

Supplementary Material

**A novel electrochemical aptasensor for sensitive detection
of streptomycin based on gold nanoparticles functionalized magnetic
multi-walled carbon nanotubes and nanoporous PtTi alloy**

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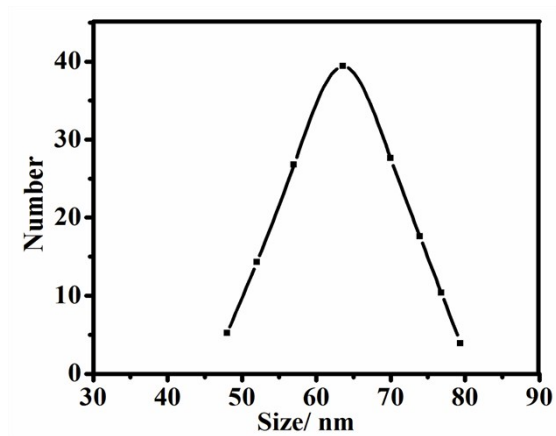


Fig. S1 Grain size distribution of NP-PtTi alloy.

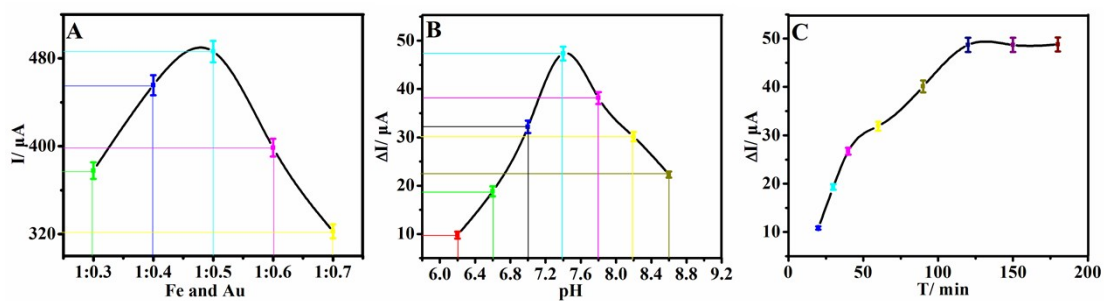


Fig. S2 Effect of (A) the atomic percent ratio of Fe and Au on the CV peak current of the aptasensor, (B) the value of pH and (C) the incubation time of streptomycin on the DPV peak current of the aptasensor.

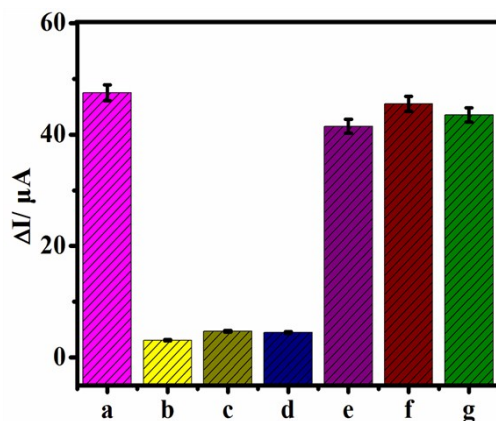


Fig. S3 DPV current responses of the aptasensor using (a) 5 $\mu\text{mol L}^{-1}$ streptomycin aptamer, (b) 5 $\mu\text{mol L}^{-1}$ oxytetracycline aptamer, (c) 5 $\mu\text{mol L}^{-1}$ kanamycin aptamer, (d) 5 $\mu\text{mol L}^{-1}$ neomycin aptamer, (e) 5 $\mu\text{mol L}^{-1}$ streptomycin aptamer + 10 $\mu\text{mol L}^{-1}$ oxytetracycline aptamer, (f) 5 $\mu\text{mol L}^{-1}$ streptomycin aptamer + 10 $\mu\text{mol L}^{-1}$ kanamycin aptamer, (g) 5 $\mu\text{mol L}^{-1}$ streptomycin aptamer + 10 $\mu\text{mol L}^{-1}$ neomycin aptamer to measure 10 ng mL^{-1} streptomycin solution. Error bars are standard deviations across three repetitive experiments.

Table S1. Comparison of streptomycin determinations using the proposed and reference methods

Methods	Linear range	Limit of detection	Reference
Colorimetric and fluorescent dual-responses chemosensor	1.2-40.7 $\mu\text{g mL}^{-1}$	0.1 $\mu\text{g mL}^{-1}$	1
Fluorescence quenching aptasensor	0-1.2 $\mu\text{g mL}^{-1}$	27.7 ng mL^{-1}	39
Electrochemical aptasensor	17.4-872 ng mL^{-1}	6.6 ng mL^{-1}	3
Electrochemical sensor with molecularly imprinted polymer	0.05-20 ng mL^{-1}	10 pg mL^{-1}	40
Electrochemical sensor with molecularly imprinted polymer	0.01-10 ng mL^{-1}	7.0 pg mL^{-1}	41
Electrochemical immunosensor	0.05-50 ng mL^{-1}	5 pg mL^{-1}	42
Electrochemical aptasensor	0.05-100 ng mL^{-1}	7.8 pg mL^{-1}	This work