Supplementary materials

Photoelectrochemical immunosensor based on CdS/CdTe cosensitized SnO_2 as platform for ultrasensitive detection of amyloid β-protein

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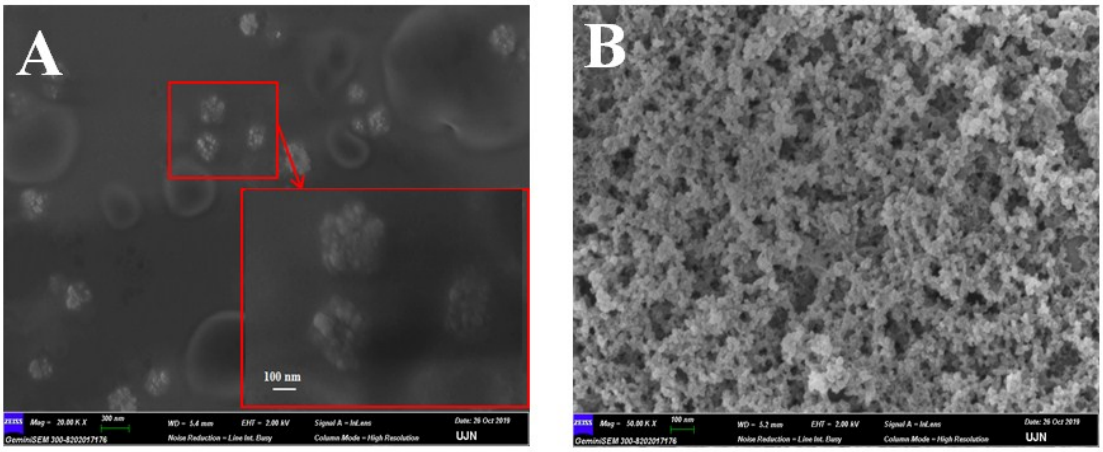

Figure S1. SEM image of CdTe (A) and CdS (B).

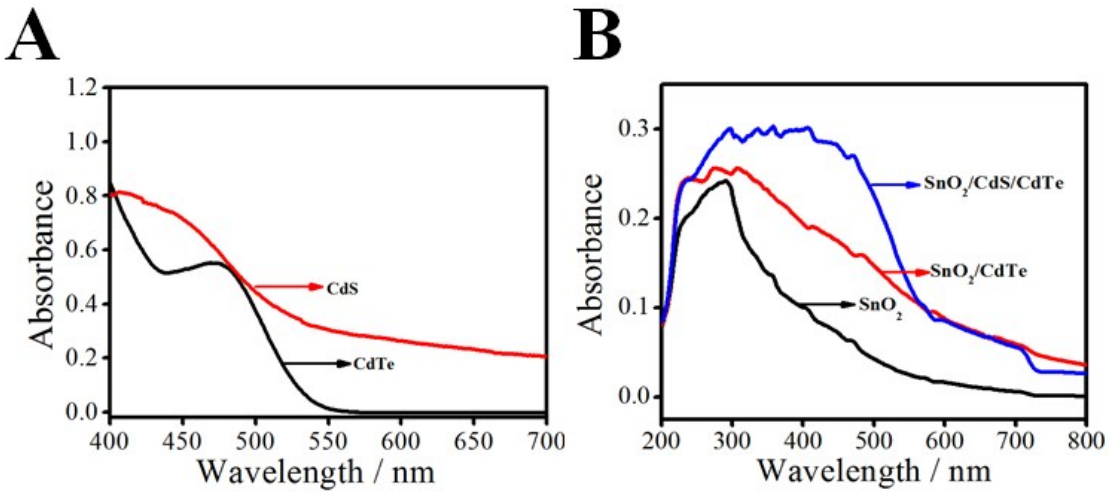

Figure S2. UV-vis absorption spectra of CdTe and CdS (A) and UV-vis diffuse reflectance spectra of SnO_2, SnO_2/CdTe and SnO_2/CdS/CdTe.

