



A competitive sensing system based on cyclobis(paraquat-p-phenylene) and a new β -cyclodextrin-tetrathiafulvalene derivative

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Titre A competitive sensing system based on cyclobis(paraquat-p-phenylene) and a new β -cyclodextrin-tetrathiafulvalene derivative

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Résumé en anglais We report the synthesis of 4,5-di(ethylthio)-4'-[6-deoxy- β -cyclodextrin-6-yl]-aminocarbonyl]-tetrathiafulvalene (β -CD-DET-TTF) and its inclusion abilities towards cyclobis(paraquat-p-phenylene) (CBPQT4⁺) and 1-naphthol. The structure of the synthesised compound has been established by mass spectrometry and ¹H NMR spectra combined with a theoretical MM3 and AM1 study. The sensor affords a charge transfer (CT) complex with the CBPQT4⁺ and is able to include 1-naphthol in the cyclodextrin cavity. The complexes were characterised experimentally by UV-vis spectroscopy and simulated by a MM3 docking procedure. The sensing ability of the β -CD-DET-TTF/CBPQT4⁺ complex towards 1-naphthol has been investigated by a competitive spectral method. The synthesis and characterisation of a new water soluble β -CD-DET-TTF derivative able to form a CT complex with the CBPQT4⁺ acceptor is reported. The water soluble CT complex β -CD-DET-TTF/CBPQT4⁺ could be used as an efficient sensor towards aromatic guests prone to give inclusion complexes with the CBPQT4⁺ ring.

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