Supplementary Information

Nitrogen and sulfur co-doped graphene-supported nickel tetrapyridyloxyphthalocyanine hybrid fabricated by a solvothermally assisted π–π assembly method and its application for the detection of bisphenol A

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Experimental details

For real sample analysis, BPA was extracted from three samples of plastic containers using a method reported by Tu et al. [1]. Briefly, the commercial plastic were cut into small pieces and washed with distilled water. The pieces (4 g) were placed in a 100 mL flask and 50 mL distilled water was added. This was sealed using parafilm, ultrasonicated for 30 minutes and kept overnight at 70 °C for 48 hours. The filtrate was diluted to 100 mL in a volumetric flask. The container samples will be referred to as B1, B2 and B3.

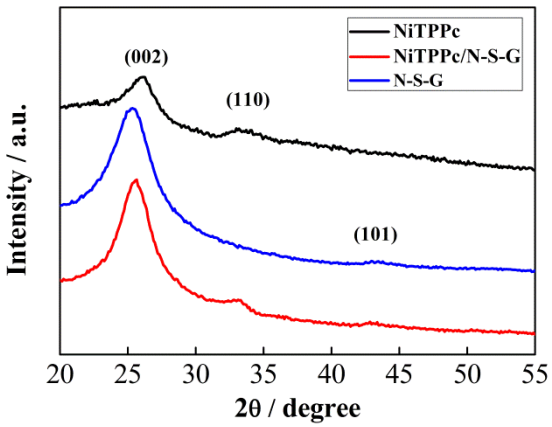

Fig. S1 XRD patterns of NiTPPc (black line), N-S-G (blue line), and NiTPPc/N-S-G (red line).

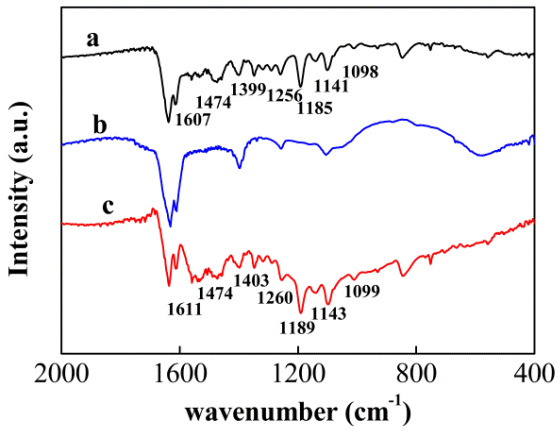

Fig. S2 FT-IR spectra of NiTPPc, N-S-G, and NiTPPc/N-S-G.

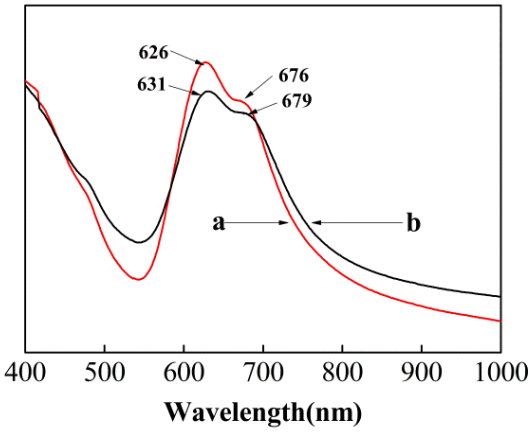

Fig. S3 UV-Vis spectra of NiTPPc in DMF before (a) and after (b) addition of BPA.

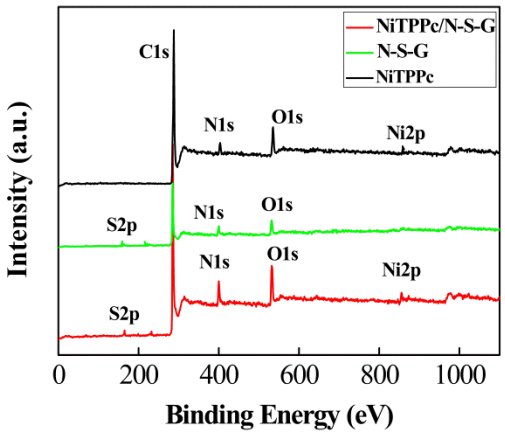

Fig. S4 XPS spectra of NiTPPc, N-S-G, and NiTPPc/N-S-G.

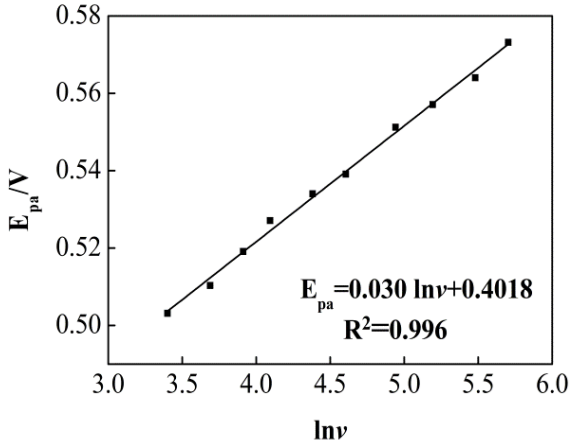

Fig. S5 The relationship between the potential E_{pa} and the natural logarithm of scan rate (ln v).

