Electronic Supplementary Material (ESI) for Analyst.

Three-dimensional hydrogel-modified Indium Tin Oxide electrode with enhanced performance for in situ electrochemical detection of extracellular H_2O_2

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For preparation of GCE and ITO electrode

Firstly, the GCE was polished with 0.3 μm alumina slurry. The GCE was then cleaned in an ultrasonic cleaner for 30s and dried under high purity N_2. The electrode was characterized by cyclic voltammetry (CV) with a scanning rate of 50 mV s^{-1} in a 5 mM $[Fe(CN)_6]^{3-/4-}$ solution including 0.1 M KCl. The peak potential difference was less than 95 mV, indicating that the electrode had been ground for use.

For preparation of ITO electrode, ITO (1 cm×2 cm) was ultrasonically washed with acetone, ethanol and distilled water successively, and then dried at room temperature.

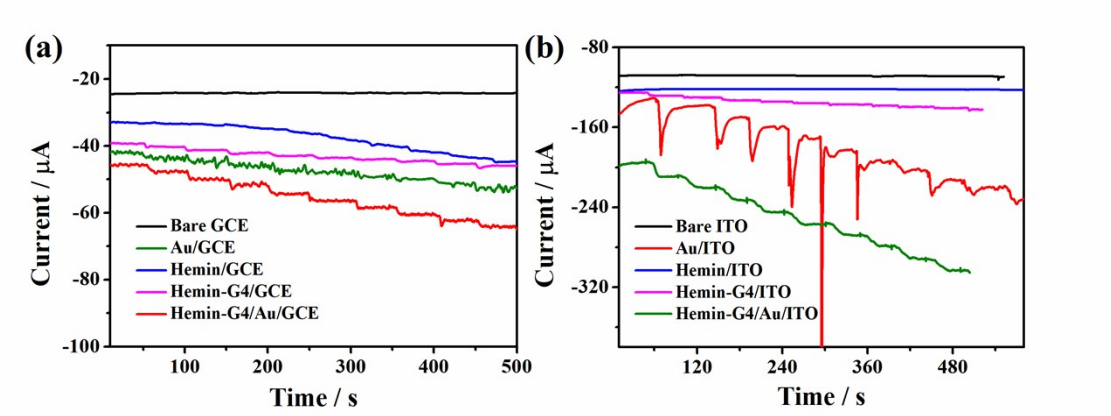

Fig. S1 Amperometric responses of bare GCE, Au/GCE, Hemin/GCE, Hemin-G4/GCE, and Hemin-G4/Au/GCE (a). Amperometric responses of bare ITO, Au/ITO, Hemin/ITO, Hemin-G4/ITO, and Hemin-G4/Au/ITO (b).

