processes

Design of Polymer-Embedded Heterogeneous Fenton Catalysts for the Conversion of Organic Trace Compounds

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Supporting Information

1. **WAXS diffraction patterns of F1 and F2**
2. **N_2 adsorption isotherms and pore size distribution**
3. **Scavenger effect on the RB5 degradation catalyzed by F2**
4. **Degradation kinetics of RB5 catalyzed by polymer composites with different iron contents**

1. WAXS diffraction patterns of F1 and F2.

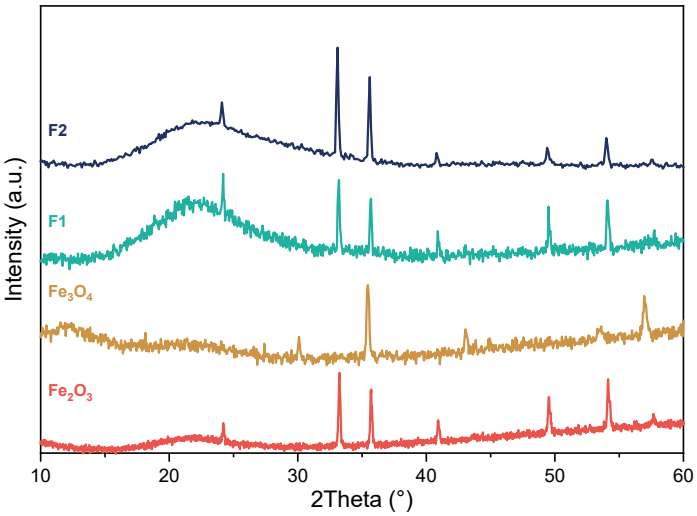

Figure S1. WAXS patterns of the Fenton catalysts F1 and F2 compared to Fe_2O_3 and Fe_3O_4.

2. N_2 adsorption isotherms and pore size distrubution

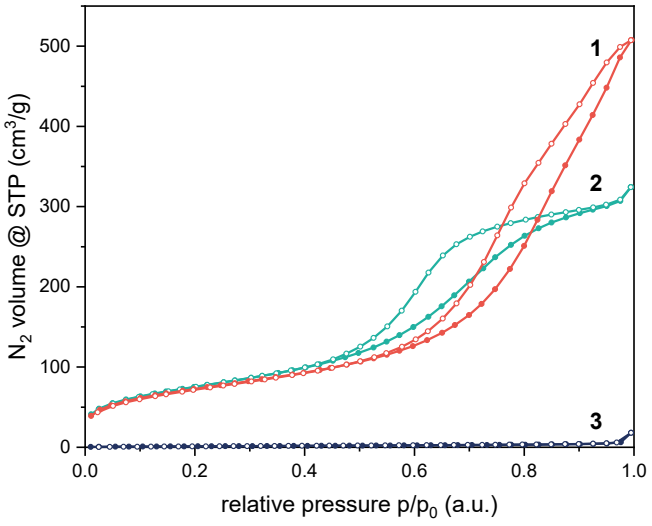

Figure S2. Isotherms for N_2 adsorption (filled circles) and desorption (empty circles) of the samples (**1**) F2, (**2**) F1 and (**3**) Fe_2O_3 at 77 K.

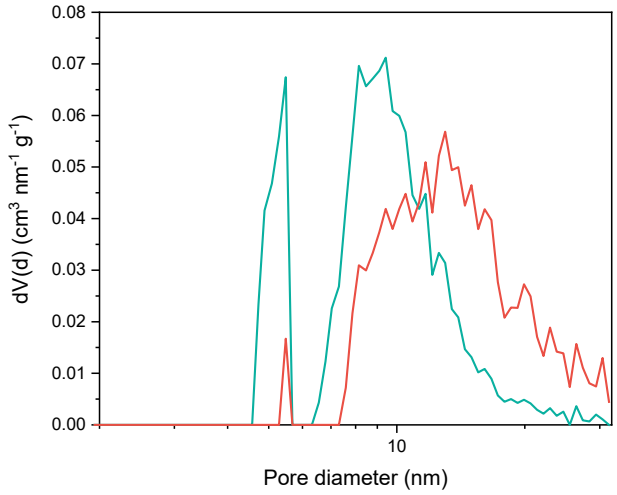

Figure S3. Pore size distribution (PSD) calculated by NLDFT fit (cylindrical/sphere pores, adsorption model, N_2 on silica) for F1 (red) and F2 (green).

