HIGH RESOLUTION ANALYSIS OF HDCO IN THE 10 μm REGION

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Using new Fourier transform spectra recorded with high resolution at Giessen, it has been possible to perform an extensive study of the absorption spectra of the HDCO isotopomer of formaldehyde in the 900-1400cm^{-1} spectral range. This analysis of the ν_5 and ν_6 bands was performed starting from the results obtained previously in the same spectral region [a] and using the ground state parameters of Bocquet et al [b]

For the ν_5 band (CHD rocking) both A- and B- type transitions were observed, while the ν_6 band (out of plane bend) involves C- type and forbidden transitions. The energy level calculation was performed using first the model previously proposed by Allegrini et al.: i.e. for the v- diagonal blocks a Watson A-type Hamiltonian in Ir representation and for the off- diagonal blocks, A- and B- type Coriolis operators. Surprisingly, this model appeared unsuitable because a new type of resonance was observed. We propose a new model which satisfactory reproduces the observed energy levels.

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[a] A. Allegrini, J. W. Johns, and A.R.W.McKellar Can. J. Phys. 56, 859 (1978).

[b] R.Bocquet, J.Demaison, J.Cosleou, A.Friedrich, L.Margules, H.Mader, M.M.Beaky, and G.Winnewisser, J. Mol. Spectrosc. (in press)