CFEL SCIENCE

SEMINAR

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Building 99, Seminar Room I+II (EG)

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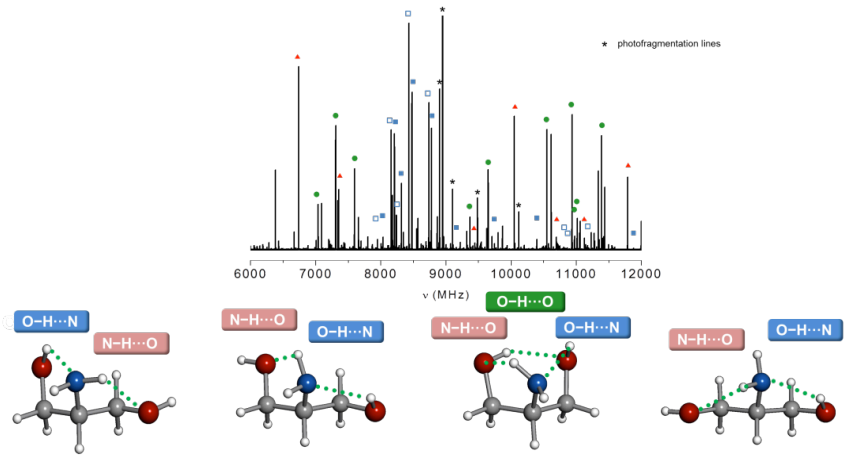
Structures and Interactions of Biomolecules from Rotational Spectroscopy

Structure and function are intimately linked in biological systems. One of the important features of biologically-relevant molecules is that they are highly flexible and can adopt different conformations – and interconvert between them – depending on the environment. What determines the conformation that a biomolecule adopts in a given situation? The role of the environment can only be ascertained if it is removed or controlled through a small number of intermolecular interactions, information that is extracted from gas-phase investigations. Over the last decades there has been a growing effort to determine biomolecular behaviour at the microscopic level through the use of different spectroscopic methods. Most spectroscopic techniques use multiphoton resonantly enhanced ionization and therefore require the presence of a UV chromophore in the target biomolecule. Rotational spectroscopy, considered the most powerful technique for structural characterisation, is not constrained by the need of a chromophore. Its combination with laser ablation for the vaporization of solid biomolecules has opened up a new range of molecules to detailed structural analysis. This technique has been applied to a variety of biomolecules, showing their preferred structures and the role of the intra- and intermolecular hydrogen bond interactions. Examples of recent work including amino acids and their complexes with water, and aminoalcohols, will be discussed.



Host: Melanie Schnell - CFEL Molecular Physics seminar