FeOOH activating resorcinol-formaldehyde resin nanospheres for the photo-Fenton degradation of organic pollutants

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Fig. S1 SEM image of the pristine RFS nanospheres.
**Fig. S2** Degradation rate of RhB with different catalysts in dark condition.

Experimental conditions: 0.5 g L\(^{-1}\) of photocatalysts, 15 ppm of RhB solution.
Fig. S3 UV-vis absorbance spectral and photographs changes of RhB after different irradiation time with 6FeOOH/RFS composite. Experimental conditions: 0.5 g L⁻¹ of photocatalysts, 15 ppm of RhB solution, visible light irradiation (λ > 420 nm).
Fig. S4 Zero-order kinetics curves of the degradation of RhB by different photocatalysts.
Fig. S5 The degradation rate of RhB with different concentrations by 6FeOOH/RFS composite. Experimental conditions: 0.5 g L$^{-1}$ of photocatalysts, visible light irradiation ($\lambda > 420$ nm).
Fig. S6 Degradation rate of DMP with different catalysts. Experimental conditions: 10 ppm of DMP solution, 1 g L\(^{-1}\) of photocatalysts, visible light irradiation (\(\lambda > 420\) nm).
Fig. S7 (a to f) The original HPLC data of Fig. 4f (HPLC chromatograms of the degradation of DMP by 6FeOOH/RFS composite after different reaction times).
Fig. S8 Photocatalytic production of $\text{H}_2\text{O}_2$ of the (a) RFS nanospheres and (b) 6FeOOH/RFS composite after four cycling runs. Experimental conditions: 20 mg of catalysts, 40 mL of $\text{H}_2\text{O}$, visible light irradiation ($\lambda > 420$ nm).
Fig. S9 (a) XRD pattern and (b) FTIR spectrum of the 6FeOOH/RFS composite before and after four cycles of RhB degradation.
Fig. S10 (a) Survey XPS spectrum, high resolution (b) C1s, (c) O1s and (d) Fe2p XPS spectra of 6FeOOH/RFS composite after four cycles of RhB degradation.
Fig. S11 Cyclic voltammogram of (a) RFS and (b) FeOOH in 0.1 M Na$_2$SO$_4$ solution (pH 6.8) before and after AM 1.5G irradiation
Table S1. The atomic ratios of the 6FeOOH/RFS composite before and after four cycles of RhB degradation according to the XPS detection

<table>
<thead>
<tr>
<th>Samples</th>
<th>C [atom%]</th>
<th>O [atom%]</th>
<th>Fe [atom%]</th>
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<tbody>
<tr>
<td>Before reaction</td>
<td>62.68</td>
<td>30.17</td>
<td>7.15</td>
</tr>
<tr>
<td>After four cycles</td>
<td>63.82</td>
<td>29.74</td>
<td>6.44</td>
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