



- *Non-equilibrium charge recombination dynamics of excited donor-acceptor complexes*

Nicolet, Olivier; Vauthey, Eric

Trends in Optics and Photonics **72** **2002**, p78-79

- *Ultrafast Photochemistry*

A. Morandeira, A. Fürstenberg, O. Nicolet, S. Pagès, B. Lang and E. Vauthey

Chimia **56** (12) **2002**, p690-694 DOI:10.2533/000942902777679849

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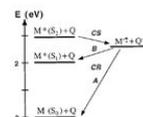
Several aspects of ultrafast photochemistry in the condensed phase are discussed and illustrated by three examples from our laboratory.

- *Ultrafast Charge Recombination of Photogenerated Ion Pairs to an Electronic Excited State*

Ana Morandeira, Laurine Engeli, and Eric Vauthey

Journal of Physical Chemistry A **106** (19) **2002**, p4833-4837

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The dynamics of charge recombination (CR) of ion pairs formed upon electron-transfer quenching of Zn tetraphenylporphine (ZnTPP) in the $S_2\tilde{A}$ state has been investigated by fluorescence upconversion. These ion pairs have two possible CR pathways: (A) a highly exergonic CR to the neutral ground state and (B) a moderately exergonic CR leading to the formation of ZnTPP in the $S_1\tilde{A}$ state. Upon addition of quencher, the $S_2\tilde{A}$ fluorescence decreases considerably, while the $S_1\tilde{A}$ fluorescence is unaffected, indicating unambiguously that CR occurs via path B. A large fraction of the $S_2\tilde{A}$ fluorescence quenching occurs in less than 100 fs. CR to the $S_1\tilde{A}$ state of ZnTPP takes place with time constants around 400 fs.

- *Ultrafast Nonequilibrium Charge Recombination Dynamics of Excited Donor-Acceptor Complexes*

O. Nicolet and E. Vauthey

Journal of Physical Chemistry A **106** (23) **2002**, p5553-5562

DOI:10.1021/jp025542c

The dynamics of charge recombination (CR) of excited donor-acceptor complexes composed of methoxy-substituted benzenes and pyromellitic dianhydride were investigated in four different solvents using both the multiplex transient grating and the transient absorption techniques. At constant driving force, the CR dynamics are substantially faster than those with methyl-substituted benzenes as donors. In acetonitrile (ACN), the CR time constant decreases from 3.5 ps with anisole down to 240 fs with tetramethoxybenzene. In valeronitrile, the CR is always slower than in ACN but is, in most cases, faster than diffusional solvation. The free energy, the solvent, and the temperature dependence of the CR dynamics can be qualitatively well reproduced using the hybrid model of Barbara and co-workers after incorporation of the contribution of inertial motion to solvation. The ability of this model to account for the absence of normal region at small driving force is also examined.

- *Dynamics of S_2 Fluorescence Quenching and of Charge Recombination in the Resulting Ion Pair*

L. Engeli, A. Morandeira, P.-A. Muller and E. Vauthey

Femtochemistry and Femtobiology **2002**, p314

- *Ultrafast Excited State Dynamics in Multiporphyrin Arrays*

A. Morandeira, E. Vauthey, A. Mongin and A. Gossauer

Femtochemistry and Femtobiology **2002**, p789