PRECISE STUDY OF CHD_3 SPECTRUM IN THE REGION OF 1900-2800 CM^{-1}

O.N. ULENIKOV and G.A. ONOPENKO, *Physics Department, Tomsk State University, 634050, Tomsk,Russia*; S. ALANKO, M. KOIVUSAARI, and R. ANTTILA, *Department of Physics, University of Oulu, Linnanmaa, Oulu, Finland* .

High resolution spectrum of CHD_3 (instrumental resolution 0.0035 cm^{-1}) was recorded on the Bruker IFS 120HR Fourier transform spectrometer (Oulu) and analyzed in the region of 1900-2800 cm^{-1}. Spectrum in this region contains two strong fundamental bands $\nu_2(A_1)$ and $\nu_4(E)$, and some weak combination and overtone bands $2\nu_3(A1)$, $\nu_3+\nu_6(E)$, $2\nu_6(A_1)$, $2\nu_6(E)$, $\nu_3+\nu_5(E)$, $\nu_5+\nu_6(A_1)$, $\nu_5+\nu_6(E)$, $2\nu_5(A1)$, and $2\nu_5(E)$. There are only few detailed studies of spectrum in this region[a−d]. However, even at the recent paper (d) parameters were not determined which would reproduce initial experimental data with satisfactory accuracies. We used for analisys specially derived model of Hamiltonian which based on the irreducible tensorial sets theory. Taking into account a).higher-order resonance interactions between above mentioned vibration-rotation bands and b).higher-order splitting parameters we obtained set of spectroscopic constants which reproduce initial experimental data with the accuracies near to experimental uncertainties. Anomalous behaviour of A_1–A_2 splittings in E-type vibrational states and anomalous shifts of energy levels in A_1-type vibrational states are discussed.
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