

## Electronic Supplementary Information

Facile synthesis of novel Ni(II)-based metal-organic coordination polymer nanoparticles/reduced graphene oxide nanocomposites and their application for highly sensitive and selective nonenzymatic glucose sensing

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## Experimental Section

Graphite powder, TA, and H<sub>2</sub>O<sub>2</sub> (30%) were purchased from Aladin Co., Ltd (Shanghai, China). NaNO<sub>3</sub>, H<sub>2</sub>SO<sub>4</sub> (98%), KMnO<sub>4</sub>, NiCl<sub>2</sub>, DMF, glucose, ascorbic acid (AA), dopamine (DA), uric acid (UA), and salicylate (SA) were purchased from BeiJing Chemical Works. All chemicals were used as received without further purification. The water used throughout all experiments was purified through a Millipore system. Human blood serum was obtained from Institute of Virology and AIDS Research, First Affiliated Hospital, Jilin University, Changchun, Jilin, People's Republic of China.

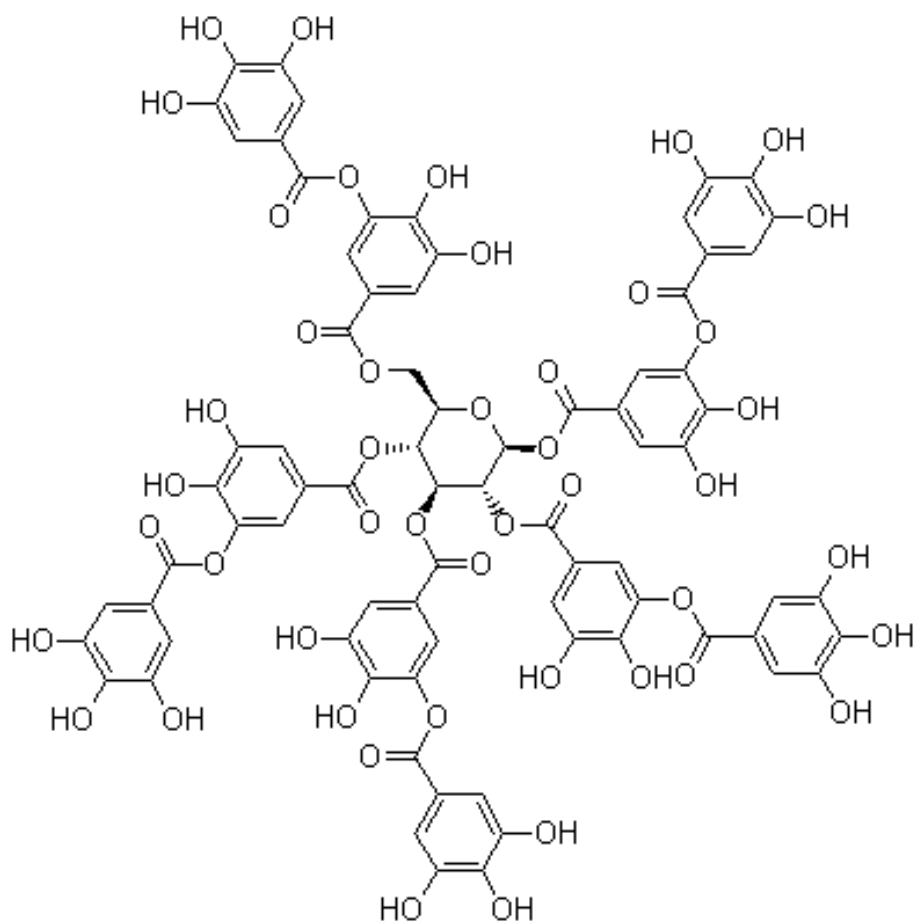
GO was prepared from natural graphite powder by the modified Hummers method (W. S. Hummers, R. Offeman, *J. Am. Chem. Soc.*, 1958, **80**, 1339-1339). In a typical synthesis, 1 g of graphite was added into 23 mL of 98% H<sub>2</sub>SO<sub>4</sub>, followed by stirring at room temperature over a 24 h period. After that, 100 mg of NaNO<sub>3</sub> was introduced into the mixture and stirred for 30 min. Subsequently, the mixture was kept below 5 °C by ice bath, and 3 g of KMnO<sub>4</sub> was slowly added into the mixture. After being heated to 35-40 °C, the mixture was stirred for another 30 min. After that, 46 mL of water was added into above mixture during a period of 25 min. Finally, 140 mL of water and 10 mL of H<sub>2</sub>O<sub>2</sub> were added into the mixture to stop the reaction. After the unexploited graphite in the resulting mixture was removed by centrifugation, as-synthesized GO was dispersed into individual sheets in distilled water at a concentration of 0.5 mg/mL with the aid of ultrasound for further use.

