FAR-INFRINGEMENT SPECTROSCOPY OF SYN-VINYL ALCOHOL

PAUL RASTON, Department of Chemistry and Biochemistry, James Madison University, Harrisonburg, Virginia, USA; HAYLEY BUNN, School of Chemistry and Physics, The University of Adelaide, Adelaide, South Australia, Australia.

Vinyl alcohol has been extensively studied in both the microwave\textsuperscript{a,b} and mid-IR\textsuperscript{c,d} spectral regions, where 9 out of 15 vibrational modes have been identified. Here we present the first far-IR spectrum of vinyl alcohol, collected below 700 cm\textsuperscript{-1} at the Australian Synchrotron. The high resolution (0.001 cm\textsuperscript{-1}) spectrum reveals the $\nu_{11}$ and $\nu_{15}$ fundamentals of syn-vinyl alcohol at 489 cm\textsuperscript{-1} and 407 cm\textsuperscript{-1}, in addition to two hot bands of the $\nu_{15}$ mode at 369 cm\textsuperscript{-1} and 323 cm\textsuperscript{-1}. High $J$ transitions in the R-branch of the $\nu_{15}$ band were found to be perturbed by an $a$-axis Coriolis interaction with the nearby $\nu_{11}$ state. The $\nu_{15}$ torsional mode of syn-vinyl alcohol was fit using a Watson’s A-reduced Hamiltonian to yield rotational, centrifugal distortion, and Coriolis coupling parameters.

\textsuperscript{a}S. Saito, Chem. Phys. Lett. 42, 3 (1976)
\textsuperscript{b}M. Rodler et al., J. Am. Chem. Soc. 106, 4029 (1984)
\textsuperscript{c}Y. Koga et al., J. Mol. Spec. 145, 315 (1991)
\textsuperscript{d}D-L. Joo et al., J. Mol. Spec. 197, 68 (1999)