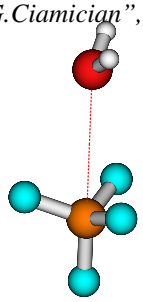
ANTI-HYDROGEN BONDING INTERACTION IN TETRAFLUOROMETHANE-WATER

A. MARIS, W. CAMINATI, A. DELL'ERBA, P. G. FAVERO, *Dipartimento di Chimica "G.Ciamician", Universita' di Bologna, Via Selmi I-40126, Italy*.



The rotational spectrum of the tetrafluoromethane-water (CF_4-W) complex has been assigned in a supersonic expansion through millimeter wave absorption spectroscopy. In order to reach the best experimental conditions mixtures with rather high concentrations of CF_4 (up to 20-30 per cent) in Ar at a pressure of 50 kPa were flown at room temperature and expanded to about 1 Pa through a pulsed nozzle with a 0.35 mm diameter. All measured isotopomers (CF_4—H_2O, CF_4—$H_2{}^{18}O$, CF_4—D_2O, CF_4—DOH) display symmetric top (prolate) spectra, because of the nearly free rotation of the water subunit with respect to CF_4. The first two isotopomers are split into two component lines due to an internal rotation of water along its C_2v axis. The water is linked to CF_4 by a C-F—O, anti hydrogen bond, interaction (see below).