The modified electrodes were prepared by a simple casting method. Prior to the

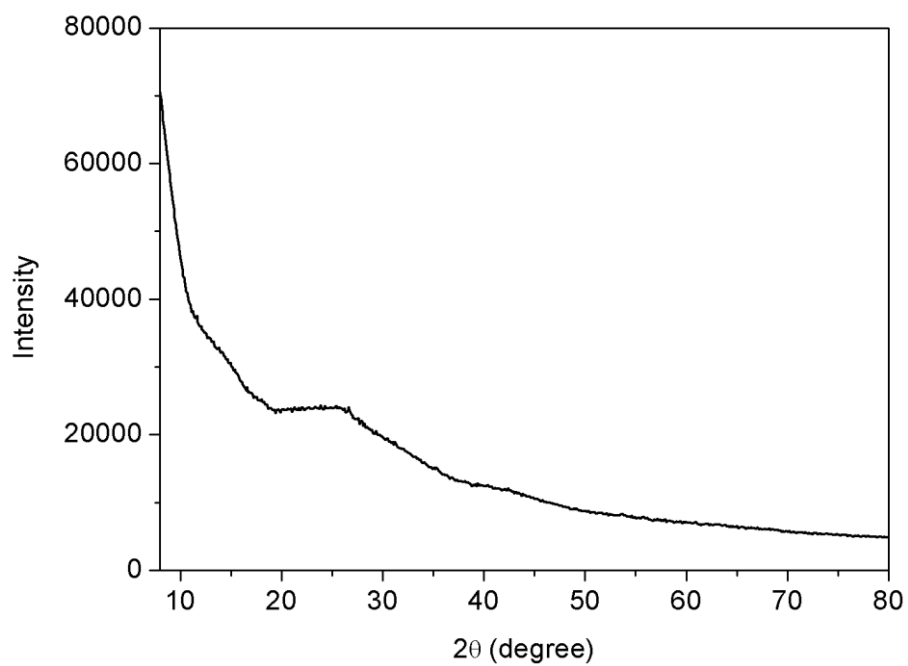
surface coating, the GCE was polished with 1.0 and 0.3  $\mu\text{m}$  alumina powder, respectively, and rinsed with doubly distilled water, followed by sonication in ethanol solution and doubly distilled water successively. Then, the electrode was allowed to dry in a stream of nitrogen. For the electrochemical experiments, 3  $\mu\text{L}$  of NiCPNPs/rGO nanocomposites were dropped on the surface of pretreated GCE and left to dry at room temperature. Then, 2  $\mu\text{L}$  of 1 wt % chitosan solution was used as fixative and additionally casted on the surface of the NiCPNPs/rGO nanocomposites modified GCE (NiCPNPs/rGO/GCE) and dried at room temperature.

