

SUBMILLIMETER WAVE STUDY OF NITROSOMETHANE (CH₃NO)

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The knowledge of synthetic routes of complex organic molecules is still far to be fully understood. The creation of reliable models is particularly challenging. Hollis et al.^a pointed out that the observations of molecular isomers provides an excellent tool to evaluate the hypothesis of the synthetic pathways. Formamide (HC(O)NH₂) is an abundant molecule in ISM detected in 1971 in SgrB2^b. We decided to investigate two isomers of formamide some years ago: formaldoxime and nitrosomethane, like they are interesting ISM targets. Formaldoxime is a classic asymmetrical spinning top, its spectrum does not present any identification difficulties, it has been published recently^c. Concerning nitrosomethane, the methyl top internal rotation should be taken into account, therefore the analysis is not obvious. We have been working on the project for several years. Analysis is performed using the version of RAM36 coded which includes the treatment of the nuclear quadrupole hyperfine structure^d. Up to now the spectroscopic studies are only available up to 40 GHz^e. We recently recorded the spectra in Lille from 225 to 660 GHz using the bolometric detection in order to improve the signal to noise ratio. The new spectroscopic results will be presented. Its presence in ISM will also be discussed. *This work was supported by the CNES and the Action sur Projets de l'INSU, PCMI.*

^aHollis, J. M.; *et al.*, 2006, *ApJ* **642**, 933

^bRubin, R. H. ; *et al.*, 1971, *ApJ* **169**, L39

^cZou L. ; *et al.*, 2021, *A&A* **649**, A60

^dIlyushin, V.V. *et al.*, 2010, *J. Mol. Spectrosc.* **259**, 26

^eTurner P. H. *et al.*, 1978, *J. Chem. Soc., Faraday Trans. 2* **74**, 533