

HIGH-RESOLUTION ABSORPTION CROSS SECTIONS OF ETHANE AT LOW TEMPERATURES

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High-resolution infrared absorption spectra have been created for the ν_9 band of ethane (C_2H_6) at 823 cm^{-1} using the Fourier transform spectrometer at the Australian Synchrotron. Infrared spectra were recorded at four different pressures for four temperatures (200, 160, 120 and 90 K) relevant to typical conditions on Titan. The THz/Far-IR beamline at the Australian Synchrotron is unique in combining a high-resolution Fourier transform spectrometer with an 'enclosive flow cooled' (EFC) cell designed to study gas phase molecules at low temperatures. The low vapor pressure of ethane at 90 K means that the EFC cell is necessary to obtain high-resolution spectra. Our cross sections and line parameters are needed to improve retrievals of ethane on Titan.