

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

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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 $35,500\text{--}44,100\text{ cm}^{-1}$ (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 $35,500\text{--}36,500\text{ cm}^{-1}$. The $S_0\text{--}S_1$ origin is a weak band located at $35,566\text{ cm}^{-1}$. 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 $S_0\text{--}S_2$ origin 5687 cm^{-1} above the $S_0\text{--}S_1$ 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.