SUBMILLIMETER WAVE SPECTRUM OF THIOACETALDEHYDE AND ITS SEARCH IN SgrB2

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Sulfur chemistry in the interstellar medium is clearly misunderstood, the tenth most abundant element in the Galaxy, it is depleted in molecular clouds by a factor of 1000 [a]. This suggests that sulfur chemistry is important on icy grain mantles, and that sulfur-bearing molecules may be not detected yet due to the lack of laboratory data. The present study is about thioacetaldehyde (CH_3CHS), the analog of acetaldehyde. Previously, the rotational spectra were recorded up to 40 GHz [b],[c]. New spectra were recorded from 150 to 660 GHz using the Lille solid-state based spectrometer. The new fast version of the spectrometer using DDS component is particulary suitable for reactive species like thioacetaldehyde. Thioacetaldehyde was produced in-situ by pyrolisis at 750°C and introduced in a 1m long pyrex cell in a flow mode. Analysis of the spectra is not obvious, like in acetaldehyde, as this molecule exhibits internal rotation of the methyl group. The internal rotation barrier is higher in thioacetaldehyde, 542 cm-1, than in acetaldehyde, 408 cm-1. However, the coupling between the internal rotation and the overall rotation in thioacetaldehyde is strong, the coupling parameter ρ value is 0.261 just slightly smaller than the acetaldehyde value of 0.329. The spectroscopic results and its searches in SgrB2 will be presented.

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[c] H. Kroto; *et al.*, 1976, *J. Mol. Spectrosc.* **62**, 346