Supplementary Data for "A CdTe nanoparticle-modified hairpin probe for direct and sensitive electrochemical detection of DNA"

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1.0 Materials

Thioglycolic acid (≥ 98%), CdCl2 (99.99%), tellurium powder (99.997%), NaBH4 (95%) and N-(3-dimethylaminopropyl)-N'-ethylcarbodiimide (EDC) were obtained from Sigma-Aldrich.

2.0 CdTe NPs

2.1 Synthesis of CdTe NPs

The synthesis of CdTe NPs was performed according to the reference (Rogach et al., 1996) with some modification. First, NaHTe was prepared by adding 40 mg NaBH4 to a flask containing 46 mg tellurium powder and 2 ml Milli-Q water under nitrogen atmosphere. The reaction was kept on for several hours until all tellurium powder was dissolved. 0.092 g (0.5 mmol) of CdCl2 and 0.092 mg (1 mmol) of thioglycolic acid were dissolved in 100 ml milli-Q water, followed by adjusting pH to 8.2 by addition of 1 M NaOH solution. The mixture was deaerated by N2 bubbling for 30 min. Then NaTeH solution (0.062 mmol) was quickly injected into the mixture under vigorous stirring, followed by refluxing the mixture for 10 min under open-air conditions.

2.2 Purification of CdTe NPs

400 mL of 2-propanol was added to as-prepared CdTe NPs colloid solution and CdTe NPs were precipitated from the solution and collected by centrifugation. The obtained CdTe NPs were dried at room temperature under vacuum, dissolved in 10 ml of milli-Q water and then used as prepared for the subsequent experiments.

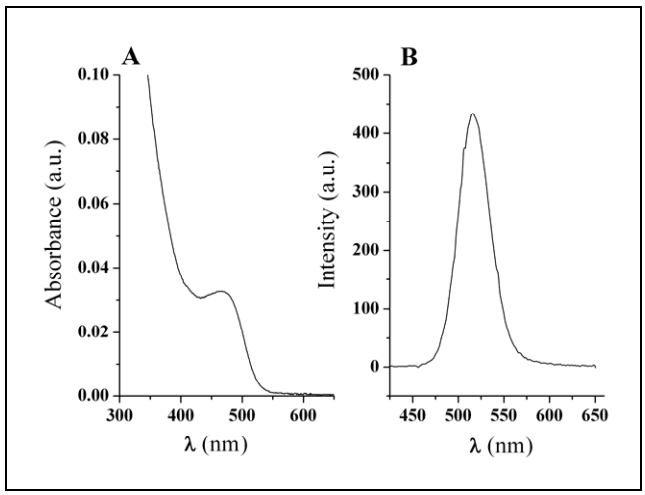

Figure S1. Absorption spectra (A) and emission spectra (B) of a 3 mM CdTe solution. The excitation wavelength was 360nm.

3.0 Results

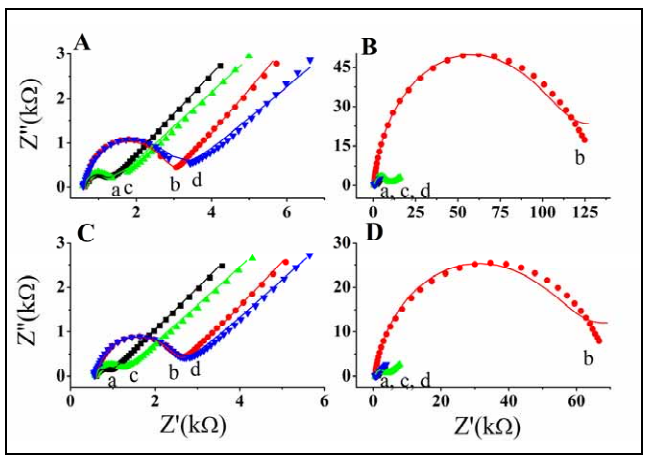

Figure S2. Nyquist plots, $-Z_{im}$ vs. Z_{re}, for A and C: HPP:PEG 1:10 and B and D: HPP:PEG 1:25 for an Au electrode in SCC solution containing 5.0 mM $Fe(CN)_6^{3-}/Fe(CN)_6^{4-}$: a) bare Au surface and b) after immobilization of the mSAM, c) after covalent attachment of CdTe NPs, d) after hybridization at 37 °C (A-B) or hybridization at 44 °C (C-D) for 1 h with 4.65×10^{-6} M of complementary target ODN.

Notes and references

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1 A. Name, B. Name and C. Name, *Journal Title*, 2000, **35**, 3523; A. Name, B. Name and C. Name, *Journal Title*, 2000, **35**, 3523.