ROTATIONAL SPECTROSCOPY OF CARBON MONOXIDE SOLVATED WITH PARA-HYDROGEN MOLECULES

PAUL L. RASTON AND WOLFGANG JÄGER, *Department of Chemistry, University of Alberta, Edmonton, Alberta T6G-2G2, Canada*.

Rotational spectra of carbon monoxide ($^{12}C^{16}O$ and $^{13}C^{16}O$) solvated with N=2 to 7 para-hydrogen (pH_2) molecules were studied by high resolution Fourier transform microwave spectroscopy. Infrared spectra of $(pH_2)_N$-CO clusters have previously been reported by Moroni *et al.*[a]. It is expected that the end-over-end rotational frequency decreases from N=2 to N=6, then increases with the addition of the next several helium atoms; this could indicate a significant decoupling of pH_2 density from CO rotation. By measuring the microwave transitions of these clusters we are able to separate the rotational and vibrational contributions to the rovibrational line positions. The trend of the pure rotational frequencies with increasing N-value will be presented.

[a] S. Moroni, M. Botti, S. De Palo, A. R. W. McKellar, *J. Chem. Phys.*, **122**, 094314 (2005).