SUB-DOPPLER SPECTROSCOPY OF THE $\tilde{A}^2\Sigma^+ - \tilde{X}^2\Pi$ AND $\tilde{B}^2\Pi - \tilde{X}^2\Pi$ TRANSITIONS OF NCO

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Sub-Doppler laser induced florescence spectra were recorded of a selection of bands within the $\tilde{A}^2\Sigma^+ - \tilde{X}^2\Pi$ and $\tilde{B}^2\Pi - \tilde{X}^2\Pi$ transitions of NCO in a supersonic molecular beam. The light source was a diode seeded optical parametric oscillator, which gave an effective resolution of 0.01 cm^{-1} in the ultraviolet. Analysis of the $\tilde{A}^2\Sigma^+ - \tilde{X}^2\Pi$ transition at high resolution allowed fitting of both the fine and hyperfine structure, and a set of rotational and hyperfine constants were obtained for 13 vibronic levels within the $\tilde{A}^2\Sigma^+$ state, including levels of both $^2\Sigma^+$ and $^2\Pi$ vibronic character. Analysis of the 0_0^0 and 1^1 bands of the $\tilde{B}^2\Pi - \tilde{X}^2\Pi$ transition, together with a band from the $\tilde{A}^2\Sigma^+$ state at the same energy was also performed. This did not reveal any hyperfine structure though the resolution was the same as the work at lower total energy, and this observation is discussed. Refined rotational constants, and perturbation parameters for the interaction between the $\tilde{A}$ and $\tilde{B}$ states were also obtained for these states.