LINE POSITIONS, INTENSITIES, SELF- AND N_2-BROADENING PARAMETERS IN THE ν_9 BAND OF ETHANE (C_2H_6)

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High-resolution infrared spectra of ethane have been recorded using the Bruker IFS 120 HR Fourier transform spectrometer (FTS) at the Pacific Northwest National Laboratory (PNNL), in Richland, Washington. Several spectra of pure ethane and ethane in N_2 mixtures were obtained with absorption paths of 20 cm and 3.2 m. Room temperature spectra were obtained in both 20 cm and 3.2 m paths while cold spectra were obtained using only the 20 cm path cell. The spectra were obtained at $\sim$0.0028 cm^{-1} resolution with sample pressures ranging from 0.3 to $\sim$36 torr for pure ethane and 11 to 180 torr in ethane-N_2 mixtures. The volume mixing ratios of ethane in the ethane-N_2 mixtures varied between 0.01 and 0.2. The gas temperatures varied from -66°C to 24°C.
Positions, intensities, self- and N_2-broadening parameters were determined by processing 16 or 17 room temperature spectra using the multispectrum nonlinear least squares spectrum fitting technique[a]. The results obtained for transitions in a few select ^PQ and ^RQ sub-bands will be reported at this time.

[a] D. Chris Benner, C.P. Rinsland, V. Malathy Devi, M.A.H. Smith, and D. Atkins, J. Quant. Spectrosc. Radiat. Transfer **53**, 705-721 (1995)