Electronic Supporting Information (ESI)

Preparation of different shaped α-Fe$_2$O$_3$ nanoparticles with large particle of iron oxide red

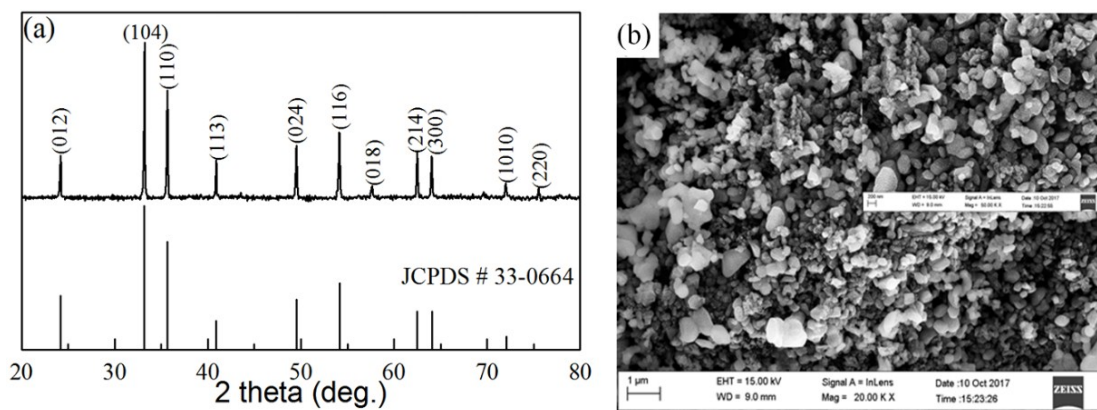Jianxing Liu [a], He Yang [a,b] and Xiangxin Xue*[a,b]

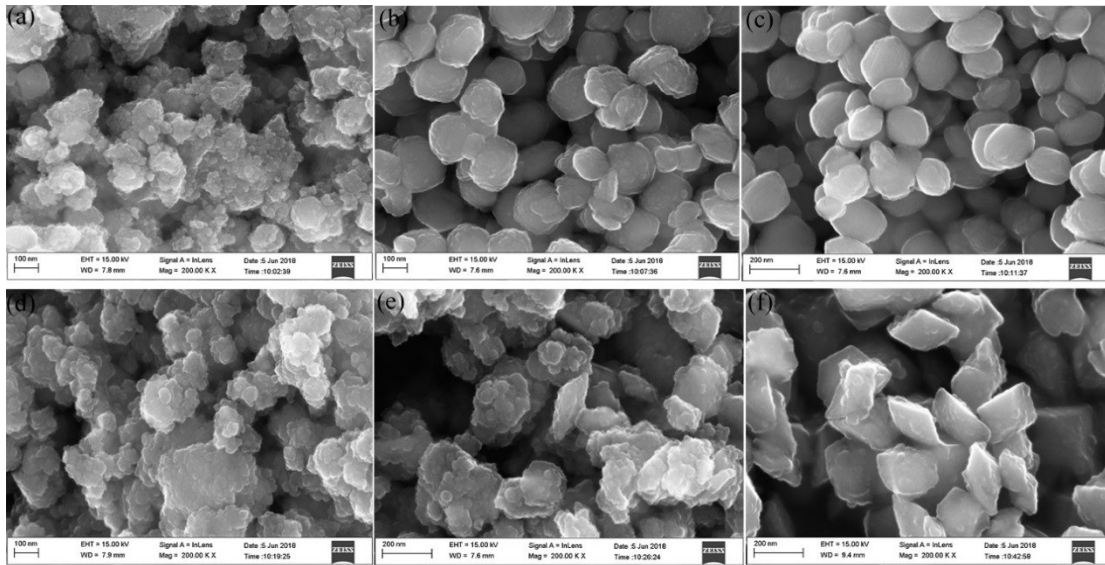Figure S1 (a) XRD pattern and (b) SEM image of iron oxide red.

Figure S2. SEM images of the samples prepared at 180 ^{o}C for different times (a) CH$_3$COOH 1h, (b) CH$_3$COOH 2h, (c) CH$_3$COOH 4h, (d) HCl 1h, (e) HCl 2h, (f) HCl 4h.

Table S1 The chemical composition of oxidized scale (mass/%)

Chemical composition	Fe_2O_3	CaO	SiO_2	Al_2O_3	MnO
Mass/%	99.18	0.05	0.05	0.15	0.37

Table S2 The crystal structure parameters, FTIR positions (v_1, v_2), band gap energies (E_g) and magnetic properties (M_r, H_c) of prepared α-Fe$_2$O$_3$

Sample	A (Å)	c (Å)	v_1 (cm^{-1})	v_2 (cm^{-1})	E_g (eV)	M_r (emu/g)	H_c (Oe)
None	5.0180	13.7422	565	477	1.94	0.082	2441
HCl	5.0014	13.6827	546	475	2.04	0.139	1695
H$_2$SO$_4$	5.0170	13.7338	570	477	2.02	0.128	909
HNO$_3$	5.0089	13.7086	540	471	2.06	0.152	1045
CH$_3$COOH	5.0065	13.6932	562	481	1.98	0.141	480