ASSIGNMENT OF THE ν_9 FUNDAMENTAL OF THE CIS CONFORMER OF METHYL NITRITE IN THE HIGH RESOLUTION FTIR SPECTRUM

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The infrared spectrum of gas phase methyl nitrite (CH_3ONO) has been recorded at high resolution between 600 and 4000 cm^{-1}. Methyl nitrite contains a mixture of cis and trans rotational isomers which are interconverted by the N=O torsion. As in the ν_8 vibration of the cis form, the ν_9 vibration is not too congested, consistent with the high barrier to rotation of the methyl group in the cis form. The ν_9, with an origin at 627.9 cm $^{-1}$, has been assigned by previous workers to the ONO bend of the cis conformer and several hot bands are also present in this region. In this study, a spectrum taken at 0.0015 cm $^{-1}$ resolution on the PNNL IFS120/HR in a 20 cm cell was used to assign more than 500 A-type transitions of the cis ν_9 between 600 and 650 cm $^{-1}$ and a set of excited state constants was determined.