

Supplementary material

Electrochemical Sensors Modified with Combinations of Sulfur Containing Phthalocyanines and Capped Gold Nanoparticles: A Study of the Influence of the Nature of the Interaction between Sensing Materials

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1. Reagents to prepare Tetraoctylammonium bromide-capped gold nanoparticles ($\text{AuNP}^{\text{TOcBr}}$):

$\text{HAuCl}_4 \cdot x\text{H}_2\text{O}$ (12325, 99.9%, min. 49% Au, Alfa Aesar), tetraoctylammonium bromide (294136, 98%, Aldrich), sodium borohydride (62861, 95%, Riedel-de Haën). Solutions were prepared in deionized water obtained using a Milli-Q system (Millipore, Direct-Q5).

2. Reagents to prepare 6,6'-dithiodihexanoic acid

6-Bromohexanoic acid (150452, 98%) was purchased from Aldrich. Potassium carbonate (ACS reagent, $\geq 99\%$), Sodium thiosulfate pentahydrate (ACS reagent, 99.5%), iodine (15600660, 99.8%), concentrated sulphuric acid (ACS reagent, 95.0-98.0%), dichloromethane (HPLC Grade), sodium sulfate (ACS reagent, $\geq 99.0\%$, anhydrous, granular), toluene (anhydrous, 99.8%).

3. Reagents to prepare Sulfur Substituted zinc phthalocyanine (ZnPc^{RS}):

6-Bromohexanoic acid (150452, 98%), 2-chloro-4,6-dimethoxy-1,3,5-triazine (97%) (CDMT), 4-methylmorpholine (ReagentPlus®, 99%) (NMM) were purchased from Aldrich. Tetrahydrofuran (anhydrous, $\geq 99.9\%$), ethyl acetate (anhydrous, 99.8%) sodium hydrogen carbonate (ACS reagent, $\geq 99.7\%$), magnesium sulfate (anhydrous, reagent grade, $\geq 99.5\%$), dichloromethane (HPLC Grade).

4. Reagents to prepare Dimeric Sulfur Substituted zinc bisphthalocyanine: ($\text{ZnPc}^{\text{R}}\text{-S-ZnPc}^{\text{R}}$):

Dicyclohexylcarbodiimide (DCC, 36650, 99%) and 4-dimethylaminopyridine (DMAP, 39405, 98%) were purchased from Honeywell Fluka. dichloromethane (HPLC Grade), sodium sulfate (ACS reagent, $\geq 99.0\%$, anhydrous), sodium hydrogen carbonate (ACS reagent, $\geq 99.7\%$), ammonium chloride (ACS reagent, $\geq 99.5\%$).