

FTIR SPECTROSCOPY OF NO₃ : OBSERVATION AND ANALYSIS OF THE 1127 cm⁻¹ BAND.

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We report the infrared spectrum of NO₃ studied with a Bruker 120 HR. In the present experiment, the NO₃ production was monitored by using He-Ne laser absorption at 633 nm. The multi-path cell was also improved to attain 48 m effective path length, and a new HgCdTe detector was introduced. In the 1000-1900 cm⁻¹ region, the following 7 bands were observed at 1127, 1137, 1173, 1413, 1492, 1550, 1927 cm⁻¹. The 1127, 1137 and 1550 bands were not reported by matrix isolation, and these are thought to be due to hot bands from the ν_4 state. The analysis of the 1127 band was carried out by fixing the upper state parameters to those of the 1492 band, and major molecular constants are determined as follows, B=0.459339(12), C=0.228848(20), C ζ_4 =-0.044279(29), ν_4 =365.4887(13) cm⁻¹. The two A-E type bands are also assigned in the 1133 and 1137 cm⁻¹ regions in addition to E-E type, indicating that the 1492 band is assignable to $\nu_3 + \nu_4$, in contrast to the previous ν_3 assignment.