THE $\nu_2$ 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$^{-3}$. In polluted coastal areas, therefore, BrNO$_2$ is an important species in the release of bromine from the ocean into the atmosphere.$^b$

The $\nu_2$ fundamental bands of $^{79}$BrNO$_2$ and $^{81}$BrNO$_2$, located around 787 cm$^{-1}$ (12.7 $\mu$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 $5 \times 10^{-4}$cm$^{-1}$. Rotational and centrifugal distortion constants for the $\nu_2$ 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 $\nu_2$ bands might be useful for future attempts to detect atmospheric BrNO$_2$.