

LINE POSITIONS AND INTENSITIES FOR THE ν_{12} BAND OF $^{13}\text{C}^{12}\text{CH}_6$

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High-resolution, high signal-to-noise spectra of mono-substituted ^{13}C -ethane ($^{13}\text{C}^{12}\text{CH}_6$) in the 12.2 μm region were recorded with a Bruker IFS 125HR Fourier transform spectrometer. The spectra were obtained for four sample pressures at three different temperatures between 130 and 208 K using a 99% ^{13}C -enriched ethane sample contained in a 20.38-cm long coolable absorption cell^a. A multispectrum nonlinear least squares fitting technique^b was used to fit the same intervals in the four spectra simultaneously to determine line positions and intensities. Similar to our previous analyses of $^{12}\text{C}_2\text{H}_6$ spectra in this same region^c, constraints were applied to accurately fit each pair of doublet components arising from torsional Coriolis interaction of the excited $\nu_{12} = 1$ state with the nearby torsional $\nu_6 = 3$ state. Line intensities corresponding to each spectrum temperature (130 K, 178 K and 208 K) are reported for 1660 ν_{12} absorption lines for which the assignments are known, and integrated intensities are estimated as the summation of the measured values. The measured line positions and intensities (re-scaled to 296 K) are compared with values in recent editions of spectroscopic databases.^d

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