

NEW HIGH RESOLUTION SPECTROSCOPY STUDIES OF METHYL NITRITE CH₃ONO

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Methyl nitrite CH₃ONO is an important species in atmospheric chemistry involved in photochemical oxidation of volatile organic compounds. The *cis* conformer (more stable by about 298 cm⁻¹) has a high internal rotation potential barrier for the methyl group (731 cm⁻¹)^a whereas for the *trans* conformer the barrier to internal rotation is extremely low (10 cm⁻¹)^b, leading to large internal rotation splittings. Only one high resolution infrared study was performed prior to this study^c. For the first time, high-resolution spectrum of CH₃ONO was recorded in the far infrared region (30-500 cm⁻¹) using the synchrotron SOLEIL far-infrared beamline (AILES) and a Fourier transform (FT) spectrometer. Some 987 lines were assigned for the *cis* isomer up to J=65 and combined with 66 previously recorded microwave lines. In addition, high-resolution spectrum of the ν_9 band of the *cis* isomer around 627.9 cm⁻¹ was also recorded using the FT spectrometer at LISA. New microwave data is currently recorded to improve the knowledge of both the *cis* and *trans* ground state parameters.

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