IR-CRLAS OF SMALL BIOMOLECULES

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Infrared cavity ringdown laser absorption spectroscopy (IR-CRLAS) is a novel technique which has been used to study a wide variety of systems.[a,b] 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 $(\text{water})_n \cdot$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.

[a] J. J. Scherer, D. Voelkel, D. J. Rakestraw, J. B. Paul, C. P. Collier, R. J. Saykally, and A. O'Keefe. *Chem. Phys. Lett.* **245**, 273 (1995).
[b] J. B. Paul, C. P. Collier, R. J. Saykally, J. J. Scherer, and A. O'Keefe. *J. Chem. Phys. A* **101**, 5211 (1997).