INFRARED LASER SPECTROSCOPY OF THE HCN-SODIUM COMPLEX EMBEDDED IN A HELIUM NANODROPLET

G. E. DOUBERLY, T. M. FALCONER, and R. E. MILLER, *Department of Chemistry, The University of North Carolina at Chapel Hill, Chapel Hill, NC 27599*.

It is well established that sodium atoms reside on the surface of helium droplets rather than being completely solvated upon pick-up. However, subsequent pick-up of a polar molecule, such as HCN or HF, results in the solvation of the sodium atom upon complexation with the chromophore. The infrared spectrum of the linear HCN-Na complex reveals an anomolous reduction in the rotational constant in comparison to the ab initio RCCSD(T) value. This result is rationalized in terms of the HCN-Na-helium intermolecular potential energy surface.