

INTRAMOLECULAR VIBRATIONAL ENERGY REDISTRIBUTION IN PROPYLENE OXIDE

JOHN KESKE and B. H. PATE, *Department of Chemistry, University of Virginia, McCormick Rd., Charlottesville, VA 22901.*

We have assigned the high-resolution rovibrational spectrum of the asymmetric ring CH₂ stretch of propylene oxide near 3050 cm⁻¹. Assignments are made using infrared-microwave double-resonance spectroscopy techniques in an electric resonance optothermal spectrometer. Because the barrier to threefold rotation is low for propylene oxide, we are able to assign the A and E levels separately. We find that the A and E levels display similar IVR dynamics on a time scale of about 200 ps. We observe correlation in the rotational spectra of different asymmetric top rotational levels of the bright state that is caused by the internal angular momentum of the rotor. The strength of Coriolis coupling is estimated through modeling of the intensity correlation of the spectra of these different asymmetric top rotational levels.