

THE MICROWAVE SPECTRA AND MOLECULAR STRUCTURES OF THE CHIRAL AND ACHIRAL ROTAMERS OF 2,3,3-TRIFLUOROPROPENE AND THEIR GAS PHASE HETERODIMERS WITH THE ARGON ATOM

HELEN O. LEUNG, MARK D. MARSHALL, TAHA AHMAD, DAVID W. BORDEN, CAITLIN HOFFMAN, NAVIE KIM, *Chemistry Department, Amherst College, Amherst, MA, USA.*

The three minima obtained upon rotation of the difluoromethyl group in 2,3,3-trifluoromethylpropene correspond to a higher energy, achiral rotamer that contains a plane of symmetry while the two minima that share a lower energy value characterize a chiral, enantiomeric pair. Four isotopologues of each form are observed in the microwave rotational spectrum obtained using a pulsed-jet, chirped pulse Fourier transform spectrometer and the spectra of all eight have been assigned and analyzed. Additionally, spectra for four isotopologues of the gas phase heterodimer formed between the chiral rotamer and an argon atom have been obtained and analyzed using a narrowband, Balle-Flygare cavity Fourier transform instrument. For the heterodimer of the achiral rotamer with argon, only the spectrum of the most abundant isotopologue has been observed.