Supporting Information

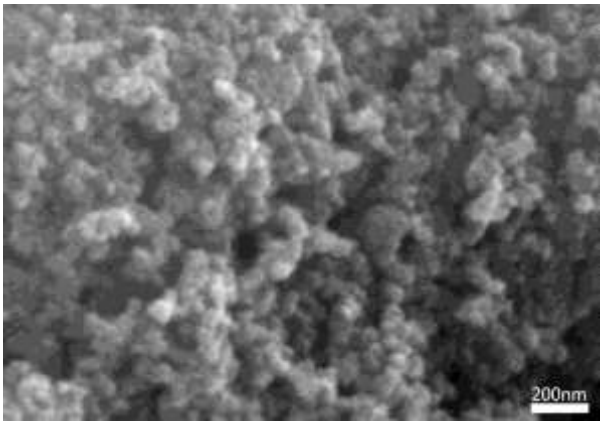
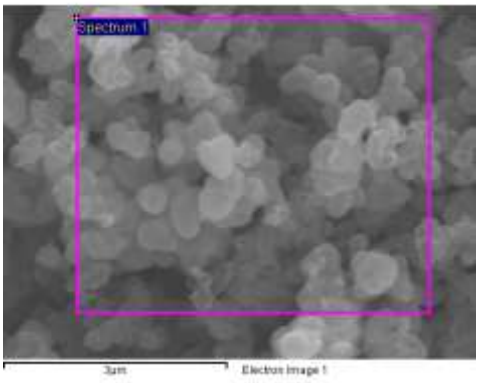


Fig. S1 The FESEM image of Fe_2O_3@TiO_2 core-shell nanocomposites with 1M HCl at 100℃ for 24h processing.



Element	Weight%	Atomic%
C K	21.89	33.89
O K	43.10	50.10
F K	4.49	4.39
Ti K	26.47	10.27
Fe K	4.06	1.35
Totals	100.00	

Fig. S2 The corresponding selected interfacial area and all elements analysis of EDS spectrum for the Fe_2O_3@TiO_2 core-shell nanocomposite etched in 0.2 M HCl for 48 h. The molar ratio for Fe_2O_3:TiO_2 is about 7.0 % by calculating the atomic percentage of Fe and Ti.

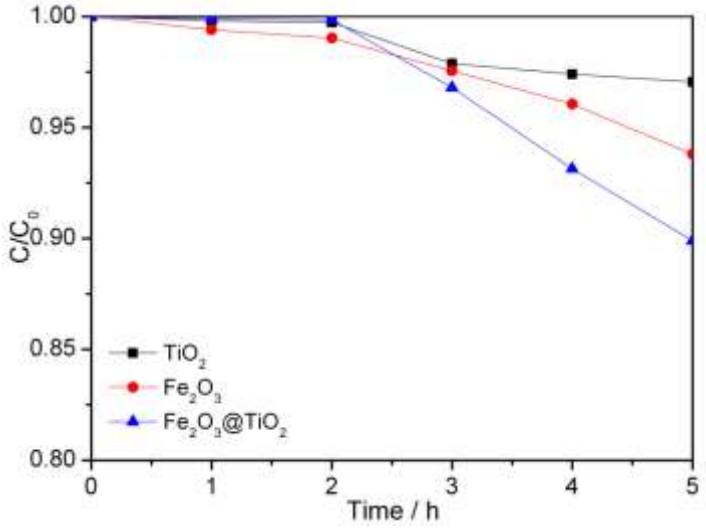


Fig. S3 The performance of TiO_2, Fe_2O_3 and Fe_2O_3@TiO_2 core-hell nanocomposites for photocatalytic degradation of RhB under the irradiation of visible light.

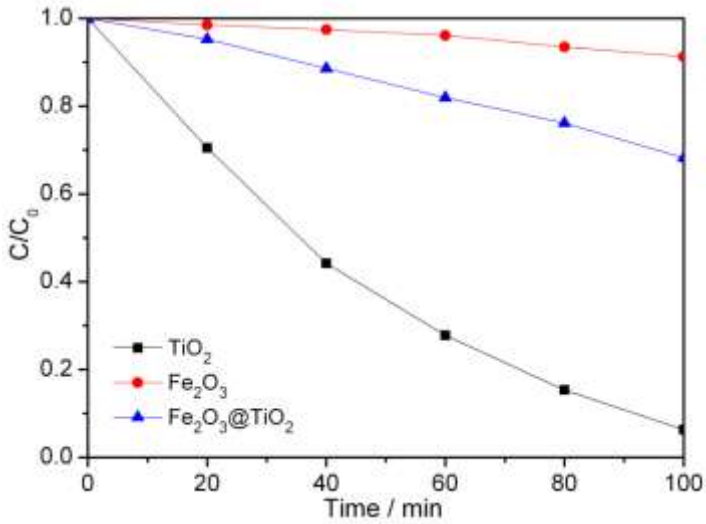


Fig. S4 The performance of TiO_2, Fe_2O_3 and Fe_2O_3@TiO_2 core-hell nanocomposites for photocatalytic degradation of RhB under the irradiation of UV light.

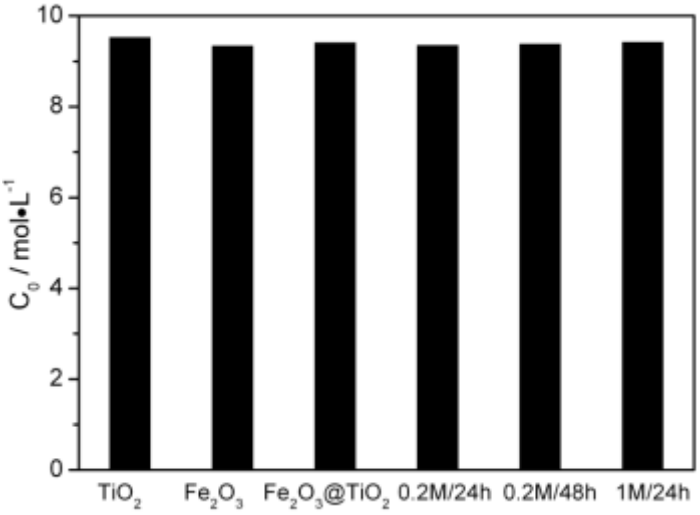


Fig. S5 The residual concentration of RhB after achieving a equilibrium state of adsorption-desorption by photocatalysts for 10 min.