state, as is already well known for their triplet state. The formation of the anthraquinone radical anion is discussed on the basis of the results obtained by flash photolysis.

Charge transfer quenching of $^3n,\pi^*$ and $^3\pi,\pi^*$ states by O_2 in the vapor phase

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Flash-excited triplet state benzene was used to sensitize phosphorescence of 13 aldehydes and ketones by collision. The rate constant k_q for quenching of this phosphorescence by O_2 ranges between 0.056×10^9 and 6.9×10^9 M^{-1} s^{-1}.

The biacetyl sensitization method of Parmenter and Ring was used to determine the quenching of the triplet state of benzene and 12 benzene derivatives. k_q ranges between 1.2×10^9 and 1.2×10^{10} M^{-1} s^{-1}.

For all molecules a relationship exists between k_q and ionization potentials that supports a mechanism involving the formation of a triplet donor–O_2 complex coupled to a charge transfer state. The absence of a deuterium effect indicates the limited importance of Franck–Condon factors, which dominate in the quenching of $^3\pi,\pi^*$ state polycyclic aromatic hydrocarbons in solution.

The differences in quenching behavior of polycyclic aromatic hydrocarbons and benzene derivatives are discussed.

On the intramolecular decay and energy transfer in liquid alkanes

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Alkanes are known to have very low fluorescence quantum yields (10^{-3}) and lifetimes (10^{-9} s). To obtain information about the mechanism of deactivation paths after excitation in the singlet manifold, lifetime measurements were performed as a function of temperature. The excitation of alkanes was achieved by a two-photon absorption of a pulsed nitrogen laser beam. A further aspect investigated was the mechanism of energy transfer from a liquid alkane to a