



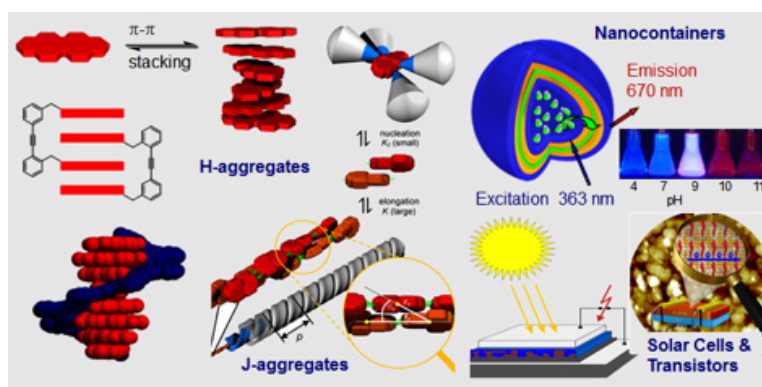
# Solvay Colloquium - Forum F

**Professor Frank Würthner**  
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## Supramolecular Photosystems Based on Dye Aggregates

Research on dye molecules has been continuing to be at the forefront of new developments in chemistry owing to their versatile functional properties associated with  $\pi$ -conjugation. On a supramolecular level, appropriately controlled spatial arrangement of dyes enables pivotal functions in nature, the most intriguing examples being provided by the light-harvesting systems of purple and green bacteria which contain a large number of chlorophyll and carotene chromophores organized in cyclic arrays or tubular architectures by non-covalent interactions. During the last few years, we have intensively investigated the organization of perylene bisimide dyes by non-covalent forces into desirable nanoscale architectures as well as liquid-crystalline and crystalline solid state materials. In this lecture, I will provide an overview on our achievements in the preparation of defined perylene dye assemblies and their functional properties that originate from proper  $\pi$ - $\pi$ -stacking.<sup>1</sup> In particular, charge and exciton transport in H- and J-aggregates<sup>2</sup> and pH-sensitive energy transfer processes in dye vesicles<sup>3</sup> will be discussed. Furthermore I will illustrate our recent achievements towards more defined perylene dye aggregates based on foldamer and zipper self-assembly approaches.<sup>4,5</sup>



1. Z. Chen, A. Lohr, C. R. Saha-Möller, F. Würthner, Chem. Soc. Rev. 2009, 38, 564–584.
2. F. Würthner, T. E. Kaiser, C. R. Saha-Möller, Angew. Chem. Int. Ed. 2011, 50, 3376–3410
3. X. Zhang, S. Rehm, M. M. Safont-Sempere, F. Würthner, Nature Chem. 2009, 1, 623–629.
4. V. Dehm, M. Büchner, J. Seibt, V. Engel, F. Würthner, Chem. Sci. 2011, 2, 2094–2100.
5. C. Shao, M. Stolte, F. Würthner, Angew. Chem. Int. Ed. 2013, 52, 7482–7486 and 2013, 52, 10463–10467.

**Monday 24 November 2014 at 4.00 P.M.**

COFFEE AND TEA WILL BE SERVED AT 3.45 P.M. IN FRONT OF FORUM F

### FORUM F

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