THE HIGHER TRIPLET VALENCE ELECTRONIC STATES OF ACETYLENE

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We report recent results of ultraviolet laser-induced fluorescence (UV-LIF) and surface electron ejection by laser excited metastables (SEELEM) spectroscopic investigations in the energy vicinity of vibronic levels of the third triplet electronic state of acetylene. A detailed analysis of the triplet singlet interactions revealed in these measurements will be presented. A surprising additional finding is the apparently regular behavior of the highly vibrationally excited levels of the first and second triplet electronic states which are also detectable by our techniques at these energies. Finally, we also discuss the implications of these measurements for the structure and dynamics of the third triplet state, about whose potential energy surface still very little is known.