THE HIGH RESOLUTION JET COOLED SPECTRUM OF PENTAFLUOROETHANE

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The jet cooled spectrum of pentafluoroethane (C_2HF_5) has been recorded between 1100. and 1325. cm^{-1}at a resolution of 0.0022 cm^{-1}. A rotational temperature of approximately 10 K was achieved by expanding 50 Torr of C_2HF_5 in 500 Torr of helium. Transitions belonging to five different vibrations have been assigned and fit to a Watson Hamiltonian: the ν_3 at 1309.88 cm^{-1}, the ν_4 at 1200.74 cm^{-1}, the ν_5 at 1142.78 cm^{-1}, the ν_{13} at 1223.33 cm^{-1}, and the ν_{14} at 1147.39 cm^{-1}. The rms deviations of the fits of the ν_4 band (0.0004 cm^{-1}) as well as the overlapping ν_5 (0.0006 cm^{-1}) and ν_{14} (0.0004 cm^{-1}) bands are in satisfactory agreement with the experimental uncertainty. The perturbations observed by McNaughton et al[a] are still apparent in the ν_3 and ν_{13} at the rotational temperature of this study but satisfactory fits have been achieved.

[a]D. McNaughton et al., *Vib. Spec.*, **36**, 123 (2004); C. D. Thompson et al., *J. Mol. Spec.*, **230**, 133 (2005).