

HIGH-RESOLUTION INFRARED SPECTROSCOPY OF 1,3-PENTADIENE COOLED IN A SUPERSONIC JET

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Small conjugated organic molecules play an important role in many areas of chemistry, including organic synthesis, atmospheric chemistry, and industrial chemistry. These small conjugated species also have an interesting conformational energy landscape, with a barrier to conversion between *trans* and *gauche* conformers. We have measured the high-resolution infrared spectrum of the strongest vibrational band of 1,3-pentadiene (C₅H₈), one of the simplest conjugated organic molecules, under supersonic jet-cooled conditions using a quantum cascade laser-based spectrometer. Under the jet-cooled conditions, we have observed rotationally-resolved spectra with a rotational temperature of approximately 15 K. We will present our initial spectral analysis and fit, and discuss the presence of “extra” peaks that appear in the spectrum. We will also compare the jet-cooled spectrum to previous measurements of the high-resolution room temperature spectrum recorded in our research group.