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Synthesis and electron-donating properties of novel norphthalocyanines containing thiacycrown ether-linked tetrathiafulvalene moieties

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Abstract

A novel magnesium-base and metal-free norphthalocyanine (**6** and **7**) containing a peripheral thiacycrown ether-linked tetrathiafulvalene moieties has been synthesized and fully characterized. Electrochemical investigations showed two quasi-reversible one-electron oxidation waves, one irreversible one-electron oxidation wave and two irreversible one-electron reduction waves, indicating that these triads are good π -electron donors. Triad **6** reacted with 2,3,5,6-tetrafluoro-7,7,8,8-tetra-cyanoquinodimethane (F₄TCNQ) to form a charge transfer complex that exhibited absorption bands in the vicinity of 750 and 960 nm. Compound **6** showed evident intramolecular charge transfer interactions in ground states and these may be explained on the basis of density functional theory.

Keywords: norphthalocyanine; tetrathiafulvalene; crown ether; density functional theory

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