Electronic Supplementary Material (ESI) for Journal of Materials Chemistry A.

Supporting Information

Synthesis of $Fe_{0.32}Co_{0.68}/\gamma$-$Al_2O_3$@C nanocomposite for depth treatment of dyes sewage based on adsorption and advanced catalytic oxidation

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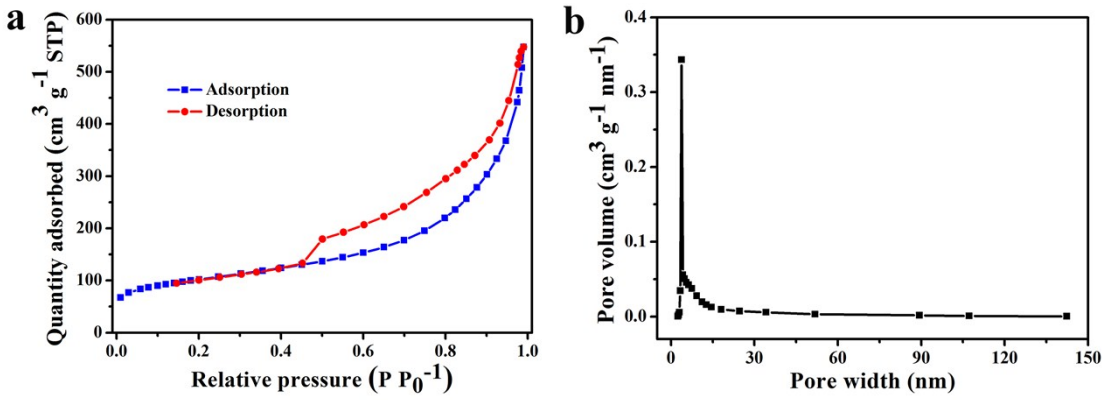

Fig. S1 (a) N_2 adsorption-desorption isotherms and b) the corresponding pore size distribution of γ-Al_2O_3@C calculated using the BJH method.

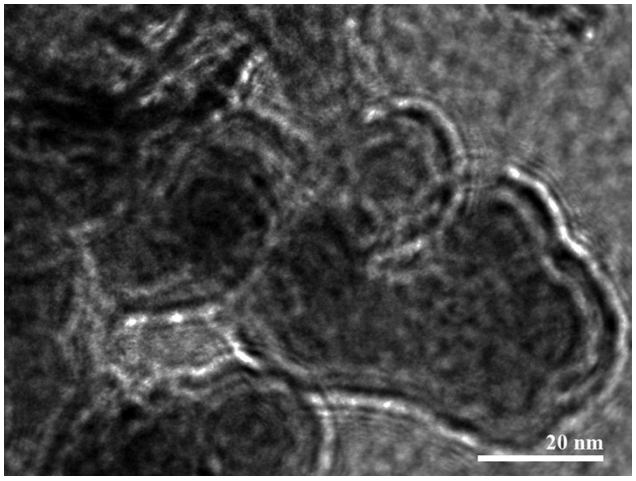

Fig. S2 HRTEM image of the as-synthesized $Fe_{0.32}Co_{0.68}$/γ-Al_2O_3@C nanocomposite.

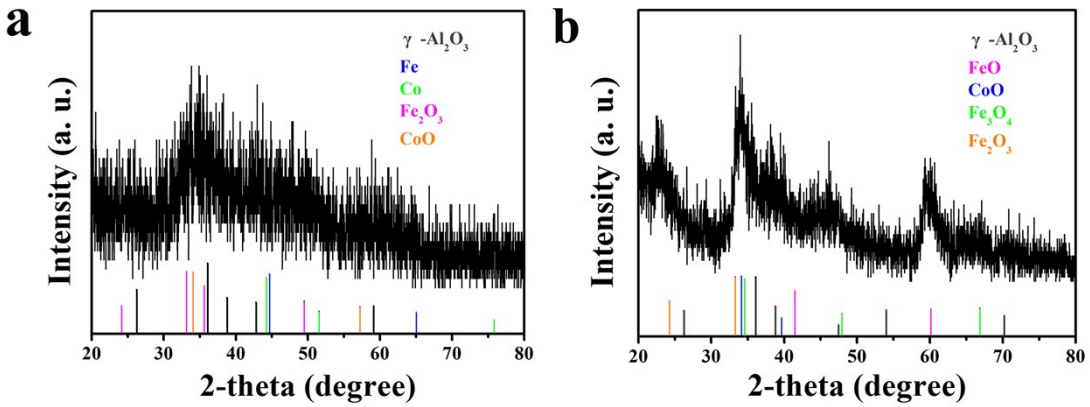

Fig. S3 XRD patterns of: (a) $Fe_{0.32}Co_{0.68}$/γ-Al_2O_3@C composite and (b) Fe-Co oxide/γ-Al_2O_3@C composite.

