THE PHOTOPHYSICS OF DIPHENYLACETYLENE (DPA). LIGHT FROM THE DARK STATE. Ratheesh Kumar V. K., Al Marinari and Jack Saltiel, Department of Chemistry and Biochemistry. Florida State University, Tallahassee, FL 32306-4390

Interest in DPA stems from its use as a rod-like energy and electron conducting unit in polymers, dendrimers and molecular photonic devices. Also, photoexcitation of derivatives of DPA leads to efficient double-strand DNA cleavage. This contribution concerns the ordering and behavior of DPA's excited states. A hitherto overlooked weak band at the tail of the known DPA fluorescence spectrum in solution is assigned to the forbidden $1^1A_{1u} \rightarrow 1^1A_g$ transition on the basis of its lifetime and fluorescence excitation spectrum. The $1^1B_{1u} - 1^1A_g$ energy gap of DPA absorption and fluorescence spectra decreases linearly with increasing medium polarizability. Medium and *T* effects on DPA fluorescence suggest a linear to *trans*-bent motion for the $1^1B_{1u} - 1^1A_{1u}$ transition. Fluorescence and phosphorescence excitation spectra differ, revealing the presence of another excited state (1^1B_{2u}) from which intersystem crossing is more efficient.