

INFRARED ABSORPTION CROSS SECTIONS OF NEOPENTANE AND ETHANE

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Hydrocarbons are of considerable importance in studies of planetary atmospheres such as Titan and Giant Planets. In Titan, ethane (C_2H_6) is the second most abundant hydrocarbon and is also widespread in Giant Planets. Neopentane ($C(CH_3)_4$) may be detected in these planetary atmospheres. This talk will present the absorption cross sections of ethane and neopentane. Infrared absorption spectra of ethane and neopentane were recorded in the $2600-3300\text{ cm}^{-1}$ region by high resolution Fourier transform spectroscopy at the Canadian Light Source. Absorption cross sections for neopentane were obtained for pure samples and samples broadened by nitrogen. The data were taken at temperatures of 203 K, 232 K, 266 K and 293 K with broadening gas pressures of 10 Torr, 30 Torr and 100 Torr. Cross sections for ethane were obtained for pure samples and samples broadened by hydrogen and helium at the same temperatures and pressures. Calibration of cross sections for ethane was carried out using data from the Pacific Northwest National Laboratory (PNNL).