

plexes. Our results include absolute values for some of the rate constants involved and relative chemiluminescence quantum efficiencies of peroxy radical cross-combinations.

### **Adiabatic photoreactions in dilute solutions of *p*-substituted *N,N*-dialkylanilines and related donor-acceptor compounds**

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Twisted intramolecular charge transfer (TICT) stable excited states can occur in molecules in which two chromophores are separated by one (twisted) single bond. The TICT state is achieved after absorption to the lowest-lying Franck-Condon excited state of that molecule by an adiabatic photoreaction. This lower-lying TICT state potential minimum in the hypersurface of the lowest-lying excited state of the total  $\pi$  electronic system comes from higher-lying excited states in the ground state molecular geometry and gives rise to the effect of dual fluorescence which allows us to study the kinetics of the twist mechanism. If the *para* substituent to the *N,N*-dialkylaniline is large (9-anthryl or sulphone) the aniline twists around that substituent, but if the substituent is small (nitrile) or flexible (ester) the dialkylamino group twists around its phenyl ring. The population of the TICT state is favoured by (1) the dialkylamino group ionization potential, (2) the substituent electron affinity, (3) the lifetime of the excited state, (4) its dipole-dipole interaction with the solvent and (5) a low viscosity.

### **Triplet excimer formation with phenanthrene: the importance of relative chromophore configuration**

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Triplet excimers were detected in dilute solution with 1,3-di(9-phenanthryl)propane (99P3P) by triplet-triplet (T-T) absorption spectroscopy in the nanosecond time domain. From an analysis of the T-T absorption spectra as a function of time, the kinetics of the intramolecular triplet excimer formation were resolved as a function of temperature and solvent viscosity. For the triplet excimer