ASSIGNMENT OF THE $\nu_9$ 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$_3$ONO) 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 $\nu_8$ vibration of the cis form, the $\nu_9$ vibration is not too congested, consistent with the high barrier to rotation of the methyl group in the cis form. The $\nu_9$, 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 $\nu_9$ between 600 and 650 cm$^{-1}$ and a set of excited state constants was determined.