Transmission electron microscopy (TEM) measurements were made on a HITACHI H-8100 electron microscopy (Hitachi, Tokyo, Japan) with an accelerating voltage of 200 kV. The sample for TEM characterization was prepared by placing a drop of colloidal solution on carbon-coated copper grid and drying at room temperature. X-ray photoelectron spectroscopy (XPS) analysis was measured on an ESCALABMK II X-ray photoelectron spectrometer using Mg as the exciting source. The X-ray diffraction (XRD) analysis was measured on a Bruker D8 ADVANCE diffractometer with Cu  $K\alpha$  radiation ( $\lambda = 1.54056 \text{ \AA}$ ) at 50 kV and 200 mA with a scanning rate of  $5^\circ \text{ min}^{-1}$ . Scanning electron microscopy (SEM) measurements were made on a XL30 ESEM FEG scanning electron microscope at an accelerating applied potential of 20 kV. Electrochemical measurements were performed with a CHI 660D electrochemical analyzer (CH Instruments, Inc., Shanghai). A conventional three-electrode cell was used, including a GCE (geometric area= $0.07 \text{ cm}^2$ ) as the working electrode, a Ag/AgCl (3 M KCl) electrode as the reference electrode, and

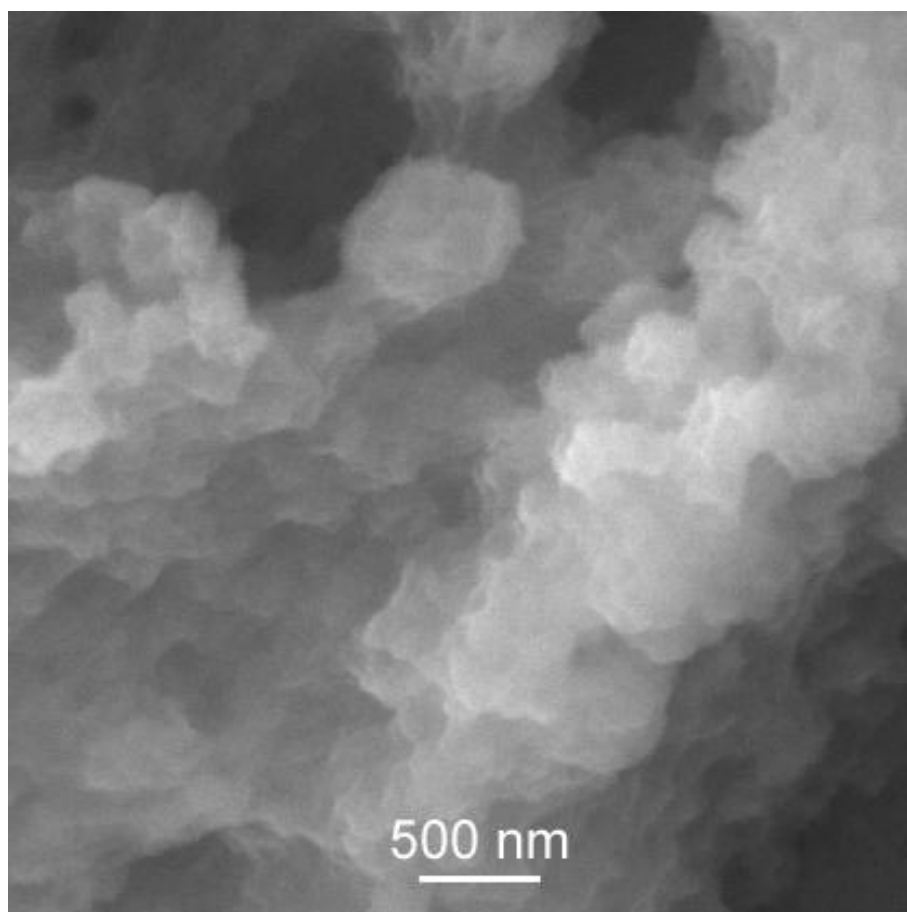
platinum foil as the counter electrode. All potentials given in this work were referred to the Ag/AgCl electrode.



