Electronic Supplementary Material (ESI) for New Journal of Chemistry.

Hollow metal-organic nanoparticles as redox species for label-free voltammetric immunoassay of prostate specific antigen

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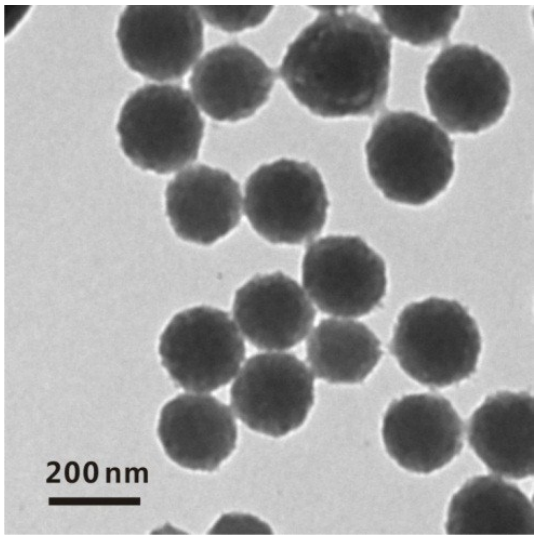

Figure S1. TEM image of the solid cadmium organic nanoparticles.

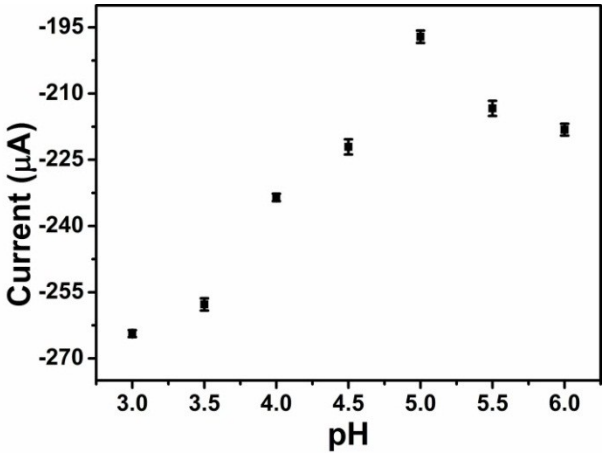

Figure S2. The effect of pH on square wave voltammetry (SWV) current responses of this biosensor towards 10 ng mL^{-1} PSA.

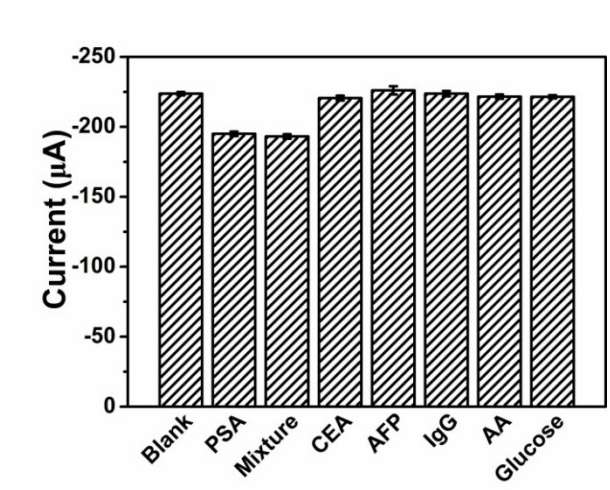

Figure S3. Current response of the biosensor to 10 ng mL^{-1} PSA, mixture (10 ng/mL PSA + 100 ng mL^{-1} alpha fetoprotein (AFP) + 100 ng mL^{-1} carcino-embryonic antigen (CEA) + 100 ng mL^{-1} Human immunoglobulin G (IgG) + 100 ng mL^{-1} ascorbic acid (AA) + 100 ng mL^{-1} Glucose), 100 ng mL^{-1} CEA, 100 ng mL^{-1} AFP, 100 ng mL^{-1} IgG, 100 ng mL^{-1} AA, and 100 ng mL^{-1} glucose.

Table S1. Determination of PSA in human serum samples (n= 3).

Sample	This work (ng mL^{-1})	ELISA (ng mL^{-1})	Relative error (%)
1	1.24±0.025	1.30	-4.3
2	1.57±0.041	1.53	2.9
3	1.01±0.032	1.05	-3.7
4	2.30±0.016	2.13	7.2
5	1.30±0.053	1.22	6.2
6	0.97±0.017	0.95	-1.6
7	0.83±0.041	0.85	2.3
8	1.06±0.034	1.07	0.7
9	0.75±0.058	0.78	3.9
10	1.13±0.022	1.08	4.1

Table S2. A comparison of the performance of the present and referenced immunosensors for the detection of PSA.

Substrate materials	Method	Linear range (ng/mL)	Detection limit (pg/mL)	Sensitivity (μA/(lgC)) (C: ng ml^{-1})	Ref.
Au-NH_2/rGO	Cyclic voltammetry	0.0005-15	0. 17	11.83	1
3,4-Diaminobenzoic acid	Linear-sweep voltammogram	0.2-16	100	5.42	2
Graphene/gold	Cyclic voltammetry	0-10	0.59	4.8	3
Gold nanorods	Chronocoulometry	0.004-60	1.5	11.67	4
Nafion-Graphene/CdOPs	Square wave voltammetry	0.01-100	0. 97	9.37	This work

References:

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