IR-CRLAS OF SMALL BIOMOLECULES

C. J. CHAPo, J. B. PAUL, K. ROTH, and R. J. SAYKALLY, Department of Chemistry, UC Berkeley, Berkeley, CA 94720.

Infrared cavity ringdown laser absorption spectroscopy (IR-CRLAS) is a novel technique which has been used to study a wide variety of systems. Currently, we report the application of this method to study hydration of small biomolecules. We have recorded mid-infrared absorption spectra for several jet-cooled amino acids, including valine and arginine. We have also collected spectra of (water)$_n$-biomolecule clusters for these systems. In addition, we have recorded spectra in the Amide I region (1600–1700 cm$^{-1}$) for jet-cooled GlyGly, which has allowed us to begin examination of peptide backbone conformation issues. Along with ab initio frequency calculations, these results provide insight in answering questions such as the gas-phase conformation distribution and the zwitterionic state of these systems.