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Joining Corroles and Phthalocyanines in Functional Porphyrinoid Arrays

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Among the chromophores that have been used as molecular components in artificial photosynthetic systems, porphyrinoids have been the preferred, due their intense optical absorption and rich redox chemistry.[1–3]

Amidst them, phthalocyanines (Pcs) and corroles (Corr) enjoy a privileged position. These chromophores, which have a two-dimensional 18 π -electron aromatic system isoelectronic with porphyrins, possess in fact unique physico-chemical properties which render these macrocycles valuable building blocks in materials science.[4,5]

Additionally, these tetrapyrroles can be peripherally modified to improve their light-harvesting ability and to tune their redox potentials.

In the present study, we have synthesized a donor-acceptor Corrole-Phthalocyanine dyad via a Sonogashira copper free cross coupling reaction. The presence of a different number of methoxy groups on the corrole framework is expected to improve the electron-donor properties of such a macrocycle thus enhancing the electron transfer to the linked zinc phthalocyanine, bearing electron-withdrawing groups.

The structural integrity of the multicomponent system has been confirmed performing spectral, electrochemical and computational studies.

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