of Chemistry, Harvey Mudd College, Claremont, CA, USA*; S E WORTHINGTON-KIRSCH, *Department of Chemistry, University of California, Davis, Davis, CA, USA*; A. O. HERNANDEZ-CASTILLO, *Department of Chemistry, Harvey Mudd College, Claremont, CA, USA*; KYLE N. CRABTREE, *Department of Chemistry, University of California, Davis, Davis, CA, USA*.

N-halosuccinimides are important reagents in organic synthesis and in the chemistry of natural products, they can mediate or catalyze many reactions including halocyclizations and formation of heterocyclic systems. Surprisingly, these molecules have not been previously investigated by rotational spectroscopy. In organic chemistry, halogen substituents are known to be inductively electron withdrawing and resonance donating. To explore the effect of the halogen substituents on the structure and electronics of succinimide, N-chlorosuccinimide, N-bromosuccinimide, and N-iodosuccinimide have been studied in the 26.5-–40 GHz range using the chirped-pulse Fourier transform microwave (CP-FTMW) spectroscopy technique. The samples were heated and coupled to a pulsed supersonic expansion to achieve rotational cooling. Experimental details and the determined molecular parameters will be discussed, along with structural comparisons among the halogenated series.