Effect of morphology and impact of electrode/electrolyte interface on the PEC response of Fe$_2$O$_3$ based systems- Comparison of two preparation techniques

Kumari Asha[a], _Vibha Rani Satsangi_[b], _Rohit Shrivastav_[a], _Rama Kant_[c], _Sahab Dass_[a*]
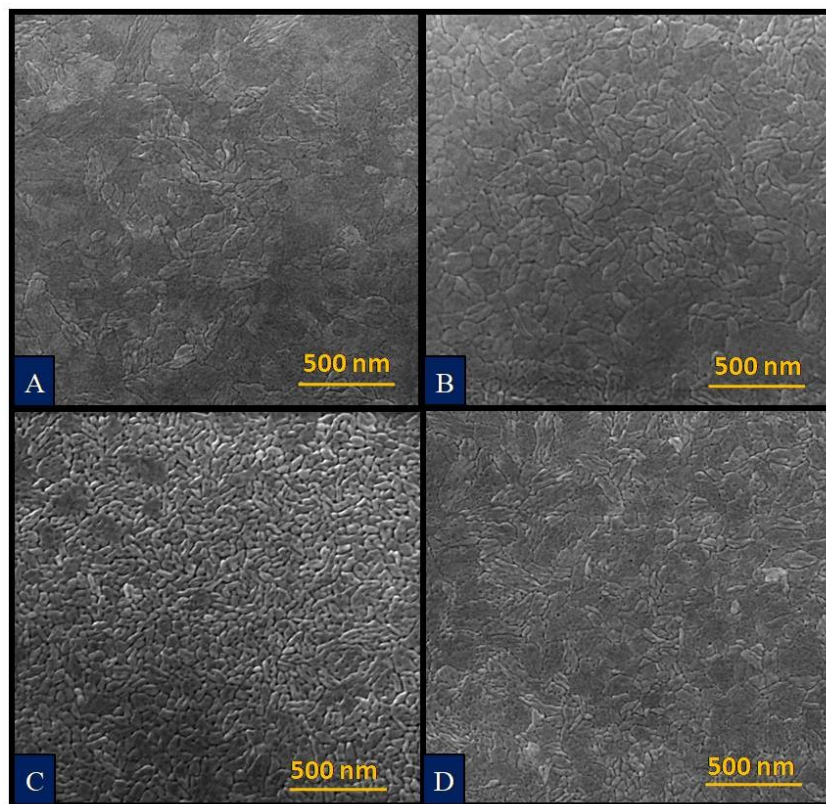

Figure S1. FE-SEM images of Fe$_2$O$_3$ thin films prepared by spray pyrolysis with (A) 20s, (B) 30s, (C) 40s and (D) 50s spray time
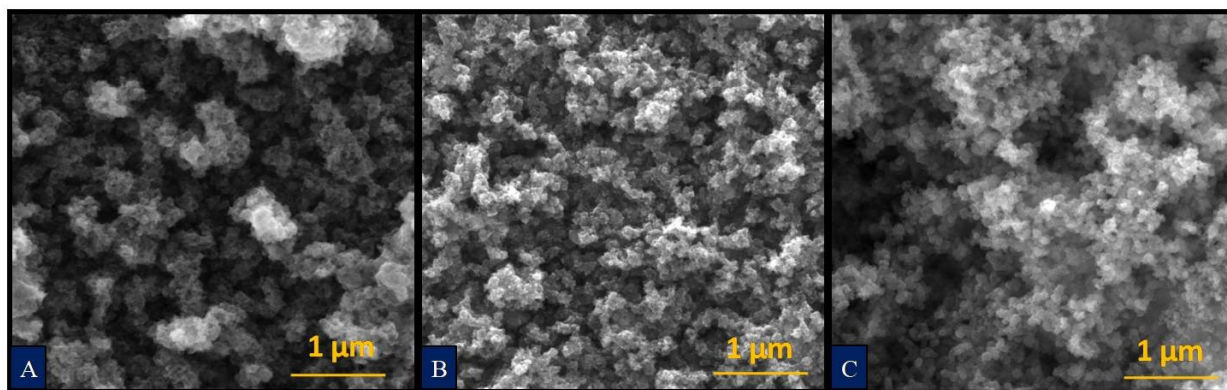

