CAVITY RINGDOWN LASER ASORPTION SPECTROSCOPY(CRLAS) of ISOTOPICALLY LABELED ACETYLENE BETWEEN 12,500 - 13,600 cm^{-1}

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About five years ago, Arkansas State University created the Arkansas Center for Laser Applications and Science (ArCLAS) with the intention of making it a state-of-the-art facility for laser-based research and optical spectroscopy in the midSouth. Since that time, University and DoD support has lead to the acquisition of numerous laser based spectrometers including a novel three color picosecond system utilized primarily for STIRAP measurements of bulk gas samples. Over the past few months, we have begun collecting near infrared overtone and combination band spectra for the acetylene molecule with a pulsed cavity ringdown laser absorption spectrometer (CRDLAS) as part of the STIRAP support effort. Certainly acetylene has been extensively studied by a number of different spectroscopic methods [a]. During these CRDLAS investigations a $^{13}C_2H_2$ band was discovered which we believe has not been previously reported. Here a complete rovibrational analysis of this band will be presented.

[a] See for example, Michel Herman, Jacques lievin, Jean Vander Auwera, and Alain Campargue, in Global and Accurate Vibration Hamiltonians from High Resolution Molecular Spectroscopy, Advances in Chemical Physics Volume 108, John Wiley and Sons, NY, NY (1999) and references therein.