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

CHARLES CHACKERIAN, *NASA Ames Research Center and SETI Institute, Mail Stop 245-5, Moffett Field, CA 94035-1000*; STEVEN W. SHARPE, THOMAS A. BLAKE, ROBERT L. SAMS, *Pacific Northwest National Laboratory, P. O. Box 999, Mail Stop K8-88, 3020 Q Avenue, Richland, WA 99352 (PNNL is operated for the US Department of Energy by the Battelle Memorial Institute under contract DE-AC06-76RLO 1830).*

Moderate-resolution spectra ($0.112\ \mathrm{cm}^{-1}$) (MRS) and high-resolution spectra ($0.002 - 0.003\ \mathrm{cm}^{-1}$) (HRS) of anhydrous nitric acid have been recorded between about $820\ \mathrm{cm}^{-1}$and $3600\ \mathrm{cm}^{-1}$. 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 BaF_2 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 H_2O, CO_2, NO, NO_2 and N_2O 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 $0.056\ \mathrm{cm}^{-1}$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 BaF_2 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 $845 - 945\ \mathrm{cm}^{-1}(\nu_5, 2\nu_9)$, $1270 - 1370\ \mathrm{cm}^{-1}(\nu_3, \nu_4)$, and $1660 - 1760\ \mathrm{cm}^{-1}(\nu_2)$ spectral regions.

[a] L. P. Giver, F. P. J. Valero, D. Goorvitch, F. S. Bonomo, *J. Opt. Soc. Am.* **B1**, 715 (1984).