Figure S2. FE-SEM images of Fe$_2$O$_3$ thin films prepared by electrodeposition with (A) 50 cycles, (B) 100 cycles and (C) 150 cycles of deposition
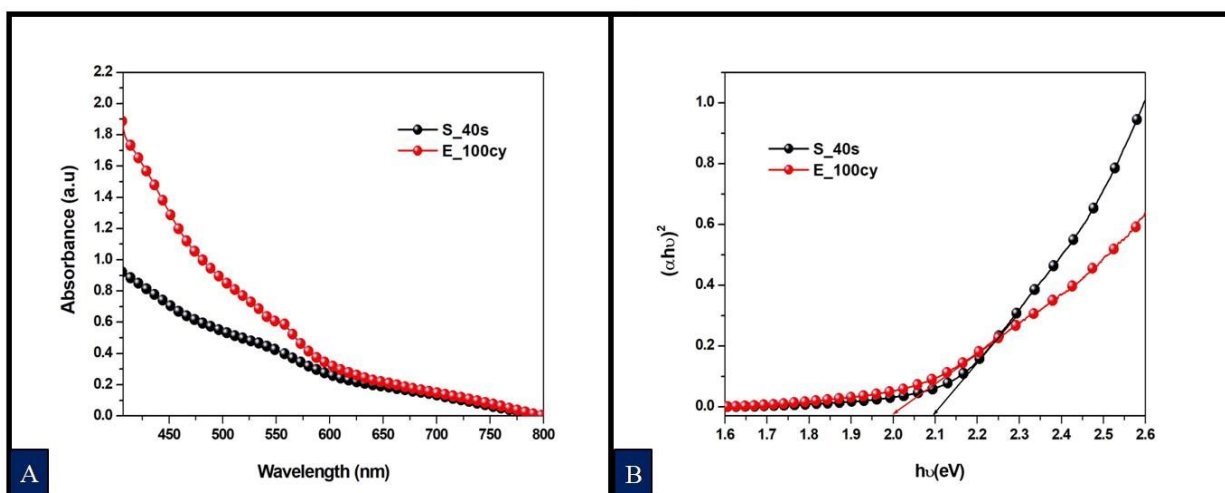
Figure S3. (A) UV-Visible absorption spectra and (B) Tauc plot of Fe_2O_3 thin films prepared by spray pyrolysis and electrodeposition
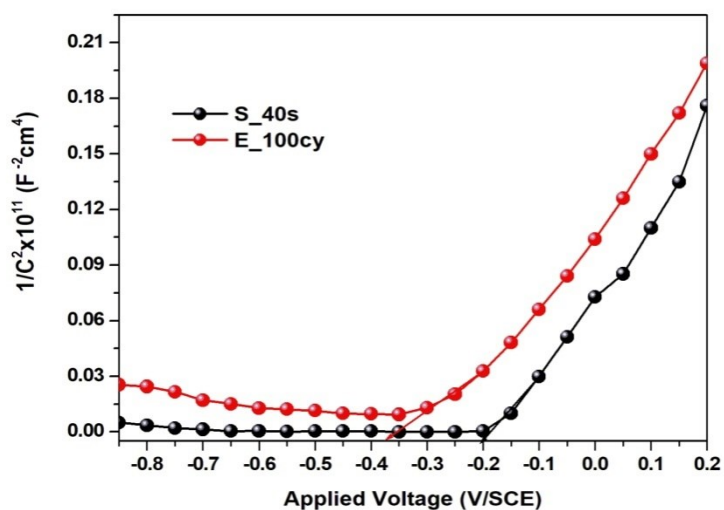

Figure S4. Mott-Schottky plot of Fe_2O_3 thin films prepared by spray pyrolysis and electrodeposition
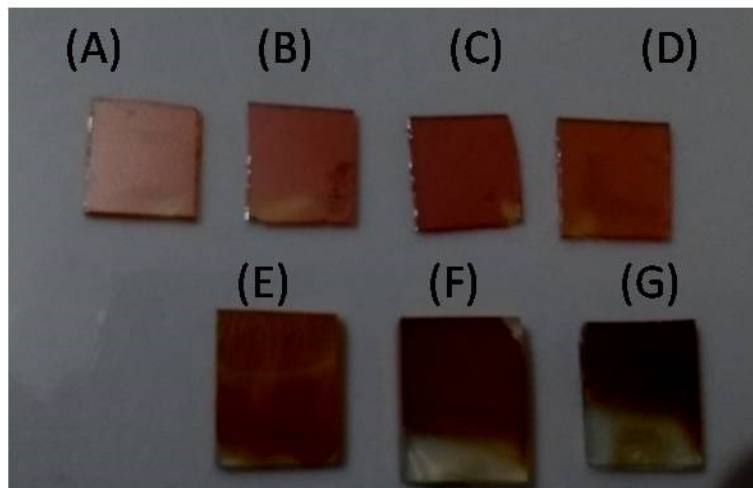
Figure S5. Fe$_2$O$_3$ thin films prepared by spray pyrolysis with (A) 20s, (B) 30s, (C) 30s and (D) 40s spray time and by electrodeposition with (E) 50 cycles, (F) 100 cycles and (G) 150 cycles
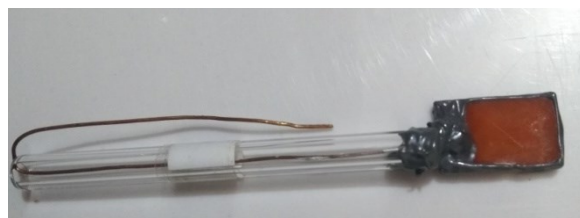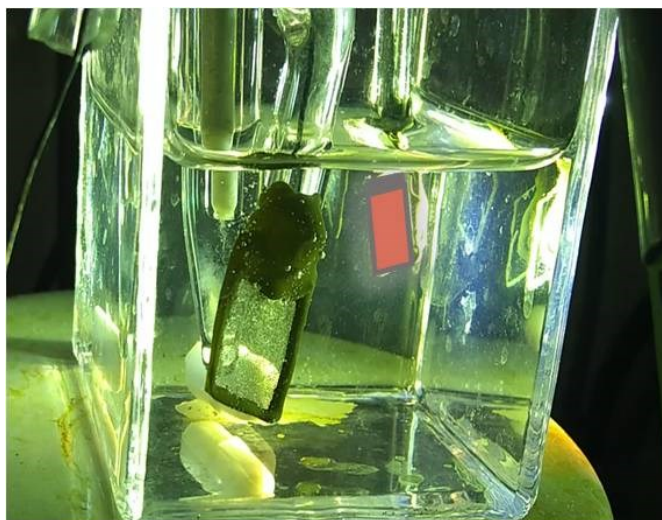

Figure S6. Prepared Fe$_2$O$_3$ electrode

Figure S7. Three electrode assembly set up for electrochemical and photoelectrochemical analysis

Sample Description	R_s	R_{ct}	C_{dl}
S_40s	21.47 Ω	20.7 kΩ	928 nF
E_100 cy	17.45 Ω	9.1 kΩ	1.12 µF

Table S1. Equivalent randles circuit parameters used for fitting EIS data