CHIRAL DISCRIMINATION IN JET-COOLED VAN DER WAALS COMPLEXES: ELECTRONIC AND VIBRATIONAL SPECTROSCOPY

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Chiral discrimination plays a key-role in life-chemistry and takes place
through the formation of contact pairs implying short-range stereospecific interactions: spectroscopic measurements of jet-cooled van der Waals complexes of chiral molecules therefore provides a powerful strategy for addressing the question of chiral recognition[a]. We present here a study of hydrogen-bonded complexes of chiral molecules by double resonance techniques, either UV/UV (hole burning spectroscopy) [b] or IR/UV fluorescence depletion spectra. Besides an spectroscopic means of discriminating between two enantiomers, the results presented here, coupled with DFT calculations, bring information on the nature of the forces responsible for chiral recognition. The role of the formation of a hydrogen-bonds network in chiral discrimination will be discussed.

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[b]K. Le Barbu, V. Brenner, Ph. Millie, F. Lahmani, A. Zehnacker-Rentien, J. Phys. Chem. A 102 128 (1998).