FOURIER TRANSFORM EMISSION SPECTROSCOPY OF NEW VISIBLE SYSTEMS OF NbN

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The emission spectrum of NbN has been reinvestigated in the 15000–35000 cm^{-1} region using a Fourier transform spectrometer and some new transitions have been observed in the visible region. The bands observed in the 18000–19800 cm^{-1} region have been assigned as a new $^3\Pi - X\ ^3\Delta$ transition. Three bands with R heads near 19463.8, 19659.0 and 19757.0 cm^{-1} have been assigned as the 0–0 bands of the $^3\Pi_2 - X\ ^3\Delta_3$, $^3\Pi_1 - X\ ^3\Delta_2$ and $^3\Pi_{0\pm} - X\ ^3\Delta_1$ sub-bands of the new transition. To higher wavenumbers, a 0–0 band with origin near 25409.9 cm^{-1} has been assigned as a $\Delta\Omega = 0$ transition with $X\ ^3\Delta_2$ as the lower state. A rotational analysis of the 0–0 and 0–1 bands of these sub-bands has been carried out and spectroscopic constants have been extracted. Two additional bands with origins near 25518.7 and 25534.8 cm^{-1} are $\Delta\Omega = 0$ bands having $X\ ^3\Delta_1$ as the common lower state. Most of excited levels are affected by perturbations.