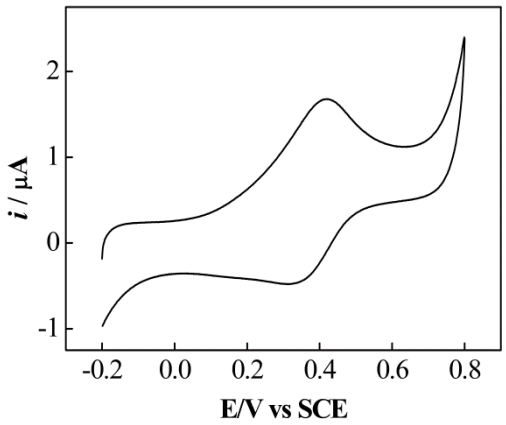

Fig. S6 CVs at NiTPPc modified GCE in 0.2 M phosphate/ethanol buffer solution (pH=7.0).

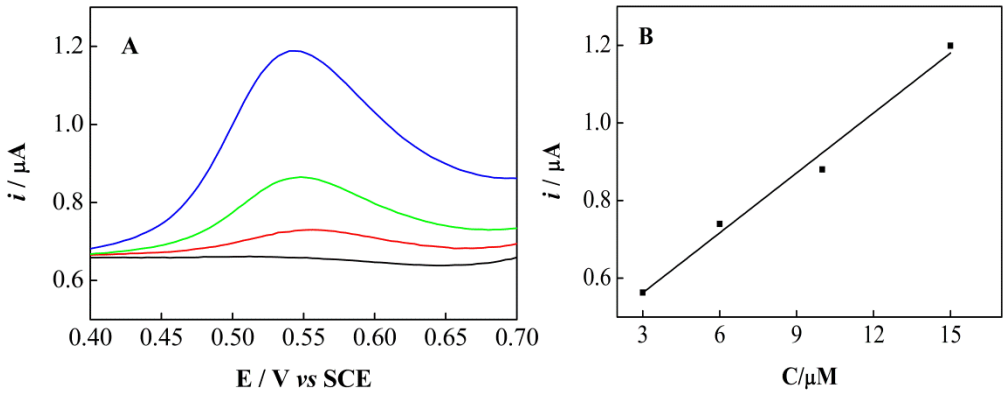

Fig. S7 (A) DPVs of various concentrations of BPA at the NiTPPc modified GCE in pH 7.0 PBS; (B) the relation between the peak currents and the BPA concentrations. Scan rate: 50 mV s^{-1}, pulse amplitude: 50 mV, pulse width: 200 ms.

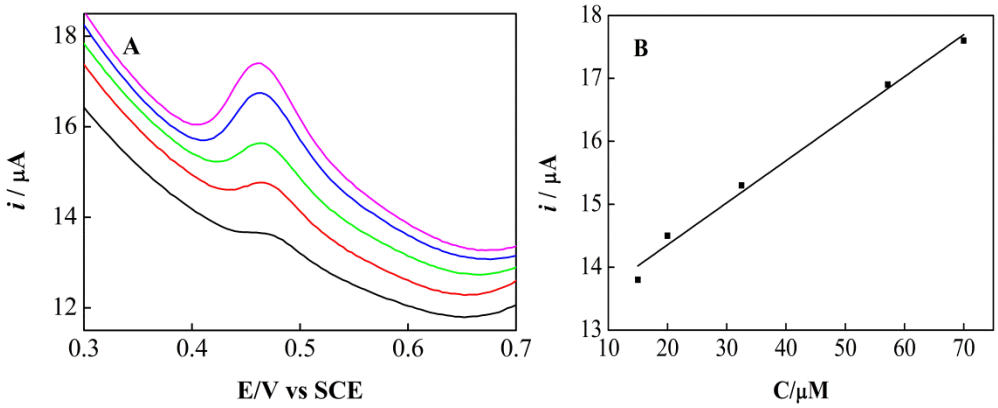

Fig. S8 (A) DPVs of various concentrations of BPA at the N-S-G modified GCE in pH 7.0 PBS; (B) the relation between the peak currents and the BPA concentrations. Scan rate: 50 mV s^{-1}, pulse amplitude: 50 mV, pulse width: 200 ms.

Table S1 Comparsion of the performance of some modified electrodes used in the electrocatalysis of BPA.

Type of the electrode	Linear regression equation	Linear range (μM)	Detection limit (μM)	Sensitivity (μA/mM)
NiTPPc	i_{pa} (μA)=0.0515C (μM) +0.408	3-15	0.3	51.5
N-S-G	i_{pa} (μA)= 0.0668C (μM) +13.019	15-70	1.05	66.8
NiTPPc/N-S-G	i_{pa} (μA)= 0.089C (μM) +5.14	1-122	0.0505	89

References

[1] X. Tu, L. Yan, X. Luo, S. Luo, Q. Xie, *Electroanalysis*, 2009, **21**, 2491–2494.