IR SPECTRA AND STRUCTURES OF THE NUCLEOBASES IN THE SUPERFLUID HELIUM DROPLETS

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Superfluid Helium Droplet Spectroscopy is being used in our group to acquire high resolution spectra and structure information on both stable and metastable species[a]. With the goal of studying tautomerism of nucleobases, which plays an important role in genetic mutation, we have extended these helium droplet studies to bio-molecules. The combination of ultralow temperature infrared vibrational spectroscopy, pendular state methods and ab initio calculations, we obtain unambiguous structures for different isomers of the nucleobases. The application of these methods to the study of base pairs will also be discussed.

[a] R. E. Miller,Faraday Discuss., 118, 1(2001).