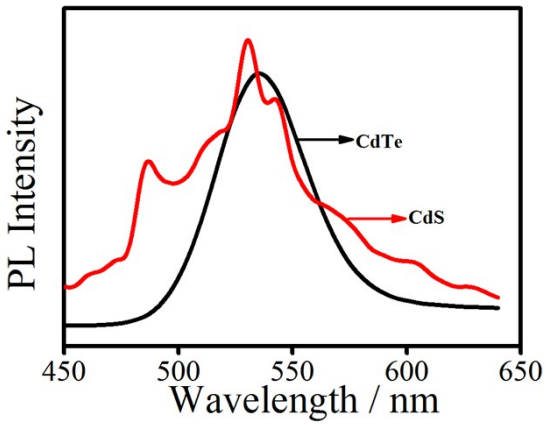

Figure S3. Fluorescence emission spectrum of CdTe and CdS.

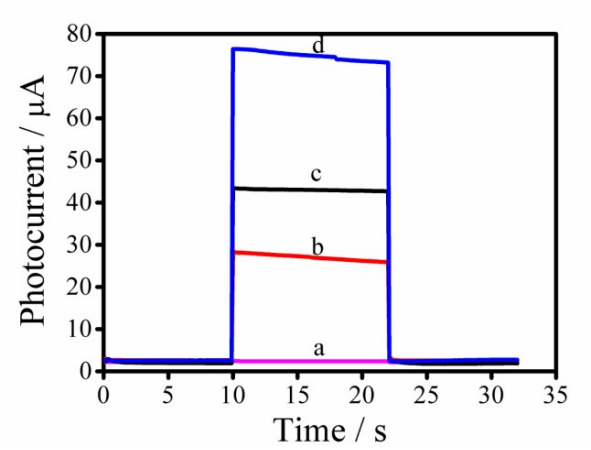

Figure S4. Photocurrent responses of ITO/SnO_2 (a), ITO/SnO_2/CdTe (b), ITO/SnO_2/CdS (c) and ITO/SnO_2/CdS/CdTe (d) electrodes.

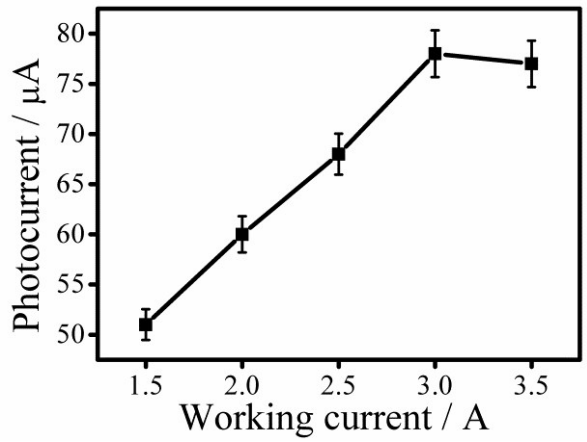

Figure S5. The effect of working current intensity on the photocurrent response of the immunosensor.

Table S1. Comparison of the performance of the proposed label-free PEC immunosensor for Aβ detection with other reports

Detection method	Linear range ($pg \cdot mL^{-1}$)	Detection limit ($pg \cdot mL^{-1}$)	References
Electrochemiluminescence immunosensor	0.1 - 5.0×10^4	0.054	1
Electrochemiluminescence immunosensor	0.05 - 1.0×10^4	0.021	2
Electrochemical immunosensor	10 - 1.0×10^3	5.2	3
Electrochemical immunosensor	88 - 4.4×10^5	35	4
Fluorescence detection method	8.8×10^4 - 4.4×10^7	5.5×10^4	5
Electrochemical impedance spectroscopy analysis	1.0 - 1.0×10^4	1.0	6
Photoelectrochemical immunosensor	0.50 - 1.0×10^4	0.18	This work

Table S2. The results of the Aβ determination in human serum samples

Content in samples ($ng \cdot mL^{-1}$)	Added content ($ng \cdot mL^{-1}$)	Found ($ng \cdot mL^{-1}$)*		RSD (n=3, %)		Recovery (%)	
		Our method	ELISA	Our method	ELISA	Our method	ELISA
0.10	0.10	0.212	0.204	8.2	7.4	106.5	101.8
	0.20	0.296	0.314	7.2	7.1	98.7	104.6
0.30	0.10	0.409	0.405	6.0	4.6	102.2	101.2
	0.20	0.502	0.510	3.6	3.2	100.5	102.1

*The average value of three successive measurements.

References：

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