Electronic Supplementary Material (ESI) for RSC Advances

α-Fe_2O_3 Nanorod Arrays for Bioanalytical Applications: Nitrite and Hydrogen peroxide Detection

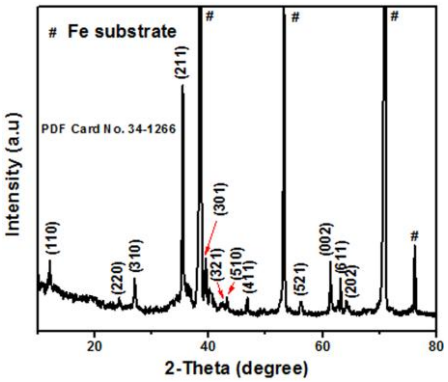

Fig. S1 XRD pattern of the electrodeposited film before calcination.

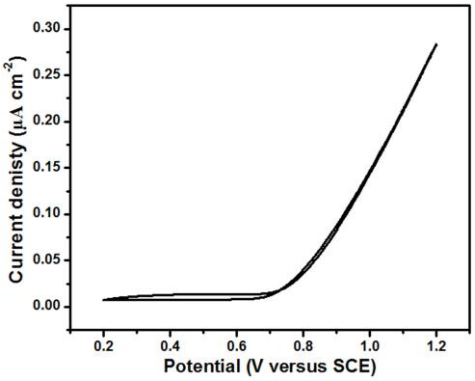

Fig. S2 Cyclic voltammogram of bare Fe electrode in 0.1 M PBS with 0.2 mM NO_2^-. Scan rate: 50 mv/s.

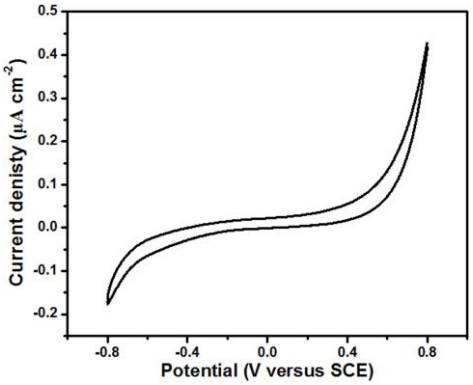

Fig. S3 Cyclic voltammogram of bare Fe electrode in 0.1 M PBS with 0.2 mM H_2O_2. Scan rate: 50 mv/s.

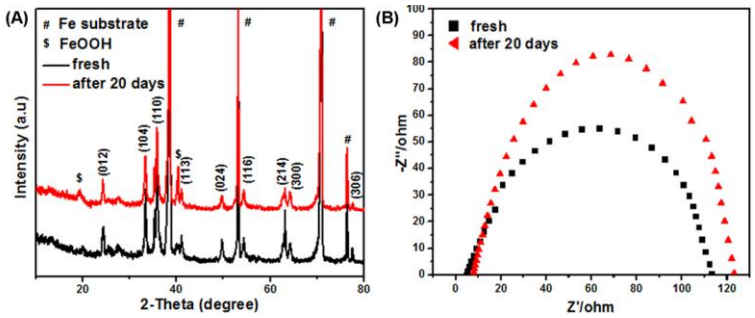

Fig. S4 (A) XRD patterns of α-Fe_2O_3 nanorod: fresh (black) and after 20 days (red), and their corresponding electrochemical impedance spectras (B).

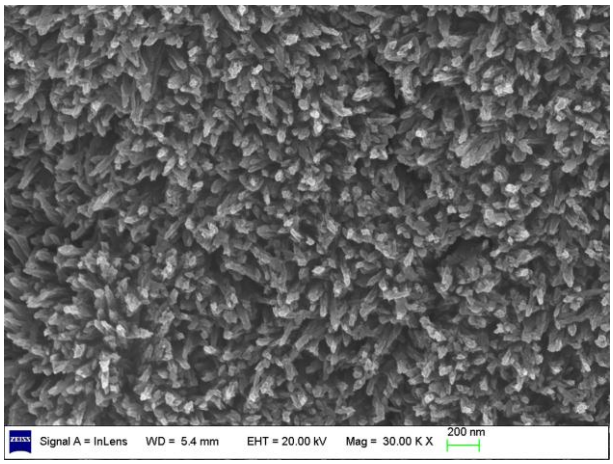

Fig. S5 Typical SEM image of α-Fe_2O_3 nanorod array after 20-days test.

