A novel CuZnInS quantum dot-based ECL sensing system for lysophosphatidic acid detection

Department of Analytical Chemistry, College of Chemistry, Jilin University, Changchun, 130012, China

Xueqian Chen, Wenying Gui, Hua Liu and Qiang Ma*

Caption

Fig. S1 cyclic voltammograms of GO-modified GCE in PBS solution at a scan rate of 0.1 V/s

Fig. S2 **(A)** Plot of Q-t curve of the GNs/GCE in 1 mmol L^{-1} K3[Fe(CN)6] containing 0.1 mol L^{-1} KCl; **(B)** Plot of Q-t1/2 curve of the GNs/GCE.

Fig. S3 ECL–time curves of GNs/GCE with mixed solution of AGM-QD_S and LPA (10 μmol L^{-1}) in (A) N_2-saturated Hepes solution (B) air-saturated Hepes solution.

Fig. S4 ECL responses of CuZnInS QDs in air-saturated Hepes solution.

Table S1 the ΔEp of bare GCE and GNs/GCE

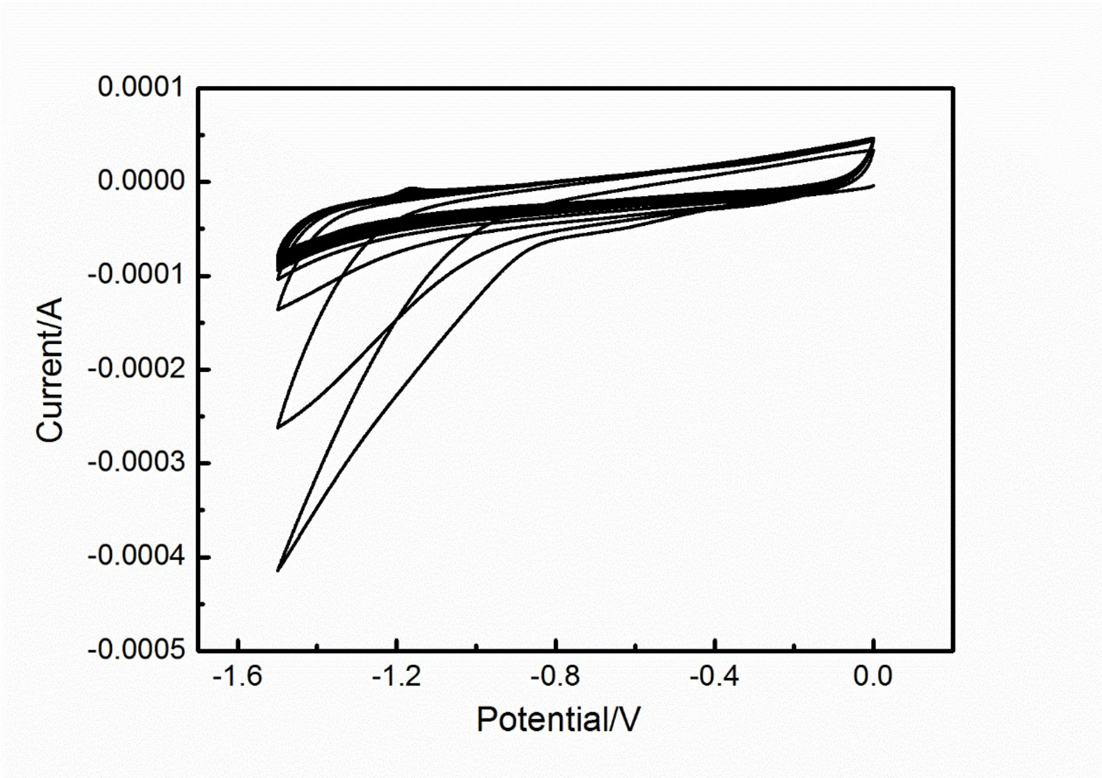
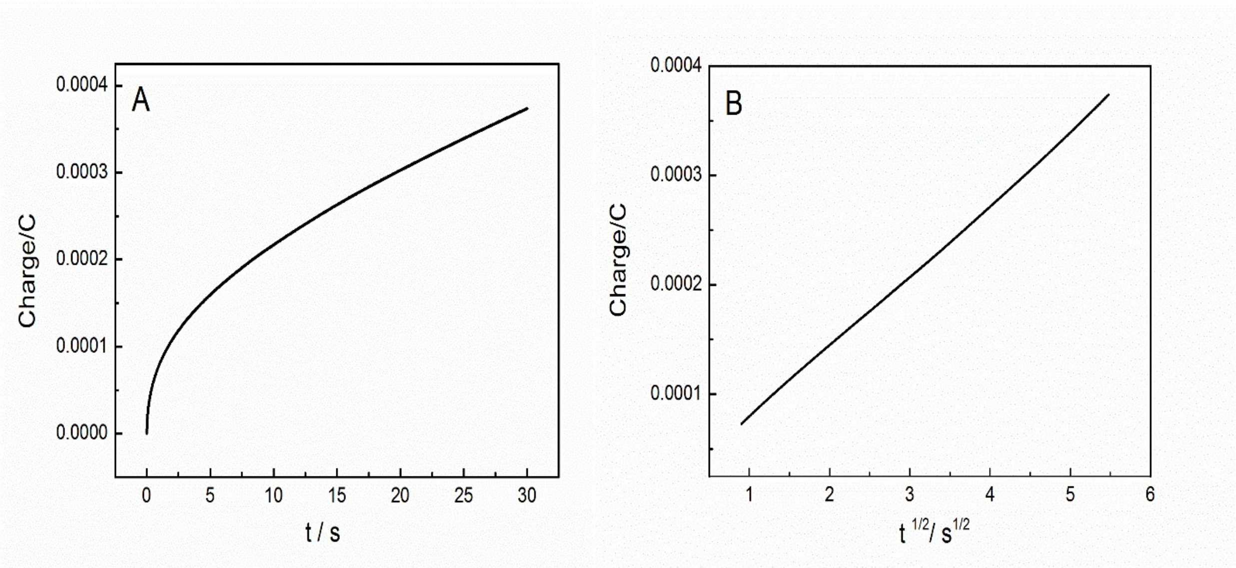