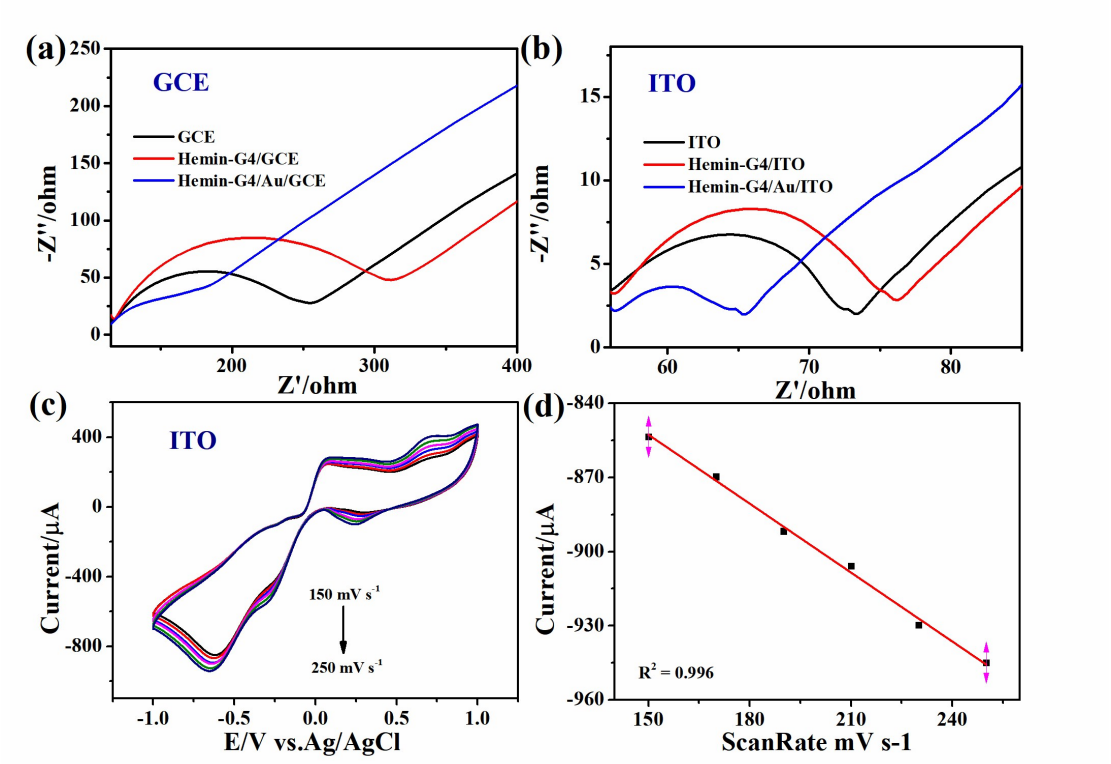

Fig. S2 EIS of bare GCE, Hemin-G4/GCE and Hemin-G4/Au/GCE in 5 mM $[Fe(CN)_6]^{3-/4-}$/0.1 mol/L KCL solution (a); CV of bare ITO, Hemin-G4/ITO and Hemin-G4/Au/ITO in 10 mM $[Fe(CN)_6]^{3-/4-}$/0.1 mol/L KCL solution (b).

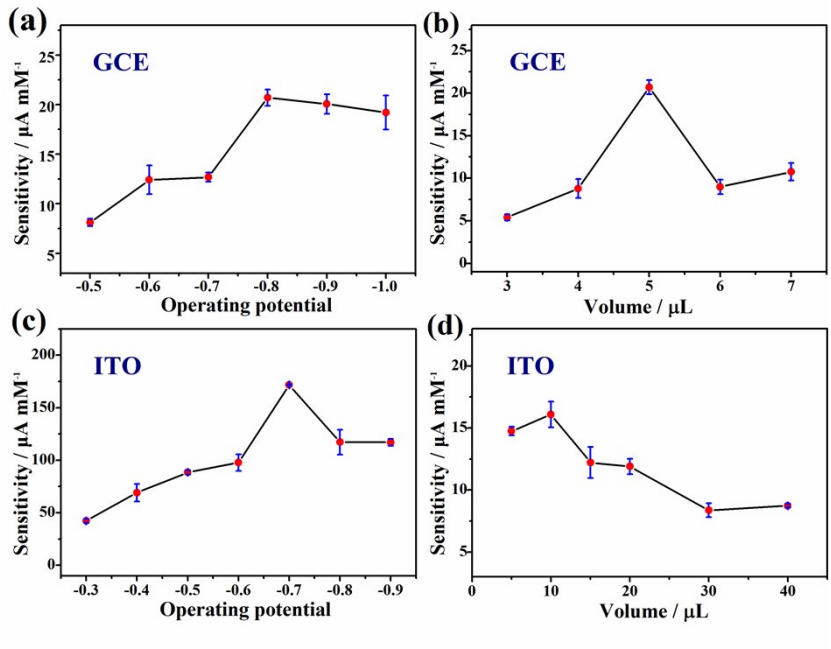

Fig. S3 Optimization of applied potential and volume of Hemin-G4/Au/GCE (a, b); Optimization of applied potential and volume of Hemin-G4/Au/ITO (c, d).