Supporting Information

Electrochemiluminescence Detection of *Escherichia coli* O157:H7 Based on a Novel Polydopamine Surface Imprinted Polymer Biosensor

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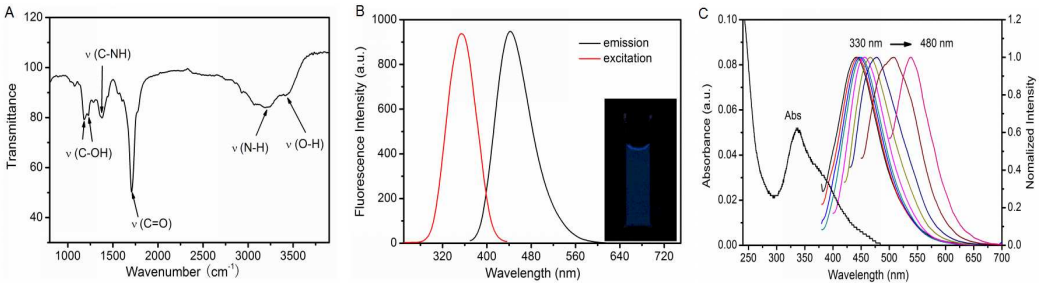

Fig.S1 (A) FT-IR spectrum of N-GQDs. (B) Fluorescence spectra of N-GQDs aqueous solution and photograph of the sample excited by a 365 nm lamp (inset). (C) UV-vis absorption and fluorescence spectra of N-GQDs at different excitation wavelengths (330-480 nm).

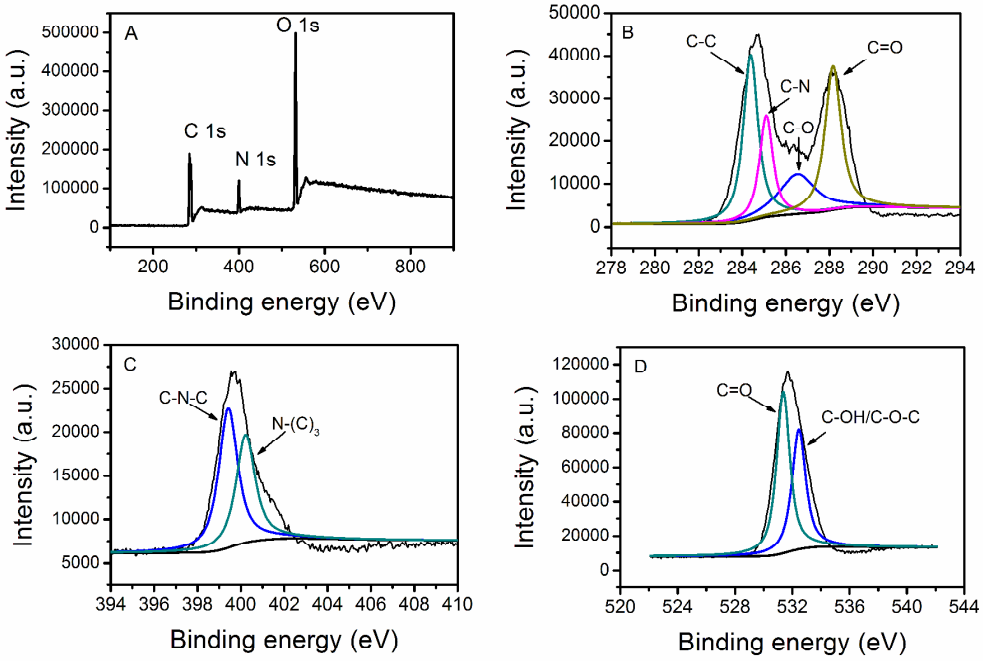

Fig.S2 (A) XPS Survey spectrum of N-GQDs and the high resolution (B) C 1s, (C) N 1s, and (D) O 1s spectra of N-GQDs.

