Supporting Information

Multi-components composed Cu$_2$O@FePO$_4$ core-cage structure to jointly promote fast electron transfer toward highly sensitive \textit{in situ} detection of nitric oxide

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Fig. S1. (a) Nitrogen adsorption-desorption and (b) pore-size distribution curves of Cu$_2$O@FePO$_4$CC.
Fig. S2. HRTEM image of Cu$_2$O@FePO$_4$CC.
Fig. S3. HRTEM image of Cu$_2$O.
**Fig. S4.** (a) XRD patterns of Cu$_2$O, Cu$_2$O@FePO$_4$CS, Cu$_2$O@FePO$_4$CC and FePO$_4$. (b) XPS survey spectrum of Cu$_2$O@FePO$_4$CC and corresponding high-resolution spectra in (c) Cu 2p, (d) Fe 2p and (e) P 2p regions.
Fig. S5. EDS spectrum of Cu$_2$O@FePO$_4$CC.
Fig. S6. (a) Scheme and (b) optical image of SPE.
Fig. S7. SEM images of Cu$_2$O@FePO$_4$CC materials synthesized with various Fe$^{3+}$ concentrations: (a) 1.0 μM, (b) 5.0 μM, (c) 10.0 μM, (g) 2.5 μM. And the SEM images of Cu$_2$O@FePO$_4$CC materials synthesized with different S$_2$O$_3^{2-}$ concentrations: (d) 0.1 M, (e) 0.7 M, (f) 1 M, (g) 0.25 μM. Effect of the different addition of Fe$^{3+}$ (h) and S$_2$O$_3^{2-}$ (i) on the performance of Cu$_2$O@FePO$_4$CC/SPE in CV responses, peak currents or half-wave potentials. (Scale bar is equal to 200 nm for every image)
Fig. S8. CV curves of Cu$_2$O@FePO$_4$CS (a) and Cu$_2$O@FePO$_4$CC synthesized under different conditions of (b) 2.5 μM, (c) 1 μM, (d) 5 μM and (e) 10 μM Fe$^{3+}$ concentrations; (f) and (g) and (h) are the CV curves f Cu$_2$O@FePO$_4$CC synthesized under 0.1 M, 0.7 M and 1.0 M S$_2$O$_3^{2-}$; the potential window is 0.2-0.3 V and the scan rates vary from 10, 20, 30, 40, 50 to 70 mV s$^{-1}$. (f) Capacitive currents at 0.25 V as a function of scan rates for different materials.
Fig. S9. Amperometric curve of Cu$_2$O@FePO$_4$CC/SPE, Cu$_2$O@FePO$_4$CS/SPE, Cu$_2$O/SPE, FePO$_4$/SPE upon continuous injection of NO at 0.97 V in 0.01 M PBS (pH 7.4).
Fig. S10. Selectivity of Cu$_2$O@FePO$_4$CC/SPE.