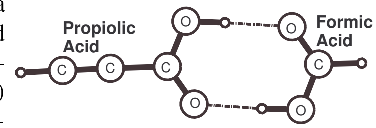
MICROWAVE SPECTRUM OF THE HYDROGEN BONDED COMPLEX BETWEEN PROPIOLIC AND FORMIC ACID [a]

ADAM M. DALY, STEPHEN G. KUKOLICH, *Department of Chemistry and Biochemistry, 1306 E. University, Tucson, Arizona 85721.*

The microwave spectrum of the gas phase complex formed between propiolic acid (HCC-COOH) and formic acid (HCOOH) along with 5 other isotopomers were obtained using a pulsed beam fourier transform microwave spectrometer. The spectra of the $HC^{12}OOH$ and $HC^{13}OOH$ isotopomers were each fit to two sets of rotational constants. The parent rotational constants were 5988.7(8), 927.782(7), 803.720(7) and 5988(1), 927.779(9) 804.058(9) MHz respectively. Isotomers containing deuterium in the OH bonds, HCOOD and HCC-COOD, do not show this feature. We tentatively assign the two sets of rotational constants to the two different inverstion states for the concerted proton tunnelling in the hydrogen bonds.



[a]Supported by THE NATIONAL SCIENCE FOUNDATION