

## LINE INTENSITY MEASUREMENTS AND ANALYSIS IN THE $\nu_3$ BAND OF RUTHENIUM TETROXIDE

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Ruthenium tetroxide ( $\text{RuO}_4$ ) is a heavy tetrahedral molecule characterized by an unusual volatility near ambient temperature. Because of its chemical toxicity and the radiological impact of its  $^{103}\text{Ru}$  and  $^{106}\text{Ru}$  isotopologues, the possible remote sensing of this compound in the atmosphere has renewed interest in its spectroscopic properties. In a recent study, the strong fundamental band associated with the excitation of the infrared active stretching mode  $\nu_3$  of  $^{102}\text{Ru}^{16}\text{O}_4$ , observed near  $10\ \mu\text{m}$ , was re-investigated at high-resolution ( $0.001\ \text{cm}^{-1}$ ) with the help of a  $^{102}\text{Ru}$  isotopically pure sample.<sup>a</sup> Building upon that work, the present contribution is the first investigation dealing with high-resolution line-by-line intensity measurements for the  $\nu_3$  fundamental band of  $^{102}\text{Ru}^{16}\text{O}_4$ . It relies on high resolution Fourier transform infrared spectra specifically recorded at room temperature at the AILES beam line of SOLEIL using synchrotron radiation, a specially constructed cell and an isotopically pure sample of  $^{102}\text{Ru}^{16}\text{O}_4$ . Relying on an effective Hamiltonian and associated effective dipole moment,<sup>a</sup> the measured line intensities were assigned and dipole moment parameters determined. A HITRAN-formatted frequency and intensity line list was generated.

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<sup>a</sup>S. Reymond-Laruinaz, V. Boudon, L. Manceron, L. Lago, D. Doizi, *J Mol Spectrosc* 315 (2015) 46–54.