TRANSIENT/PERMANENT CHIRALITY: ROTATIONAL SPECTRA OF THE DIMERS OF ISOPROPANOL

LUCA EVANGELISTI, FEDERICO PESCI and WALTHER CAMINATI, *Dipartimento di Chimica "G. Ciamician" dell'Università, Via Selmi 2, I-40126 Bologna, Italy.*

The two mirror images of gauche isopropanol are connected through the low energy barrier of the OH torsion potential energy surface. This produces large tunnelling splittings in the rotational spectrum, and we can talk of transient chirality. We assigned the rotational spectra of five conformers of the dimer of isopropanol, all of them involving at least one gauche monomer (see the Figure to the right). The inertial effects quench the tunneling and, in the time scale of MW spectroscopy, all these systems appear as made of a pair of "classical" enantiomers. From the relative intensities of the rotational transitions of the various conformers it has been possible to estimate their relative abundances. Some interesting features related to the molecular recognition, dynamic of formation of the dimers in the supersonic expansion and sizing of the Ubbelohde effect will be discussed.