MICROWAVE STUDIES OF GLYCEROL

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Glycerol is of interest as a potential candidate for interstellar detection in view of recent detections of the simplest sugar, glycolaldehyde (CH_2OHCHO)[a], and ethyleneglycol (CH_2OHCH_2OH)[b] in the interstellar cloud Sgr B2(N-LMH). Also this molecule presents information about the energies involved in intramolecular hydrogen bonding of vicinal hydroxyl groups. These properties were the motivations for the current study of the rotational spectra of glycerol in a pulsed nozzle FTMW spectrometer. The microwave spectrum of glycerol has been investigated by Fourier-transform microwave (FTMW) spectroscopy in the 8 GHz to 26 GHz frequency range. The prior investigation by Maccaferri, et al.[c] has been expanded, so transitions belonging to five low-lying conformers have now been assigned with three conformers assigned for the first time. The assignment of observed rotational spectra to different conformers was made on the basis of rotational constants and dipole moments from ab initio calculations which accompanied the current experimental investigation.

[a] J. M. Hollis, F. J. Lovas, and P. R. Jewell *Astrophys. J. (Letters)* **540**, L107 (2000).
[b] J. M. Hollis, F. J. Lovas, P. R. Jewell and L. H. Coudert *Astrophys. J. (Letters)* **571**, L59 (2002).
[c] G. Maccaferri, W. Caminati, and P. G. Favero *J. Chem. Soc. Faraday Trans.* **93**, 4115 (1997).