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Template-free, controllable and scalable synthesis of poly(5-aminoindole) nanoparticles for printable electrochemical immunosensor with ultra-high sensitivity

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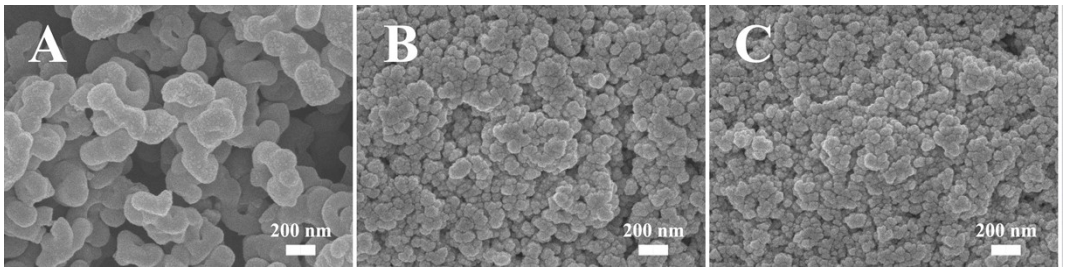

Figure S1. The SEM images of PIn-5-NH_2 nanospheres synthesized using different oxidants. (A) $(NH_4)_2S_2O_8$; (B) $Fe_2(SO_4)_3$; (C) $CuCl_2$. Synthesis conditions: $M_{[oxidant]}/M_{[In\text{-}5\text{-}NH2]}$ = 1:1; reaction temperature: 25℃; reaction time: 16 h.

