FLUORESCENCE SPECTROSCOPY OF JET-COOLED 1-PHENYL-1-BUTYN-3-ENE

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With the growing interest in the role naphthalene may play in planetary atmospheres and the interstellar medium, it is important to characterize other $C_{10}H_8$ structural isomers. These $C_{10}H_8$ isomers, once formed, may undergo an isomerization reaction to form naphthalene, or react via alternative pathways that lead away from its formation. The laser induced fluorescence (LIF) and single vibronic level dispersed fluorescence (SVLF) spectra have been collected for the $S_1 \leftarrow S_0$ transition of the $C_{10}H_8$ isomer 1-phenyl-1-butyn-3-ene. With an $S_1 \leftarrow S_0$ origin occurring at 34922 cm^{-1}, the vibronic bands at 464.0 and 530.5 cm^{-1} above the origin dominate the LIF spectrum giving evidence for strong vibrational coupling in the excited state. The SVLF spectra for more than fifteen vibronic bands in the LIF have been collected. Vibrational assignments were made with assistance from *ab initio* calculations. Unlike its close structural isomer 1-phenyl-1-buten-3-yne, PAV shows no evidence for a fast non-radiative process within the first 1400 cm^{-1} above the S_1 origin.