Spectroscopy of ammonia in the range 6622 to 6805 cm^{-1}: using temperature dependence towards a complete list of lower state energy transitions.

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Absorption spectra of NH_3 has been recorded by laser spectroscopy at different temperatures from 130K to 300K. Systematic analysis of the ratio of the intensity between already assigned and unassigned transitions enables the determination of the most probable energy of the lower state of the unassigned transition. Such a procedure has been applied to transitions of ammonia in the range 6622.0-6805 cm^{-1}. This information is of great interest in the considerable task of the assignment of the complete 1.5 mm infrared spectral range where combination and overtone vibrational bands are present.

1722 transitions have been observed from which 1361 values of lower state energies are derived. In this range 292 transitions were previously assigned and their assignment is confirmed by our study. Our work is compared with recent study of SUNG et al [1] covering a larger energy range (6300-7000 cm-1) using Fourier Transform spectrometer with lower temperature difference (185 -296 K). The data allow the calculation of reliable absorption spectrum at any temperature needed for astrophysical purposes.

[1]. Sung K, Brown LR, Huang X, Schwenke DW, Lee TJ, Coy SL, et al. *Journal of Quantitative Spectroscopy and Radiative Transfer* **2012**;*113*(11):1066

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