

## **Intramolecular excitation energy transfer in anthracene appended porphyrins**

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Free-base and zinc(II) derivatives of supermolecular porphyrins bearing one or four anthracene subunits have been synthesized and fully characterized. It was observed that, in methylene chloride solutions, fluorescence due to the anthracene subunit of these systems has been quenched in comparison with the fluorescence of free anthracene and that the extent of quenching depends on the number and site of attachment of the anthracene/s at the porphyrin periphery. Based on the fluorescence emission and excitation spectral data, the observed quenching has been attributed to the singlet-singlet energy transfer, from the anthracene donor subunits to the porphyrin. A detailed analysis of the results suggested that the energy transfer process proceeds predominantly through Forster's dipole-dipole mechanism in these systems. Further, in the light of structural and thermodynamic data, other possible mechanisms for the observed quenching were considered. A photoinduced electron transfer reaction has been found to effectively compete with the energy transfer in polar solvents.

The results obtained in this study are discussed in comparison with the results of other porphyrin based energy transfer model systems and also with relevance to the carotene function of the photosynthetic antenna pigments.

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