SPECTROSCOPY OF LONG-LIVED, HIGHLY REACTIVE MOLECULES: CHARACTERIZATION OF TRIPLET STATES AND ELUCIDATION OF DYNAMICS

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Molecules in their excited triplet states exist in energetic environments and are chemically reactive, yet their structure, formation and both unimolecular and collisional decay processes are poorly characterized. The triplet states of small organic molecules are populated in a molecular beam source via direct optical pumping or excitation transfer from metastable atomic species. High-resolution spectroscopic techniques of surface electron ejection by laser excited metastables (SEELEM), ultraviolet laser induced fluorescence (UV-LIF) and infrared laser induced fluorescence (IR-LIF) are employed to characterize the triplet state and will lead to illumination of the dynamical processes which underlie complex spectra.