INVESTIGATION OF THE ROVIBRATIONAL ENERGY PATTERN IN ACETALDEHYDE IN THE MID AND NEAR INFRARED RANGES

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Three ranges of the infrared and near infrared absorption spectrum of CH_3CHO have been recorded using a Fourier transform interferometer, under various experimental conditions: between 1300 and 3100 cm^{-1} at a resolution of 0.01 cm^{-1} under jet cooled conditions, between 1400 and 3200 cm^{-1} at a resolution of 0.008 cm^{-1} at room temperature, and between 4000 and 8000 cm^{-1} at a resolution of 0.03 cm^{-1} at room temperature. We are investigating specific bands in those ranges, all presenting problems of different nature, severely limiting the analysis in each case. We are studying ν_5 and ν_{12} respectively located at 1429.91 and 1435.83 cm^{-1}. They are two methyl bending fundamentals, with strong Coriolis interaction[a]. We are also focusing on the aldehydic CH stretch fundamental band (ν_3), located around 2716 cm^{-1} and known to be in Fermi-type interaction with $2\nu_6$[b]. Eventually, we are considering the two first overtones of the aldehydic CH stretch, observed around 5320 and 7810 cm^{-1}, presenting a dense structure.

[a] H. Hollenstein, Mol. Phys., 39 (1980) 1013.

[b] H. Hollenstein and Hs. H. Günthard, Spectrochim. Acta 27A, 2027 1971.