

THE ν_2 BANDS OF BrNO_2 (NITRYL BROMIDE) AROUND 787 CM^{-1}

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Nitryl bromide, BrNO_2 , is produced in the marine troposphere by heterogeneous reactions between nitrogen oxides and bromine containing aerosols.^a Its peak concentrations reach values of several 10^7 cm^{-3} .^b In polluted coastal areas, therefore, BrNO_2 is an important species in the release of bromine from the ocean into the atmosphere.^c

The ν_2 fundamental bands of $^{79}\text{BrNO}_2$ and $^{81}\text{BrNO}_2$, located around 787 cm^{-1} ($12.7 \mu\text{m}$), were recorded using a high-resolution Fourier-transform infrared spectrometer. A total of nearly 5000 transitions with $J \leq 80$ and $K_a \leq 30$ were reproduced using a Watson-type A -reduced Hamiltonian with a root-mean-square deviation of better than $5 \times 10^{-4} \text{ cm}^{-1}$. Rotational and centrifugal distortion constants for the ν_2 states have been determined, as well as an improved set of ground state constants for both isotopomers. Due to their sharp Q branches falling into an atmospheric window, the ν_2 bands might be useful for future attempts to detect atmospheric BrNO_2 .

^aW. Behnke, V. Sheer, and C. Zetzsch, *J. Aerosol. Sci.* 25, S277-S278, 1994.

^bJ. Moldanova and E. Ljungström, *J. Geophys. Res.* D106, 1271-1296, 2001.

^cR. Vogt, P. J. Crutzen, and R. Sander, *Nature* 383, 327-330, 1996.