

## LASER-INDUCED FLUORESCENCE AND DISPERSED FLUORESCENCE SPECTROSCOPY OF THE TROPYL C<sub>7</sub>H<sub>7</sub> RADICAL

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Laser-induced fluorescence (LIF) and dispersed fluorescence (DF) spectra of the cycloheptatrienyl (troyl) radical (C<sub>7</sub>H<sub>7</sub>) have been observed under supersonic jet cooling conditions. The DF emission was collected by pumping different vibronic bands of the  $\tilde{A}^2E_3'' \leftarrow \tilde{X}^2E_2''$  LIF excitation spectrum. Analysis of the DF spectra yields valuable information about the vibrational levels of the ground  $\tilde{X}^2E_2''$  electronic state. In addition to the experimental work, *ab initio* calculations have been performed providing ground and excited state Jahn-Teller parameters; a comprehensive analysis reveals Jahn-Teller activity in 4  $e_3'$  modes for the  $\tilde{X}^2E_2''$  state and 3  $e_1'$  modes for the  $\tilde{A}^2E_3''$  and provides values for their vibrational frequencies as well as linear Jahn-Teller constants. In addition to the magnitude of the Jahn-Teller distortion, the stabilization energies for both electronic states have been calculated at the CASSCF(7,7) and EOMEA-CCSD levels of theory using different basis sets.