BROADBAND CHIRPED-PULSE FOURIER TRANSFORM MICROWAVE SPECTROSCOPY AND MOLECULAR STRUCTURE OF THE ARGON-1-CHLORO-1-FLUOROETHYLENE COMPLEX

MARK D. MARSHALL AND HELEN O. LEUNG, *Department of Chemistry, Amherst College, P.O. Box 5000, Amherst, MA 01002-5000*.

Previous studies of argon complexes with fluoroethylenes have revealed a preference for a geometry that maximizes the contact of the argon atom with heavy atoms on the fluoroethylene.[a] We have observed a continuation of this trend when one of the fluorine atoms is replaced by chlorine. As part of a systematic study of the effect of chlorine substitution on intermolecular interactions, we have examined the argon-1-chloro-1-fluoroethylene complex, and obtained the 5.6 – 18.1 GHz chirped-pulse Fourier transform microwave spectrum of this species. Transitions for both the ^{35}Cl and ^{37}Cl isotopologues are observed and analyzed to provide geometric parameters for this non-planar complex. The structure is found to be similar to those of analogous complexes and agrees well with *ab initio* predictions.

[a] Z. Kisiel, P.W. Fowler, and A.C. Legon, *J. Chem. Phys.* **95,** 2283 (1991).