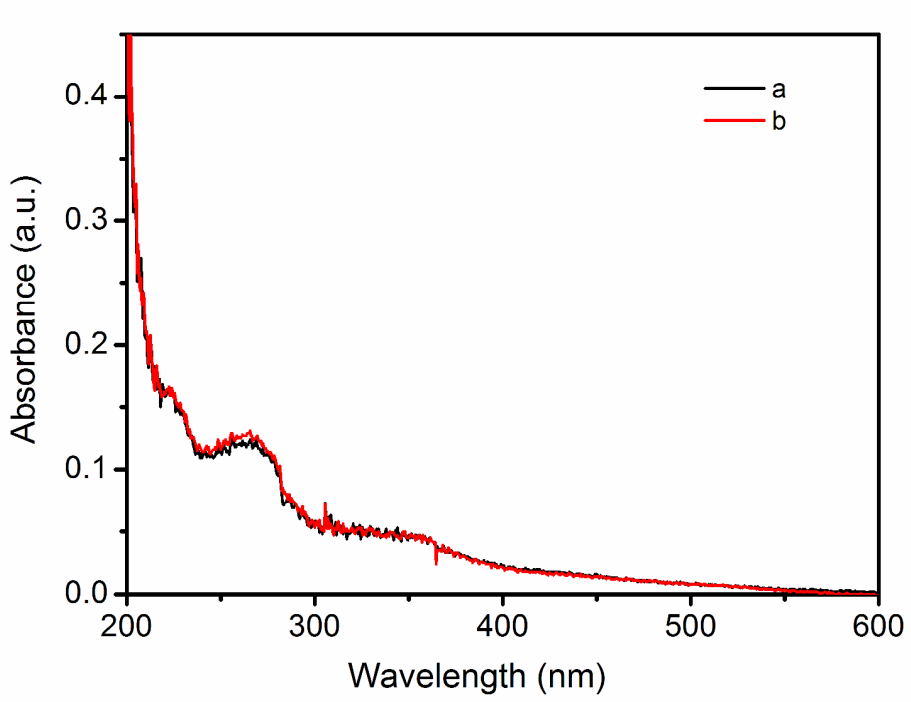

Fig. S3 Curve a: the UV-vis absorption of acetic acid/SDS containing the removed *E. coli* O157:H7 from PDA SIP with the extraction time of 18h. Curve b: the UV-vis absorption of the acetic acid/SDS with the outer addition of standard solution of *E. coli* O157:H7 (10^8 CFU/ml).

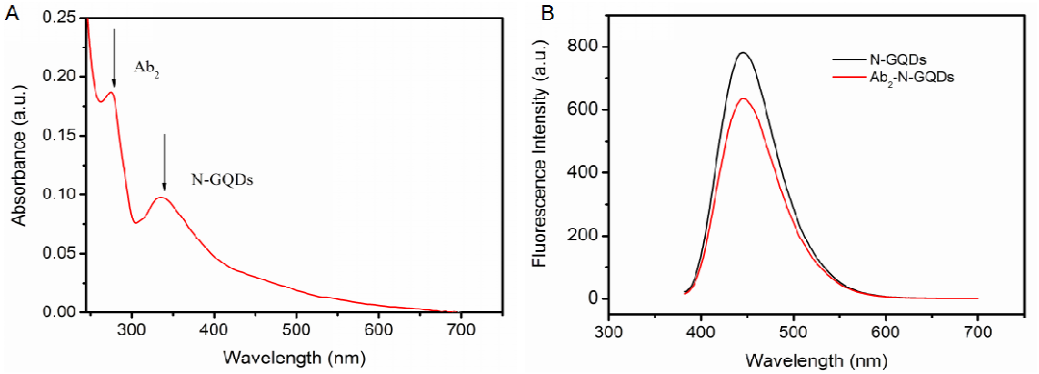

Fig. S4 (A) UV-vis spectra of *E. coli* O157:H7-N-GQDs. (B) Fluorescence spectra of N-GQDs and *E. coli* O157:H7-N-GQDs.

