

Supplementary Information

Adsorption and Photo-Fenton Catalytic Degradation of Organic Dyes Over Crystalline LaFeO₃-doped Porous Silica

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Table S1. Kinetic parameters of pseudo-first-order and pseudo-second-order.

Sample	Pseudo-first-order kinetic model			Pseudo-second-order kinetic model		
	k_1 (min ⁻¹)	q_e (cal) (mg g ⁻¹)	r^2	k_2 (g mg ⁻¹ min ⁻¹)	q_e (cal) (mg g ⁻¹)	r^2
HPS-0LFO	0.0751	1.2349	0.8161	0.1621	6.5530	0.9998
HPS-0.075LFO	0.0823	2.8912	0.8620	0.0222	5.4436	0.9877
HPS-0.15LFO	0.0656	2.0686	0.9862	0.0354	2.1335	0.9661
HPS-0.3LFO	0.1006	1.0550	0.9213	0.0771	1.0329	0.9715

*Pseudo-first-order: $\ln(q_e - q_t) = \ln q_e - k_1 t$; Pseudo-second-order: $\frac{t}{q_t} = \frac{1}{k_2 q_e^2} + \frac{t}{q_e}$; where q_t is the amount of RhB adsorbed at a given period of time (mg g⁻¹); q_e is the amount of RhB adsorbed at equilibrium (mg g⁻¹); t is the adsorption time (min); k_1 (min⁻¹), and k_2 (g mg⁻¹ min⁻¹) are the adsorption rate constants of the pseudo-first-order and pseudo-second-order, respectively^{1,2}.

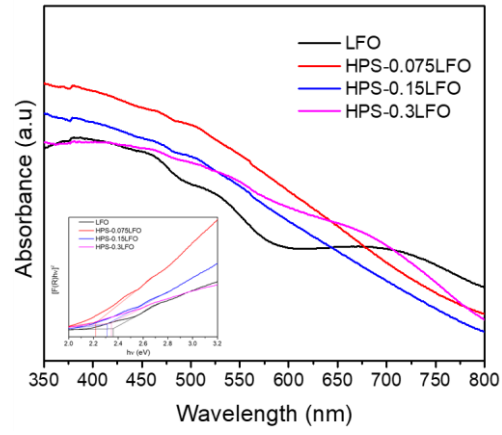


Fig. S1. UV-vis absorption spectra of the samples (the inset: $[F(R)hv]^2$ versus $h\nu$ plots).

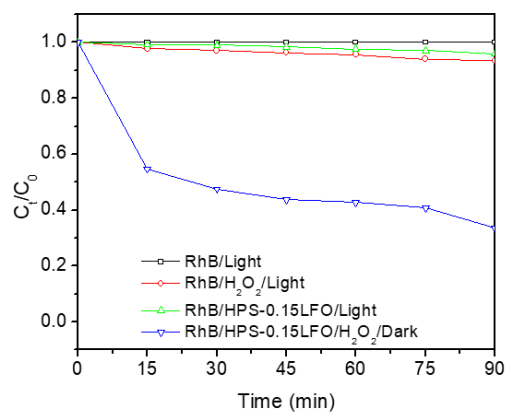


Fig. S2. Change of RhB concentration in different systems: RhB/Light (the solution with RhB under visible light), RhB/H₂O₂/Light (the solution with RhB and H₂O₂ under visible light), RhB/HPS-0.15LFO/Light (the solution with RhB and HPS-0.15LFO under visible light) and RhB/HPS-0.15LFO/H₂O₂/Dark (the solution with RhB, H₂O₂ and HPS-0.15LFO in dark).

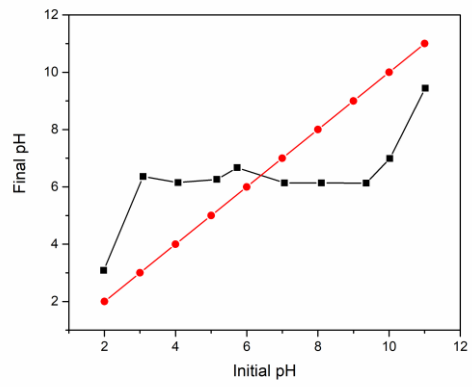


Fig. S3. pH_{pzc} of the HPS-0.15LFO sample using the pH drift method.

References

1. Y.-S. Ho and G. McKay, *Process Safety and Environmental Protection*, 1998, **76**, 183-191.
2. J. Lin and L. Wang, *Frontiers of Environmental Science & Engineering*, 2009, **3**, 320-324.