CHIRAL RECOGNITION IN NEUTRAL AND IONIC SPECIES IN THE GAS PHASE

Chirality and more generally stereochemistry effects play a key-role in molecular recognition. The study of weakly bound neutral or ionic complexes isolated in the gas phase brings information on these effects at the molecular level\(^1\). Molecular recognition manifests itself in both the energetic and structural points of view. These aspects will be illustrated on the example of amino-alcohols.

I will present results combining IR and UV spectroscopy in the gas phase with \textit{ab initio} calculations \(^2,3\). I will also describe mass-spectrometry experiments involving collision-induced dissociation (CID) and UV or IR photofragmentation \(^4,5\) of β-amino-alcohols. CID and UV fragmentation experiments of cinchona alkaloid protonated dimers lead to different fragmentation pathways. In both cases, the homochiral dimer is more strongly bound than the heterochiral adduct. These examples show how weak interactions controlled by stereochemical factors govern molecular recognition processes.

\(^{1}\) Zehnacker, A.; Suhm, M. A. \textit{Angewandte Chemie-International Edition} 2008, 47, 6970.