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Electronic Supplementary Information

Construction of dentate bonded TiO_2-CdSe heterostructures with enhanced photoelectrochemical property: Versatile labels toward photoelectrochemical and electrochemical biosensing

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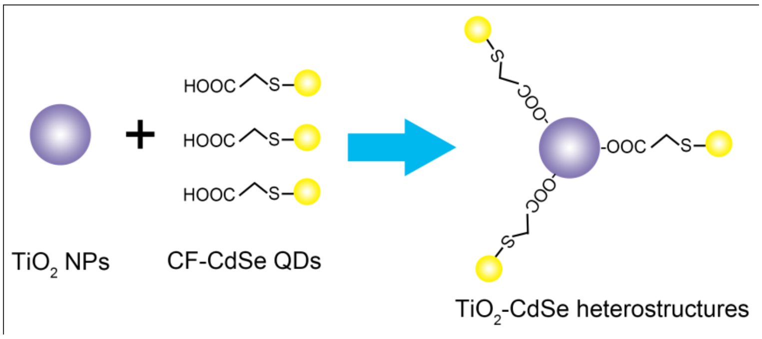

Scheme S1. Schematic illustration for the formation process and mechanism of TiO_2-CdSe heterostructures.

Preparation of AuNPs

Typically, 25 mL 0.01 % (wt) $HAuCl_4$ aqueous solution was stored in 50 mL round-bottom flaskand heated to boiling, then 0.4 mL 1%(wt) sodium citrate was added into the boiling solution under stirring for 30 min. Gold colloidal solution inwine red color was obtained eventually and was used for the following modification of the immunosensor.

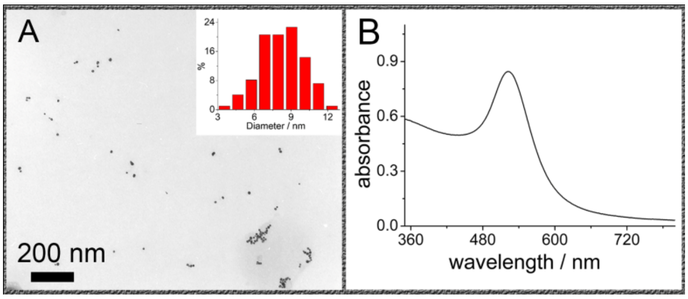

Fig.S1 TEM image (A) and UV-vis spectrum (B) of AuNPs. Inset of A shows size distribution of AuNPs.

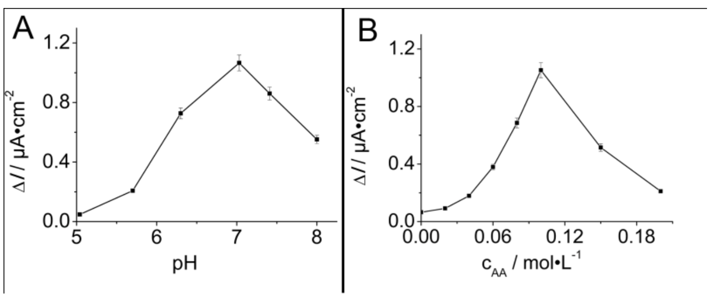

Fig. S2 Optimization of pH (A) and AA concentration (B).

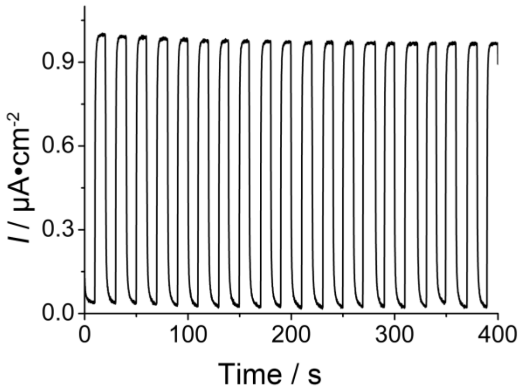

Fig. S3 Time-based photocurrent response of the immunosensorincubated with 5 ng·mL^{-1}HIgG. A 30 W white LED light was used as the illumination source and the applied potential is 0 V.

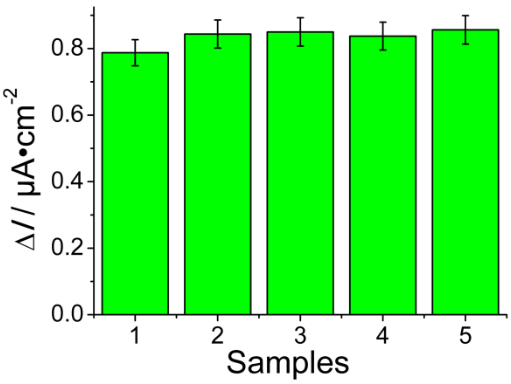

Fig. S4 Reproducibilityof the immunosensor detected by PEC method.

Table S1. Detection results of HIgG in human serum

Detected concentration of HIgG in serum sample (ng·mL^{-1})	Added HIgG (ng·mL^{-1})	Detected concentration of HIgG by PEC (ng·mL^{-1})	RSD (%)	Recovery (%)	Detected concentration of HIgG by EC (ng·mL^{-1})	RSD	Recovery
0.65	0.30	0.98, 0.92, 0.90, 1.01, 1.02	5.64	101.7	1.05, 1.02, 0.92, 0.99, 0.98	5.12	104.4
	0.60	1.20, 1.18, 1.26, 1.33, 1.21	4.82	98.8	1.31, 1.35, 1.22, 1.28, 1.19	5.21	101.6
	1.00	1.71, 1.68, 1.75, 1.61, 1.68	3.11	102.2	1.58, 1.62, 1.56, 1.69, 1.61	3.01	97.7