ULTRAHIGH-RESOLUTION SPECTROSCOPY OF THE $B^2E' \leftarrow X^2A_2'$ TRANSITION OF NO_3 RADICAL

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Ultrahigh-resolution spectroscopic technique is powerful tool for studying the structure and dynamics of excited molecules in detail and unambiguously. Rotationally resolved high-resolution fluorescence excitation spectra of the 0_0^0 band of the $B\ ^2E' \leftarrow X\ ^2A_2'$ transition of NO_3 radical has been observed by crossing a single-mode laser beam perpendicular to a collimated molecular beam. The observed line width was 25 MHz, which was the residual Doppler width, and the absolute wavenumber was caliblated with accuracy 0.0001 cm^{-1}. The rotational structure of this 0_0^0 band has been reported by Carter *et al.* [a], but the rotational assignment is still remained because the spectrum is too complicated. We are trying to assign the observed rotational lines by using the combination difference in the ground state. Besides the main rotational lines, a number of small lines were observed as the background. It suggests the $B\ ^2E'(v' = 0)$ level is interacts with the other vibronic levels.

[a] R. T. Carter, K. F. Schmidt, H. Bitto, and J. R. Huber, *Chem. Phys. Lett.*, **257**, 297 (1996).