# ELECTRONIC SPECTROSCOPY OF DHPH REVISITED. POTENTIAL ENERGY SURFACES ALONG DIFFERENT LOW FREQUENCY COORDINATES [a]

LEONARDO ALVAREZ-VALTIERRA and DAVID W. PRATT, *Department of Chemistry, University of Pittsburgh, Pittsburgh, PA 15260*.

Recent observations of a tunneling splitting in the rotationally resolved $S_1 \leftarrow S_0$ fluorescence excitation spectra of 9,10-dihydrophenanthrene (DHPH) reveal the underlying multidimensional vibrational dynamics in the isolated molecule. In its vibrationally resolved spectrum, DHPH exhibits three well defined Franck-Condon (FC) progressions of vibronic bands. In the last symposium, we presented some of its fully resolved electronic spectra and gave a tentative assignment of the vibrational mode responsible for the most intense progression of transitions. However, the observation of a tunneling splitting in the spectra makes possible a re-assignment of the vibrational modes involved in each of the three FC progressions, from which, the potential energy surfaces along their respective coordinates are derived. Revealed by these results, for the first time, is a strong dependence of the barrier along one coordinate on simultaneous excitation of other modes.

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