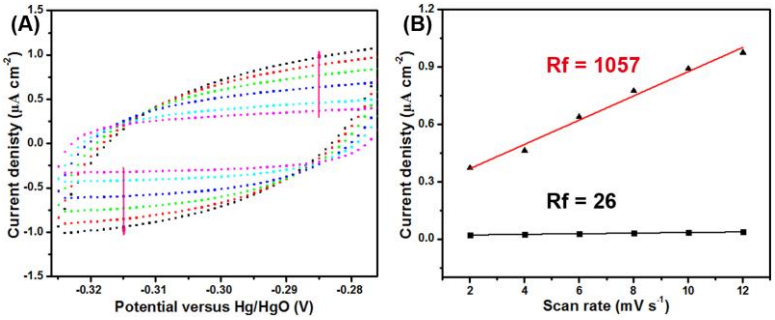

Fig.S6 Determination of roughness factor of α-Fe_2O_3 electrodes . (A) Cyclic voltammograms of α-Fe_2O_3 NR arrays electrode as a function of the scan rate (along the arrow direction: 12, 10, 8, 6, 4 and 2 mV/s). (B) Dependence of the capacitive current on the scan rate (▲α-Fe_2O_3 NR arrays, ■ α-Fe_2O_3 nanorod powder). The α-Fe_2O_3 nanorod powder were synthesized based on a method reported in our previous work[1]. The α-Fe_2O_3 nanorods are about 400 nm in length and typically 10 nm in diameter.

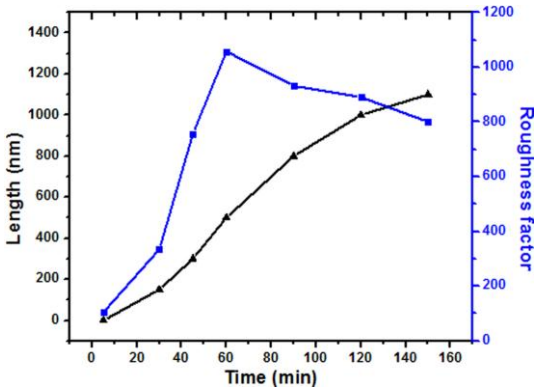

Fig. S7 Variation of the length of and roughness factor with respect to the different durations of the depositions.

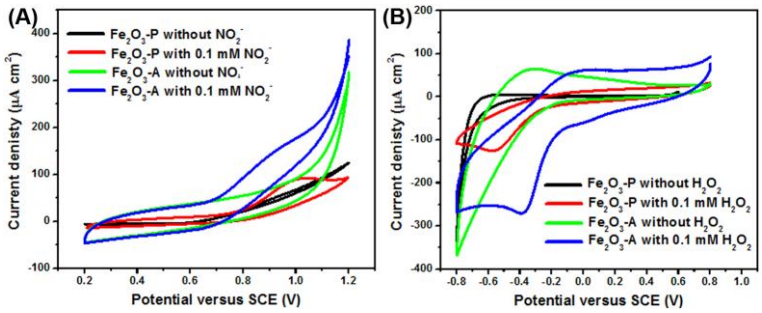

Fig. S8 Comparison of the cyclic voltammograms of α-Fe_2O_3 NR arrays (Fe_2O_3-A), and α-Fe_2O_3 nanorod powder (Fe_2O_3-P) with the same amount of α-Fe_2O_3 per square centimeter to the addition of 0.1 mM NO_2^- and 0.1 mM H_2O_2, respectively.

Reference:

1. Liu, X.; Liu, J.; Chang, Z.; Sun, X.; Li, Y. *Catal. Commun.* **2011**, *12*, 530.