Fig. S1 cyclic voltammograms of GO-modified GCE in PBS solution at a scan rate of 0.1 V/s



The calculation of electrochemical active surface areas of GN/GCE

Fig. S2 (A) Plot of Q-t curve of the GNs/GCE in 1 mmol L-1 $K_3[Fe(CN)_6]$ containing 0.1 mol L-1 KCl; (B) Plot of Q-t1/2 curve of the GNs/GCE.

Anson equation

$$Q(t)= 2nFACoD^{1/2}t^{1/2}/\pi^{1/2} + Qdl + Qads$$

where n is electron transfer number, Co is bulk concentration, D is the diffusion coefficient, Qdl is double layer charge, Qads is faradic charge, F, t, and π have usual values. By measuring the slope of the Anson plots, A was estimated to be 0.211 cm^2 for GNs/GCE.

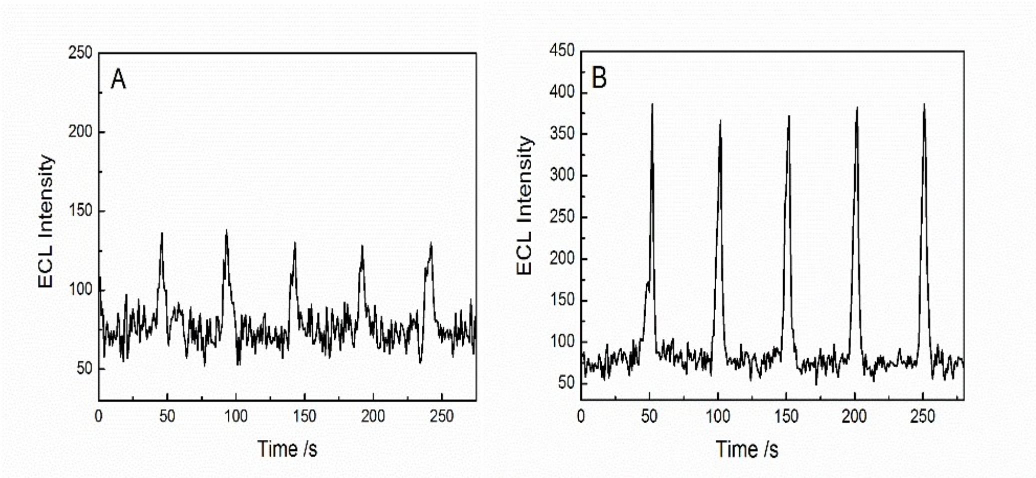

A
B
ECL Intensity
Time /s
250
200
150
100
50
0
50
100
150
200
250
450
400
350
300
250
200
150
100
50
0
50
100
150
200
250

Fig. S3 ECL–time curves of GNs/GCE with mixed solution of AGM-QD_S and LPA (10 μmol L^{-1}) in (A) N_2-saturated Hepes solution (B) air-saturated Hepes solution.

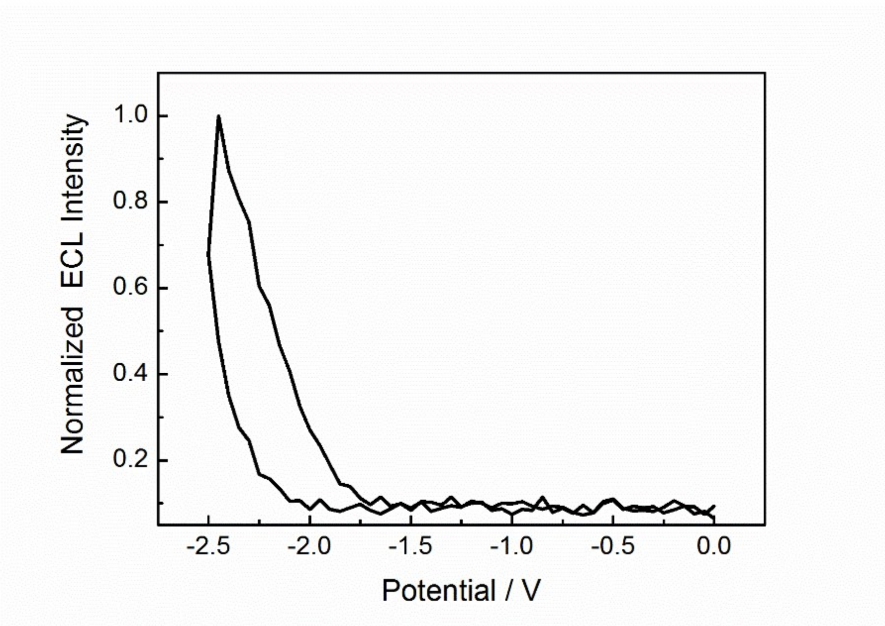


Fig. S4 ECL responses of CuZnInS QDs in air-saturated Hepes solution.

Table S1 the ΔEp of bare GCE and GNs/GCE

	ΔEp/V	R/Ω	i_{pa} / A	i_{pc} /A
GCE	0.074	160	5.326×10^{-5}	-4.826×10^{-5}
GNs/GCE	0.089	89	1.149×10^{-4}	-1.080×10^{-4}