THE SPECTRUM OF METHYL FORMATE IN THE THZ REGION

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The THz spectrum of methyl formate-$HCOOCH_3$ is currently investigated. At first a multi-pass cell having an optical path of 150 m coupled to an internal source of the Fourier Transform spectrometer of the AILES beamline, synchrotron SOLEIL (France), was used to obtain the methyl formate THz spectrum. Preliminary assignments of the pure rotation spectrum up to 80 cm^{-1}, and of the very weak torsion band v_t = 1-0 around 130 cm^{-1} are carried out. The assignments are based on the rotation-torsion energy levels calculated using the RAM approach[b]. The particular interest in $\Delta v_t = 1$ torsion-rotation band lies in the direct experimental determination of the barrier height V_3, which up to now was determined from pure rotational transitions only, and consequently in the contribution to the improvement of the global study of the rotational levels in the lowest torsional states of methyl formate. Secondly further measurements using the synchrotron radiation are planned. The latest results will be presented.

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[b]Ilyushin, Kryvda, Alekseev, *J. Mol. Spectrosc.* (2009), doi: 10.1016/j.jms.2009.01.016