COUPLING OF NON-SYMMETRIC BENDING MODES TO METASTABLE STATES OF ACETYLENE

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Several bands of acetylene involving the near degenerate non-symmetric bending modes ν_4 and ν_6 of S_1 have been recorded by simultaneous laser induced fluorescence and gold surface electron ejection by laser-excited metastables (Au:SEELEM). The Au:SEELEM spectra indicate pronounced differences in coupling to long-lived states between the torsion (ν_4) and in-plane bend (ν_6). These results will be examined in light of the fact that ab initio calculations predict a nonplanar equilibrium geometry for the third triplet state, which mediates coupling between S_1 and the triplet manifold.