

TERAHERTZ AND FIR SYNCHROTRON SPECTRA OF METHYL MERCAPTAN, CH₃SH

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Methyl mercaptan, CH₃SH, is an abundant molecule e.g. in the high-mass star-forming region Sagittarius B2^{a,b}. It is the sulfur analog of methanol and features also threefold internal rotation of the methyl group. The most recent analysis^c consisted mostly of *a*-type transitions, treated *A* and *E* torsional species separately, and does not yield predictions of sufficient accuracy for the needs of the recently launched Herschel mission or the upcoming SOFIA and ALMA. New terahertz spectra have been recorded with microwave accuracy at the Universität zu Köln which cover thus far large portions of the 1.1–1.5 THz region as well as a section near 1.9 THz. Numerous $v_t = 0, 1$ and 2 pure rotational transitions have been assigned. FIR synchrotron spectra have recently been measured at the Canadian Light Source (CLS) between 55 and 550 cm⁻¹ at 0.001 cm⁻¹ resolution. 53, 15, and 2 subbands have been assigned thus far for the $v_t = 1 - 0, 2 - 1$ and $2 - 0$ torsional bands along with further pure rotational transitions. We will present up-to-date results from our analysis which has been started.

^aLinke et al., *Astrophys. J.* **234** (1979) L139

^bNummelin et al., *Astrophys. J. Suppl. Ser.* **117** (1998) 427

^cBettens et al., *Astrophys. J.* **510** (1999) 789