

## THz AND FT-IR STUDY OF 18-O ISOTOPOLOGUES OF SULFUR DIOXIDE: $^{32}\text{S}^{16}\text{O}^{18}\text{O}$ AND $^{32}\text{S}^{18}\text{O}_2$

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Sulfur dioxide is a molecule that have a great interest in different domains: for atmospheric and planetology chemistry, it is also ubiquitous and abundant in interstellar medium. If the  $^{16}\text{O}$  species were extensively studied, this is not the case of the  $^{18}\text{O}$  isotopologues. The aim of this study is first to complete the rotational spectra of the ground state with these new measurements up to 1.5 THz, previous measurements are up to 1050 GHz for the  $^{32}\text{S}^{16}\text{O}^{18}\text{O}$  species<sup>a</sup>, and 145 GHz concerning the  $^{32}\text{S}^{18}\text{O}_2$  species<sup>b</sup>. The second part is making a global fit of the rotational and vibrational transitions for the excited vibrational states. For the  $\nu_2$  band, we will complete the recent I.R. analysis<sup>c</sup>. About the triad ( $\nu_1, 2\nu_2, \nu_3$ ):  $^{32}\text{S}^{18}\text{O}_2$  species was studied<sup>d</sup>, but not the  $^{32}\text{S}^{16}\text{O}^{18}\text{O}$  one.

The FT-IR spectra were recorded on the AILES Beamline at Synchrotron SOLEIL using the Synchrotron light source, coupled to the Bruker IFS125HR Fourier transform spectrometer<sup>e</sup>. The THz spectra were obtained from 150 to 1500 GHz using the Lille's solid state spectrometer<sup>f</sup>. The analysis is in progress, the latest results will be presented.

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<sup>a</sup>Belov, S. P.; *et al.*, 1998, *J. Mol. Spectrosc.* **191**, 17

<sup>b</sup>Lindermayer, J.; *et al.*, 1985, *J. Mol. Spectrosc.* **110**, 357

<sup>c</sup>Gueye, F.; *et al. Mol. Phys.* **in press**

<sup>d</sup>Ulenikov, O. N.; *et al.*, 2015, *JQSRT* **166**, 13

<sup>e</sup>Brubach, J.; *et al.*, 2010, *AIP Conf. Proc.* **1214**, 81

<sup>f</sup>Zakharenko, O.; *et al.*, 2015, *J. Mol. Spectrosc.* **317**, 41