VIBRONIC SPECTROSCOPY OF JET-COOLED 1,4-PHENYLENE DIISOCYANIDE

DEEPALI N. MEHTA, ANNA K. GUTBERLET, and TIMOTHY S. ZWIER, *Department of Chemistry, Purdue University, West Lafayette, IN 47907*.

This talk will present results of a gas phase, jet-cooled vibronic spectroscopy study of 1,4-PDI. A fluorescence excitation spectrum spanning the range 35,500-44,100 cm^{-1} (226.5-281.5 nm) has been recorded, as well as a resonant two photon ionization excitation and UV hole-burning spectrum, in the region of 35,500-36,500 cm^{-1}. The S_0-S_1 origin is a weak band located at 35,566 cm^{-1}. The spectrum in the S_1 region is dominated by vibronic coupling to the S_2 state. Dispersed fluorescence spectra will be presented that uncover and characterize the vibronic coupling. We have also located the S_0-S_2 origin 5687 cm^{-1} above the S_0-S_1 origin. Evidence will be presented for the coupling of the S_2 levels with nearby S_1 levels and for internal conversion from S_2 to S_1 on the timescale of the fluorescence.