HIGH RESOLUTION IR SPECTROSCOPY AND ANALYSIS OF THE BENDING DYAD OF RuO_4

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RuO_4 is a heavy tetrahedral molecule of interest in several fields. Due to its chemical toxicity and radiological impact of its 103 and 106 isotopologues, the possible remote sensing of this compound in the atmosphere in case of possible severe nuclear accident has renewed interest in its spectroscopic properties. We investigate here, for the first time at high resolution, the bending modes region in the far infrared. High resolution FTIR spectra have been recorded near room temperature, using a specially constructed cell and an isotopically pure sample of $^{102}RuO_4$. New assignments and effective Hamiltonian parameter fits for the main isotopologue ($^{102}RuO_4$) have been performed, treating the whole ν_2-ν_4 bending mode dyad. We provide precise effective Hamiltonian parameters, including band centers and Coriolis interaction parameters [1].

[1] S. Reymond-Laruinaz, M. Faye, V. Boudon, D. Doizi, L. Manceron, "High-resolution Infrared Spectroscopy and analysis of the ν_2-ν_4 bending dyad of Ruthenium Tetroxide", J. Mol. Spectrosc. 336 (2017) 29.