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A photoactive supramolecular complex formed by a bis(acridinium-porphyrin) receptor and a tetra-pyridyl porphyrin guest

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Abstract:

Multichromophoric arrays based on porphyrins are of high interest for their mimicry of naturally occurring photoinduced energy and electron transfer processes leading to energy collection and conversion.¹ N-substituted acridiniums have been recently explored as a new class of switches that respond to various stimuli (pH or electrochemical/photochemical inputs), able to trigger their reversible conversion into the non-aromatic acridane form.² It is thus interesting to explore the combination of porphyrins with acridinium units and we recently investigated the photophysical properties of molecular tweezers based on these two chromophores, where the type of porphyrin (free-base or metallated) and/or the form of the switchable component (acridinium or acridane) has been varied.³ These arrays are switchable molecular receptors able to coordinate suitable guests, and their complexation with photoactive units can lead to interesting photoinduced functions. In this context, we report here on the complexation of tweezer **1** with a meso-(5,10,15,20-tetra(4'-pyridyl)porphyrin, **TPyP** (Figure 1), in different solvents. The photophysics of the complex and its dependence on the solvent, analyzed by means of steady-state and time-resolved luminescence techniques and ultrafast transient absorption spectroscopy, will be herein presented and discussed.

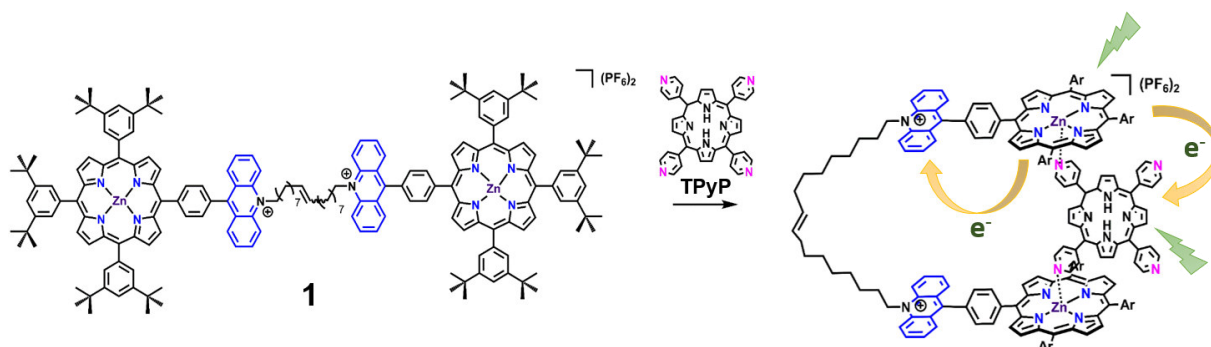
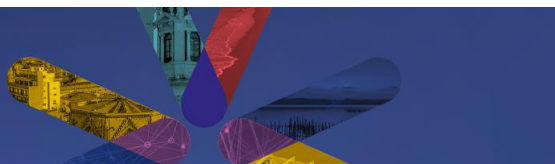


Figure 1. Scheme of the complexation process and photoinduced events in dichloromethane.

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