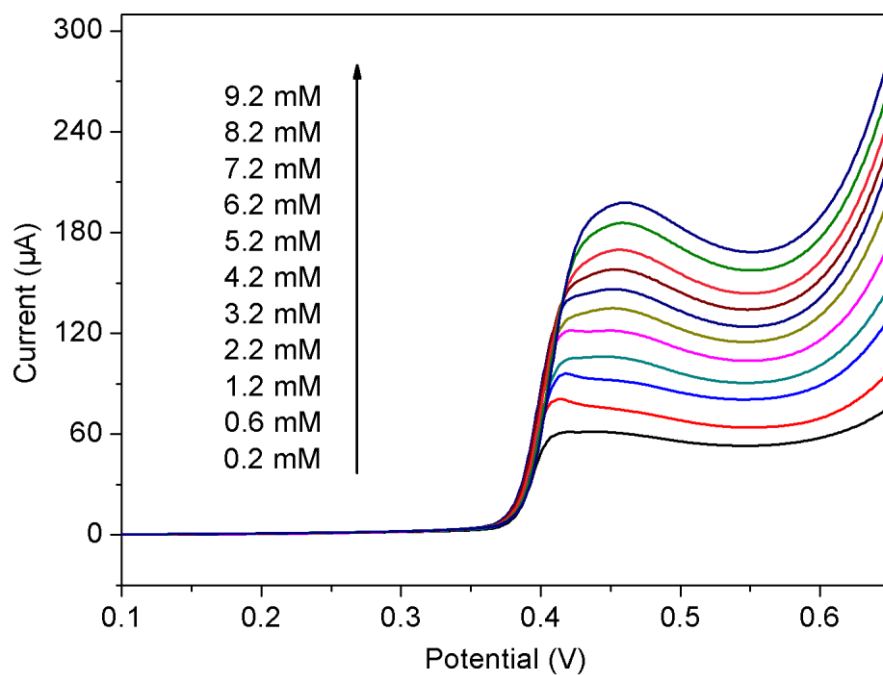
**Fig. S1** The chemical structural formula of tannic acid.



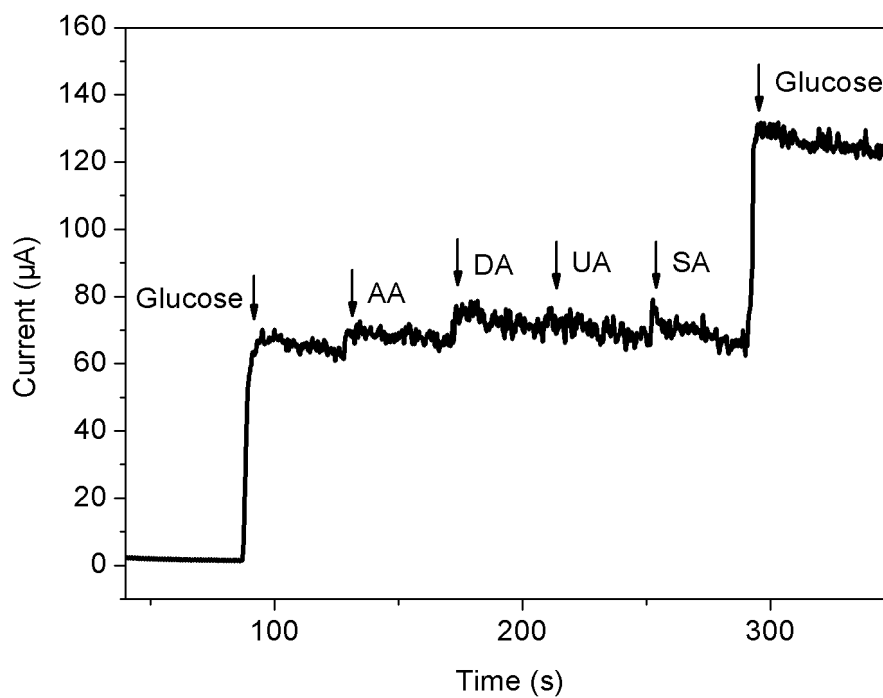
**Fig. S2** XRD pattern of the products.



**Fig. S3** SEM image of the products obtained in the absence of GO.



**Fig. S4** LSVs collected for the NiCPNPs/rGO/GCE with increasing glucose concentration in the range of 0.2 to 9.2 mM (scan rate: 100 mV/s).



**Fig. S5** Amperometric responses of the NiCPNPs/rGO/GCE to the successive addition of 2 mM glucose, 0.1 mM AA, 0.5 mM DA, 0.5 mM UA, 2 mM SA and 2 mM glucose at 0.45 V in 0.1 M NaOH.