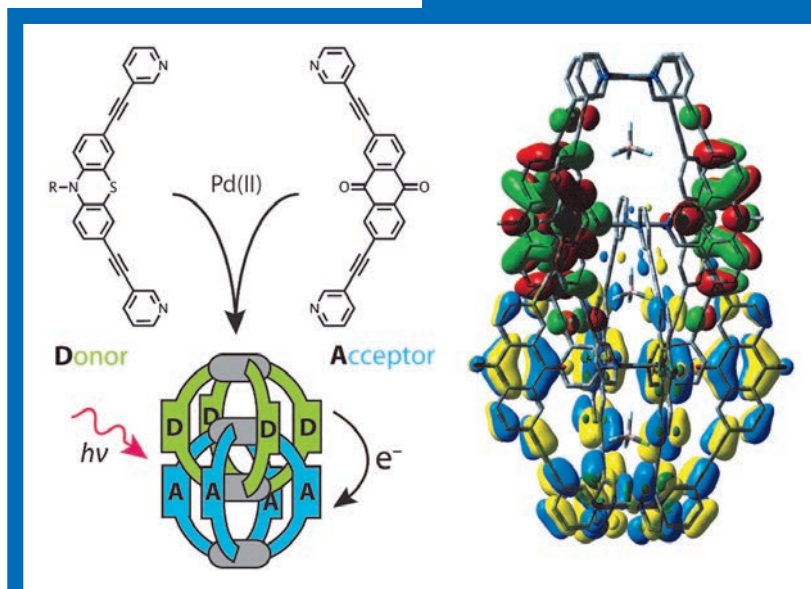


BUNSEN MAGAZIN



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- Historie
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POSTERPREISE DER BUNSENTAGUNG 2016

244 präsentierte Poster trugen wesentlich zur Bunsentagung 2016 bei. Die Poster wurden durch ein Gutachtergremium hinsichtlich der Qualität der wissenschaftlichen Ergebnisse, der Qualität der Aussagekraft der Präsentation und der Originalität der Arbeit beurteilt. Vergeben wurden 8 Posterpreise, die mit einem Geldpreis ausgezeichnet wurden.



Die Posterpreisträger zusammen mit dem 1. Vorsitzenden Prof. Dr. Joachim Sauer (re.) und Prof. Dr. Ralf Ludwig (li.) (Foto: Bunsen-Gesellschaft)

P 01-20

Ultrafast photo-induced electron transfer in self-assembled donor-acceptor coordination cages

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Electron donor-acceptor complexes built from self-assembled palladium coordinated phenothiazine (**D**) and 9, 10-anthraquinone (**A**) based ligands, Pd₄D_mA_{8-m}, were investigated by femtosecond spectroscopy with UV excitation and Vis/mid-IR detection to explore their potential use for photovoltaics. Coordination of the acceptor ligand to palladium in the complex Pd₄A₈ had no influence on the excited state dynamics of the anthraquinone chromophore which is determined by fast intersystem crossing to a long lived triplet state. On the other hand, excitation of the pure donor cage Pd₄D₈ leads to efficient ligand-to-metal charge transfer. For mixed complexes Pd₄D_mA_{8-m} clearly ligand-to-ligand charge transfer within 200 fs is detected regardless of whether donor or acceptor ligands are photo-excited. This is evident from the appearance of a carbonyl stretching band in the mid-IR assigned to the anthraquinone radical anion. The lifetime of the charge separated state appears to be very inhomogeneous ranging from 3.0 to 2000 ps. The reason for this observation could be the broad distribution of

donor-acceptor cage configurations, different spin states of the charge-separated diradical ion pairs or a combination of both.

[1] M. Frank, J. Ahrens, I. Bejenke, M. Krick, D. Schwarzer, G. H. Clever, *J. Am. Chem. Soc.* 2016, **138**, 8279-8287.

[2] M. Frank, J. Hey, I. Balcioglu, Y. Chen, D. Stalke, T. Suenobu, S. Fukuzumi, H. Frauendorf, G. H. Clever, *Angew. Chem. Int. Ed.* 2013, **52**, 10102-10106.

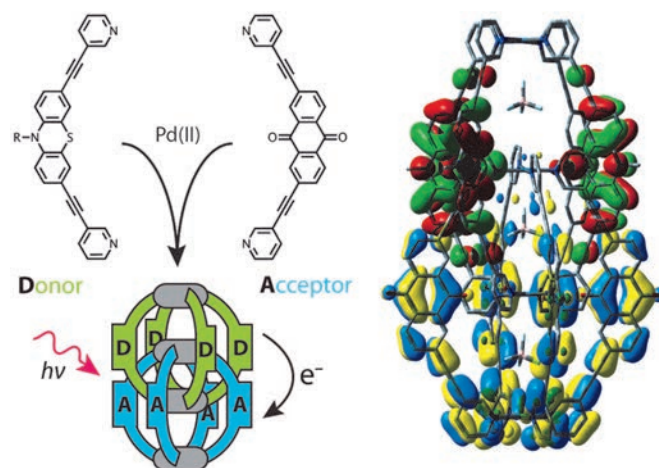


Photo-induced charge separation in palladium bound self-assembled donor-acceptor coordination cages with ultimate aim to generate ligands sitting on targeted positions, to obtain directed charge transfer.