THE C-N STRETCHING VIBRONIC BANDS OF THE MgNC $\tilde{A}\,^2\Pi$ - $\tilde{X}\,^2\Sigma^+$ TRANSITION

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We have generated MgNC in supersonic free jet expansions, and measured the laser induced fluorescence excitation spectra of the C-N stretching vibronic bands of the $\tilde{A}\,^2\Pi$ - $\tilde{X}\,^2\Sigma^+$ transition. Rotational analysis yields the molecular constants of the vibronic levels, (1,0,0) and (1,0,1), in the $\tilde{A}\,^2\Pi$ state. The vibronic levels, (0,0,0), (0,1,0), and (0,0,1), were already analyzed by Wright and Miller[a]. We can not find any anomalies in the constants of the C-N stretching vibronic levels, while they are predicted to be lying above the barrier of the isomerization reaction pathway, MgNC $\leftrightarrow$ MgCN, on the $\tilde{A}\,^2\Pi$ state. On the basis of the molecular constants obtained, we discuss the fine structures of both the ground $\tilde{X}\,^2\Sigma^+$ and excited $\tilde{A}\,^2\Pi$ states.

[a] R. R. Wright and T. A. Miller, J. Mol. Spectrosc. 194, 219 (1999).