PROTIC ACID HYDROGEN BONDING IN CHLOROFLUOROETHYLENES: THE HYDROGEN FLUORIDE-VINYL CHLORIDE COMPLEX

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Our studies of intermolecular complexes formed in the gas phase between protic acids (HX) and chlorofluoroethylene complexes to date have demonstrated a preference for HX binding to a F atom over hydrogen bond formation with the Cl atom. *Ab initio* calculations suggest that this may not be true for species with an increased degree of halogen substitution on the ethylene. To characterize the nature of hydrogen bond formation with the less electronegative, but more polarizable Cl atom, we have obtained the microwave spectrum of HF-vinyl chloride complex. Analysis of the spectra for the ^{35}Cl and ^{37}Cl isotopologues demonstrate that the complex is planar and provides structural parameters for this species. This allows comparisons to be made between the HX hydrogen bond to Cl and that to F.