OPTICAL STARK MEASUREMENT FOR THE $\tilde{A}^2\Pi(0,0,0) - X^2\Sigma^+$(0,0,0) OF MgNC

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The high resolution laser induced fluorescence spectrum of MgNC was recorded for the $\tilde{A}^2\Pi_{3/2}(0,0,0) - X^2\Sigma^+_{3/2}$(0,0,0) and the $\tilde{A}^2\Pi_{1/2}(0,0,0) - X^2\Sigma^+_{1/2}$(0,0,0) band systems and optical Stark measurements were performed on the $^{Q}R_{12}(0.5)$ and $^{P}Q_{12}(0.5)$ branch features. The field free spectrum of this band system was first measured by Wright and Miller[a]. The MgNC radicals were produced by the laser ablation of a magnesium rod in the presence of a acetonitrile/argon supersonic expansion. The permanent electric dipole moment, μ, for ^{24}MgNC was determined to be 3.116(36)D and 3.424(103)D for the $\tilde{A}^2\Pi_{1/2}$(0,0,0) and $X^2\Sigma^+_{1/2}$(0,0,0) states, respectively. The analysis of the Stark measurements will be reported and a comparison of the permanent dipole moments of MgNC and CaNC[b] will be given.

a. Wright, R. R. and Miller, T. A., *J. Mol. Spec.* **194**, 219, (1999).
b. Scurlock, C.T., Fletcher, D.A. and Steimle, T. C., *J. Chem. Phys.* **101**, 7255, (1994).