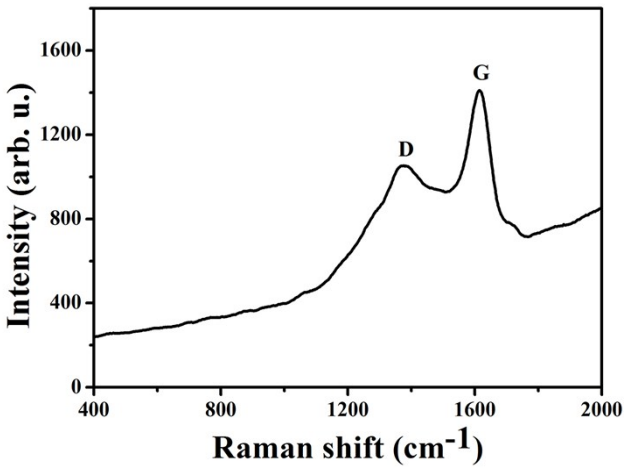

Fig. S4 Raman spectra of the flower-like γ-Al_2O_3@C composite.

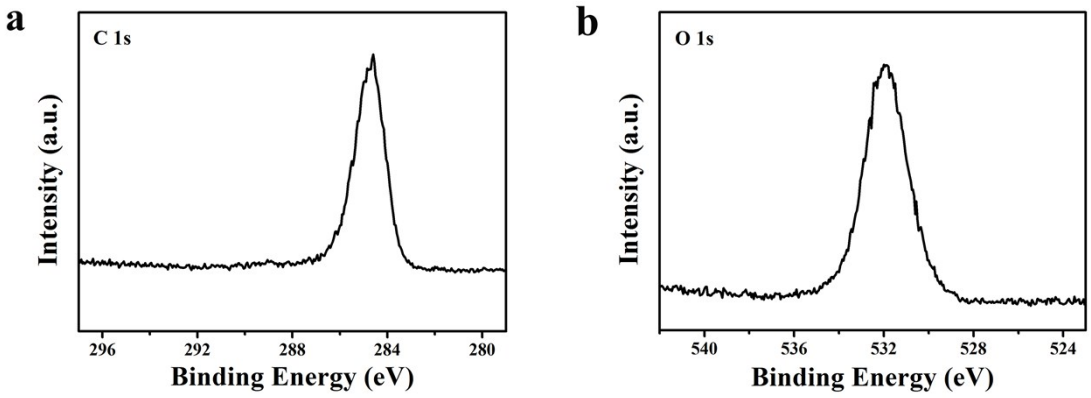

Fig. S5 XPS spectra of the as-prepared $Fe_{0.32}Co_{0.68}$/γ-Al_2O_3@C: (a) C 1s, (b) O 1s.

Table S1 Adsorption parameters got from the two kinetic models for the adsorption of Orange II on $Fe_{0.32}Co_{0.68}$/γ-Al_2O_3@C

Kinetic models	q_e (mg g^{-1})	k	R^2
Pseudo-first-order	37.26	0.1914 (min^{-1})	0.4997
Pseudo-second-order	970.87	0.0853 (g mg^{-1} min^{-1})	1

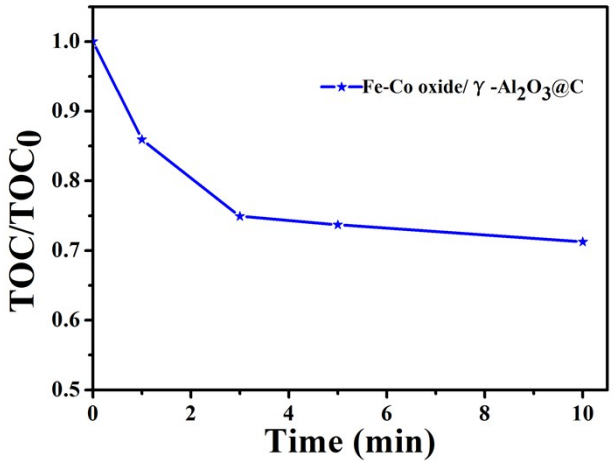

Fig. S6 Mineralization of Orange II (90 mg L^{-1}) by the "Fe-Co oxide/γ-Al_2O_3@C +

PMS" system. (Degradation reaction conditions: [PMS] = 1.5 g L^{-1}, [catalyst] = 0.05 g L^{-1}, pH = 7.0 and T = 20 ^{o}C.)

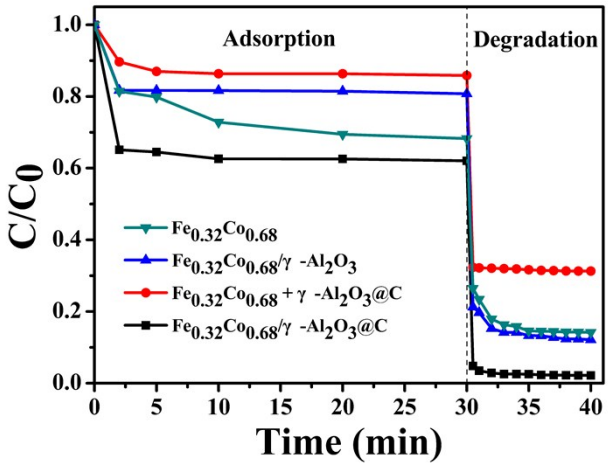

Fig. S7 Removal efficiency of Orange II (200 mg L^{-1}) by different systems combining the adsorption and catalytic degradation.