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ANALYSES OF FOUR BANDS OF THE $^{16}\text{O}^{18}\text{O}^{18}\text{O}$ ISOTOPOLOGUE OF OZONE BY CRDS IN THE 5850 – 6920 cm^{-1} REGION

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The very sensitive CW-Cavity Ring Down Spectra of ^{18}O enriched ozone isotopologues were recorded in the 5850 – 6920 cm^{-1} spectral range¹. The ozone generation from two mixtures of $^{16}\text{O}_2$ and $^{18}\text{O}_2$ leads to the production of the five ^{18}O enriched ozone isotopologues, in addition to $^{16}\text{O}_3$. The contributions of the $^{16}\text{O}^{16}\text{O}^{18}\text{O}/^{16}\text{O}^{18}\text{O}^{16}\text{O}$ and of the $^{16}\text{O}^{18}\text{O}^{18}\text{O}/^{18}\text{O}^{16}\text{O}^{18}\text{O}$ isotopomers were separated using two partial pressures of $^{16}\text{O}_2/^{18}\text{O}_2$. Here we present the results of the analysis of four rovibrational bands of the $^{16}\text{O}^{18}\text{O}^{18}\text{O}$ isotopologue of C_S symmetry: $7\nu_3$, $2\nu_2 + 5\nu_3$, $2\nu_1 + 2\nu_2 + 3\nu_3$ and $2\nu_1 + 5\nu_3$ centred at 5880, 6055, 6168, 6628 cm^{-1} , respectively. The initial assignment was performed using the band centres² and rotational constants derived from recent theoretical predictions from the molecular potential function³. For each band, the positions and intensities of the assigned transitions were modelled using the effective operator approach. The effective Hamiltonian model includes a number of dark state levels. For each band system, we will present the number of assigned transitions, the statistics of fits and some examples of agreement between measured and simulated spectra.

¹[doi:10.1016/j.jqsrt.2012.10.023](https://doi.org/10.1016/j.jqsrt.2012.10.023), D. Mondelain, A. Campargue, S. Kassi, A. Barbe, E. Starikova, M.-R. De Backer, Vl.G. Tyuterev, *J. Quant. Spectrosc. Radiat. Transfer.*, **116**, 49–66 (2013).

²<http://symp.iao.ru/ru/hrms/17/proceedings>, Vl.G. Tyuterev, R. Kochanov, S. Taskhun, *Proceedings of the XVII International Symposium HighRus-2012*, isbn:978-5-94458-133-4, 29–50 (2012).

³[doi:10.1021/jp104182q](https://doi.org/10.1021/jp104182q), F. Holka, P.G. Szalay, Th. Muller, Vl.G. Tyuterev, *J. Phys. Chem. A*, **114**, 9927–9935 (2010).