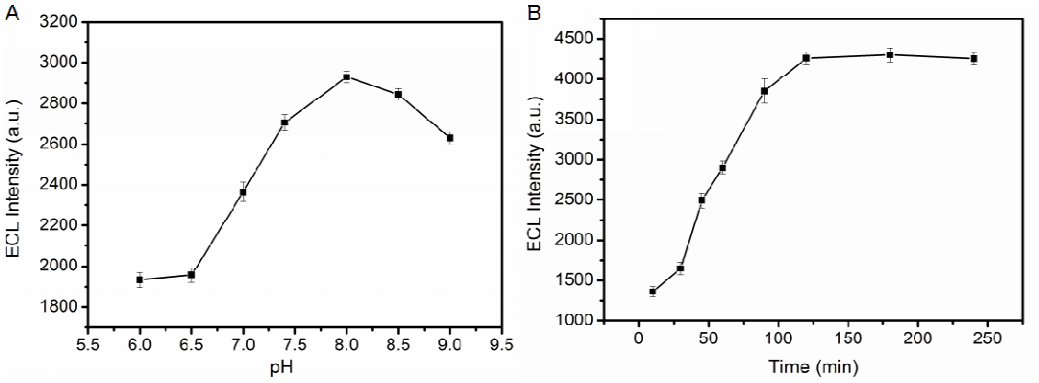

Fig. S5 (A) The effect of incubation pH of *E. coli* O157:H7 and pAb on the ECL of the biosensor (the concentration of *E. coli* O157:H7 was 10^4 CFU mL-1). (B) The effect of incubation time of E. coli O157:H7 and pAb on the ECL of the biosensor (the concentration of *E. coli* O157:H7 was 10^4 CFU mL^{-1}).

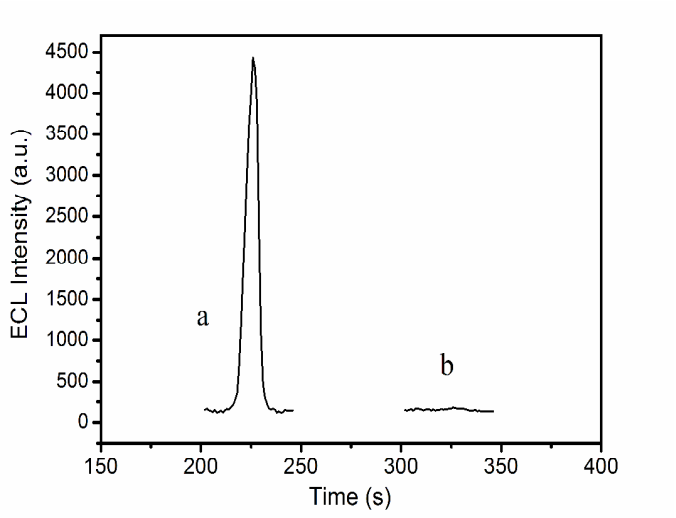

Fig.S6 ECL intensity of the biosensor with the addition of *E. coli* O157:H7 (curve a) and *Salmonella* (curve b), respectively. The concentration of *E. coli* O157:H7 and *Salmonella* was 10^4 CFU mL^{-1}.

Table S1 The interference of the coexisting substances on the determination of *E. coli* O157:H7 (10^4 CFU mL^{-1}).

Coexisting substance	Tolerable concentration	$\Delta I/I_0$ (%)
Na^+	500 μmol L^{-1}	-0.348
K^+	500 μmol L^{-1}	-0.418
Ca^{2+}	500 μmol L^{-1}	0.139
Mg^{2+}	500 μmol L^{-1}	1.07
threonine	100 μmol L^{-1}	3.50
glycine	100 μmol L^{-1}	3.64
arginine	100 μmol L^{-1}	-3.08
histidine	100 μmol L^{-1}	2.30
Salmonella	10^4 CFU mL^{-1}	-1.46

I and I_0 are the ECL intensities of the biosensor with and without coexisting substances, respectively. $\Delta I = I - I_0$.

Table S2 Comparison of different methods for the detection of *E. coli* O157:H7.

Methods	Linearity range (CFU/mL)	LOD (CFU/mL)	Reference
Inductively Coupled Plasma Mass Spectrometry (ICPMS)	5.0×10^4-5.0×10^7	5×10^4	[1]
Fluorescence probe	4.0-4.0×10^8	3	[2]
Chemiliminescence immunoassay	4.3×10^3-4.3×10^5	1.2×10^3	[3]
Electrochemical immunosensor	3.2×10^1-3.2×10^6	1.5×10^1	[4]
Real-Time PCR assay	1.2×10^3-1.4×10^6	2	[5]
ECL SIP biosensor	10^1-10^7	8	this work

References

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