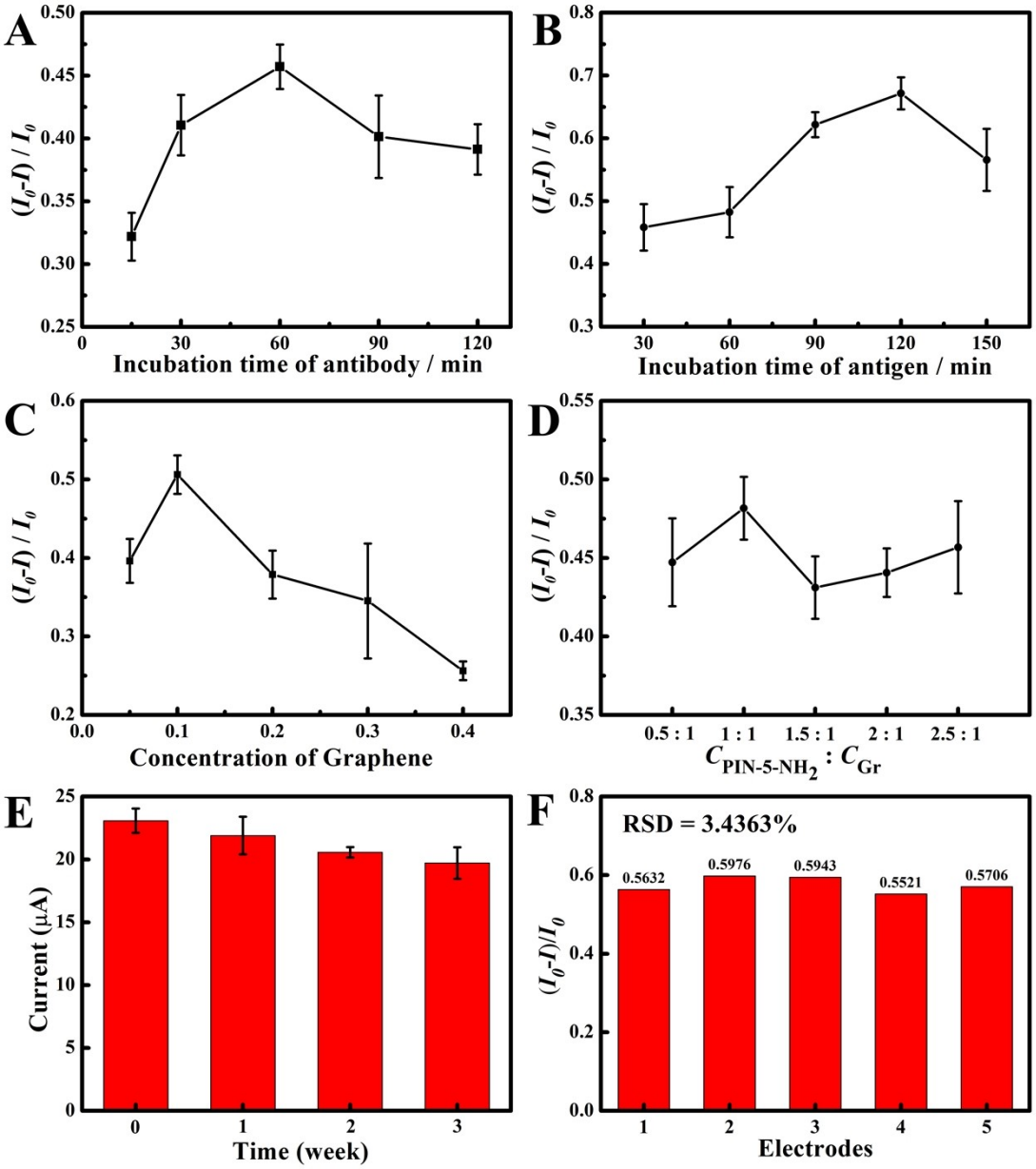

Figure S2. The immunoassay performance of PIn-5-NH_2 based immunosensor. Effects of (A) incubation time of antibody (9.323 μg mL^{-1}), (B) incubation time of antigen (1 ng mL^{-1}), (C) concentration of rGO and (D) the ratio of rGO with PIn-5-NH_2 on the analytical performance of immunosensors. (E) The stability of the electrochemical immunosensors at various storage periods. (F) Current variations of immunosensor towards five different electrodes in the same way.

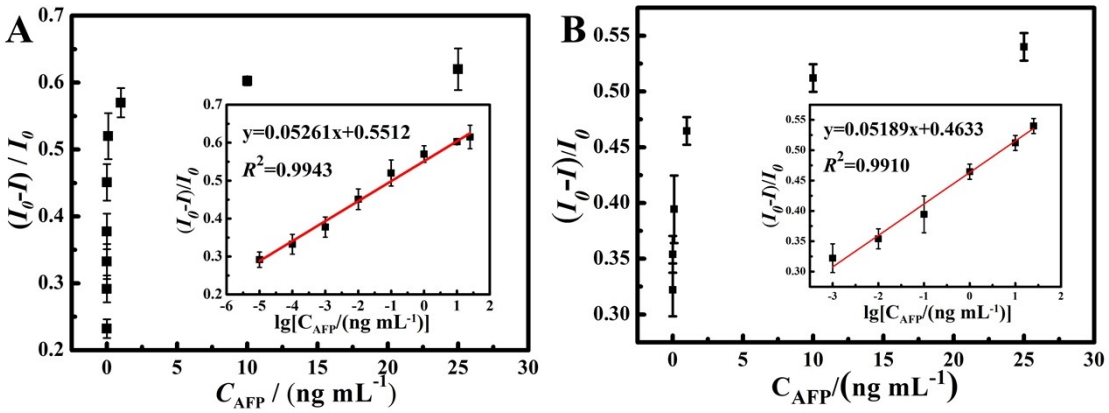

Figure S3. Calibration curve for AFP determination for (A) 327 nm PIn-5-NH_2 NPs; (B) 846 nm PIn-5-NH_2 NPs. (Inset) Linear plot of the inhibition ratio as a function of logarithmic concentration of AFP.

Table S1 The results of AFP detection in human serum samples (n=5)

Sample	Added (ng mL^{-1})	Found (ng mL^{-1})	Recovery (%)	RSD (%)
1	0.01	0.0108	108.0	6.07
2	0.1	0.11	110.0	4.31
3	1.0	0.973	97.30	4.08
4	2.0	2.071	103.55	5.74
5	5.0	4.91	98.2	3.21