THE LOW-LYING BENDING VIBRONIC BANDS OF THE MgNC $\tilde{A}\ ^2\Pi$ – $\tilde{X}\ ^2\Sigma^+$ TRANSITION: ANALYSIS OF THE P-TYPE DOUBLING

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We have generated MgNC in supersonic free jet expansions, and measured the laser induced fluorescence excitation spectra of the Mg-N-C bending vibronic bands of the $\tilde{A}\ ^2\Pi$ – $\tilde{X}\ ^2\Sigma^+$ transition. In addition to the two vibronic bands, 2^1_0, $\kappa\ ^2\Sigma^{(+)}$ – and 2^2_0, $\kappa\ ^2\Pi$ – $^2\Sigma^+$, reported by Wright and Miller[a], the 2^2_0, $\mu\ ^2\Pi_{\frac{1}{2}}$ – $^2\Sigma^+$ sub-band were found just above the 2^1_0 vibronic band. The most remarkable feature of this newly observed sub-band is unexpected rotational structure on the upper vibronic level, $\tilde{A}$ (020) $\mu\ ^2\Pi_{\frac{1}{2}}$; i.e. the rotational levels show splitting into the e and f sub-levels and have different rotational constants on the each rotational sub-level. Introducing the Coriolis coupling terms of $-J^{\pm}G^{\mp}$ and $S^{\pm}G^{\mp}$, which could be called the **G**-uncoupling operator and the spin-Coriolis interaction, respectively, into the rotational Hamiltonian, this unexpected rotational structure has been analyzed quite reasonably.

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