

Magnetic High Field Effects in Chalcogen Substituted

Donor-Acceptor Dyads

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Charge separated states of donor-acceptor compounds can be considered as spin-correlated radical pairs whose lifetimes can be influenced by an external magnetic field. By substitution of the 1,7 positions of a perylene diimide acceptor in a donor-acceptor dyad **X-Dyad** with chalcogen substituents ($X = \text{OPh}$, SPh , SePh , TePh), we observed a pronounced high field effect in the decay of the charge separated state by using magnetic field dependent ns-transient absorption spectroscopy. This can be explained by a g -tensor anisotropy induced spin relaxation, leading to an increased S-T mixing at high magnetic fields, particularly for the selenium derivative.

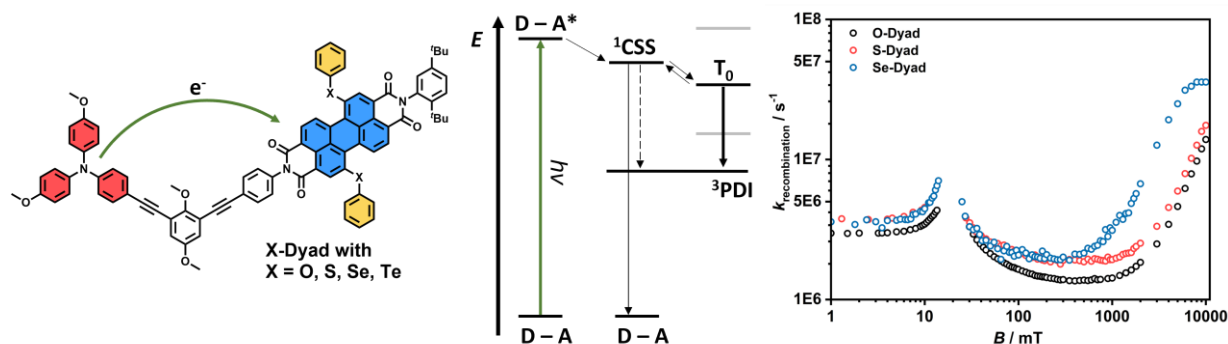


Figure 1: Left: X-Dyads for the investigation of magnetic field effect. Middle: State diagram Right: Observed recombination rates for the X-Dyads.

References:

- [1] P. Mentzel, M. Holzapfel, A. Schmiedel, I. Krummenacher, H. Braunschweig, A. Wodynski, M. Kaupp, F. Würthner, C. Lambert, *Phys. Chem. Chem. Phys.*, 2022, 24, 26254-26268.