

NITRIC ACID: ABSOLUTE INTENSITIES OF BAND AND RO-VIBRATIONAL LINE PROFILES

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Moderate-resolution spectra (0.112 cm^{-1}) (MRS) and high-resolution spectra ($0.002 - 0.003\text{ cm}^{-1}$) (HRS) of anhydrous nitric acid have been recorded between about 820 cm^{-1} and 3600 cm^{-1} . The MRS were recorded using a Bruker IFS 66V FTIR for at least five pressure burdens at each of three temperatures (278, 298, 323 K) in a temperature regulated cell with BaF₂ windows. Nominal pathlength was 20 cm. The static fills of anhydrous nitric acid samples were back filled with nitrogen to a total pressure of 760 ± 5 Torr. Small absorbances from H₂O, CO₂, NO, NO₂ and N₂O were accounted for and subtracted from the spectra. The corrected spectra were used to obtain integrated band absorption coefficients as well as a compilation of absorption coefficients tabulated at 0.056 cm^{-1} intervals. Within an experimental error of about two percent, the integrated band intensities are independent of temperature and in good agreement with results obtained by Giver *et al.*^a HRS of nitric acid were recorded with a Bruker IFS 120HR FTIR using a flow of neat anhydrous nitric acid through a temperature regulated (296 K) cell with a nominal pathlength of 10 cm and BaF₂ windows. At least four pressure burdens were measured for each spectral region. Progress will be reported on the line by line analysis of the HRS for intensities in the $845 - 945\text{ cm}^{-1}$ ($\nu_5, 2\nu_9$), $1270 - 1370\text{ cm}^{-1}$ (ν_3, ν_4), and $1660 - 1760\text{ cm}^{-1}$ (ν_2) spectral regions.

^aL. P. Giver, F. P. J. Valero, D. Goorvitch, F. S. Bonomo, *J. Opt. Soc. Am.* **B1**, 715 (1984).