3. Scavenger effect on the RB5 degradation catalyzed by F2

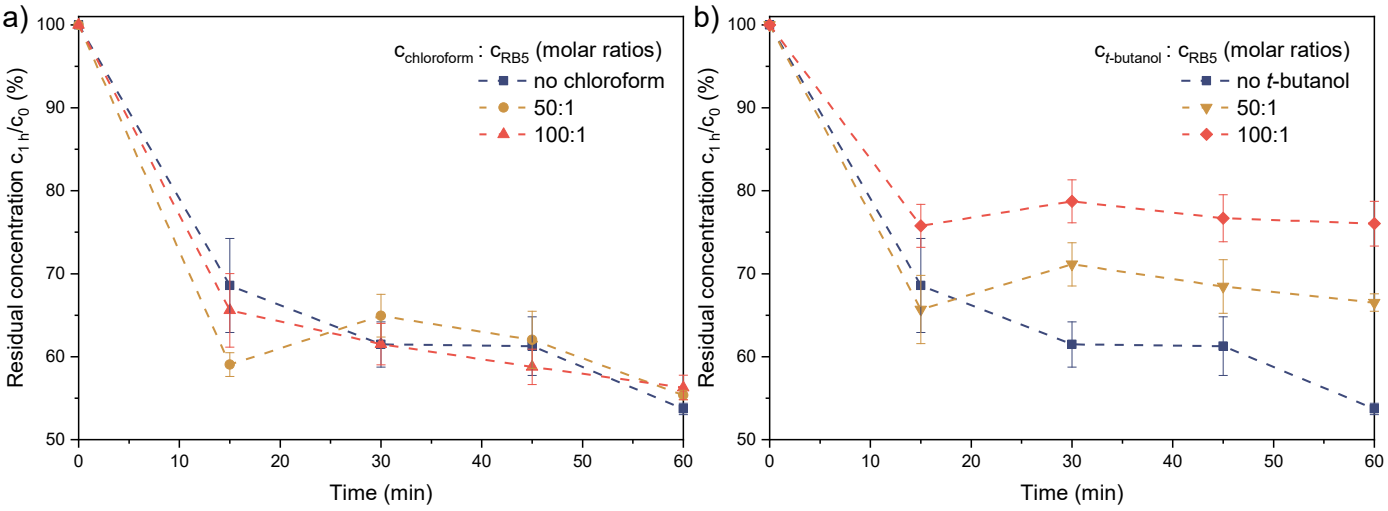

Figure S4. Effect of (a) $O_2^{\bullet-}$ scavenger chloroform and (b) $OH^{\bullet}$ scavenger *t*-butanol on the degradation of RB5 catalyzed by the Fenton catalyst F2.

4. Degradation kinetics of RB5 catalyzed by polymer composites with different iron contents

	Iron content	Conversion	Reaction order	Reaction rate coefficient	Iron Leaching after 2 h
(1)	100 mg/L	3.2%	zeroth	$k_0 = 1.03 \cdot 10^{-09}$ mol·L^{-1}·s^{-1}	0.019 mg/L
(2)	200 mg/L	31.1%	zeroth	$k_0 = 9.10 \cdot 10^{-10}$ mol·L^{-1}·s^{-1}	< 0.005 mg/L
(3)	300 mg/L	40.1%	zeroth	$k_0 = 1.17 \cdot 10^{-09}$ mol·L^{-1}·s^{-1}	0.034 mg/L

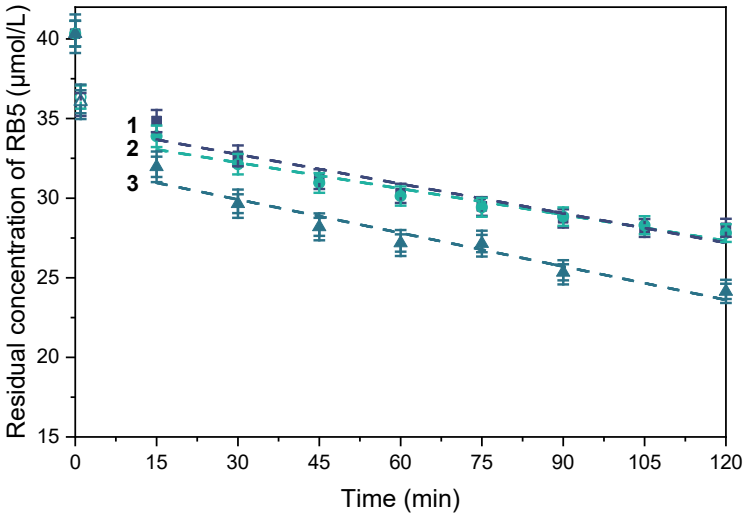

Figure S5. Kinetic study of RB5 degradation using the composite PP-*g*-MA-*g*-PEO1000/APTES/F2 (65/35) with different amount of iron per RB5 assay, (**1**) 100 mg/L iron, (**2**) 200 mg/L iron, (**3**) 300 mg/L iron.