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

Binyao Liu,^a Longgang Yan,^c Jinyu Wen,^a Xiaotian Liu,^a Feng Duan,^a Bi Jia,^b Xiaoyan Liu,^b Gaili Ke,^{a*} Huichao He,^{a, b*} and Yong Zhou^{d*}

^aState Key Laboratory of Environmental Friendly Energy Materials, School of Materials Science and Engineering, Southwest University of Science and Technology, Mianyang 621010, China.

^bInstitute of Environmental Energy Materials and Intelligent Devices, School of Metallurgy and Materials Engineering, Chongqing University of Science and Technology, Chongqing 401331, P. R. China.

^cInstitute of Applied Electronic, China Academy of Engineering Physics, Mianyang 621010, China.

^dEcomaterials and Renewable Energy Research Center, School of Physics, Nanjing University, Nanjing 211102, China.

Keywords: Resorcinol-formaldehyde resin; FeOOH; Photo-Fenton; Hydrogen peroxide; Organic degradation

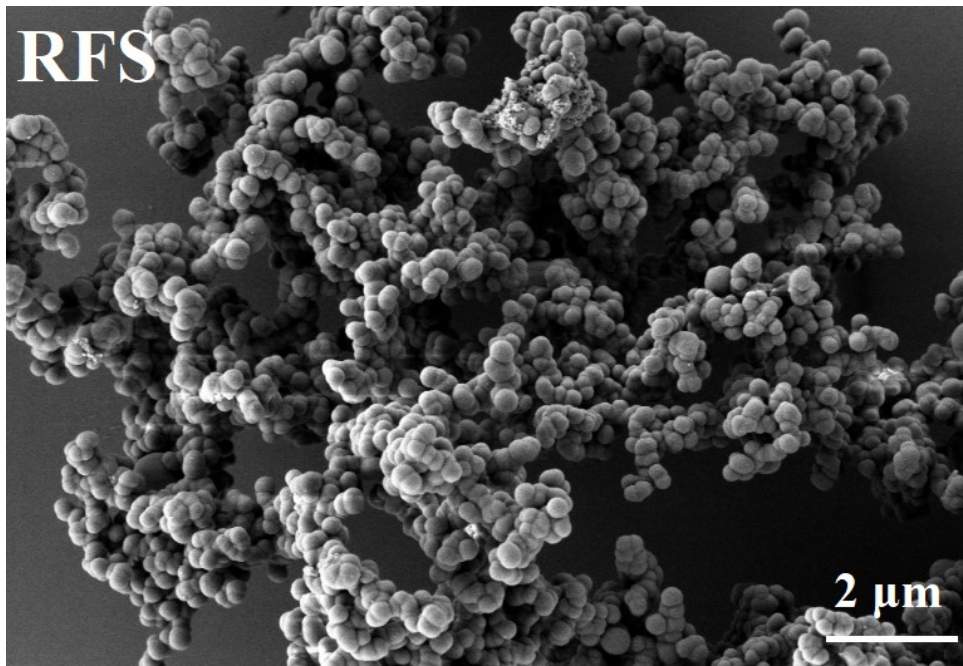


Fig. S1 SEM image of the pristine RFS nanospheres.

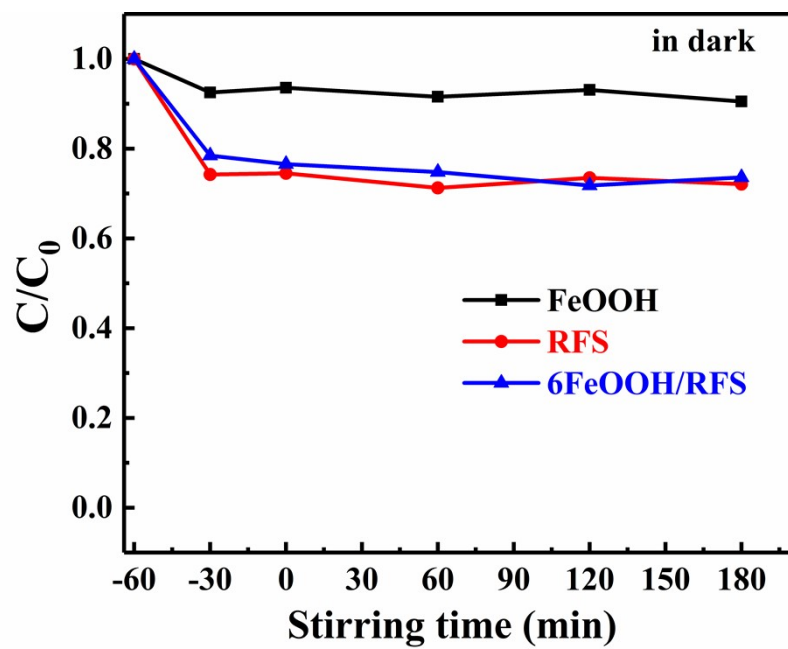


Fig. S2 Degradation rate of RhB with different catalysts in dark condition. Experimental conditions: 0.5 g L^{-1} of photocatalysts, 15 ppm of RhB solution.

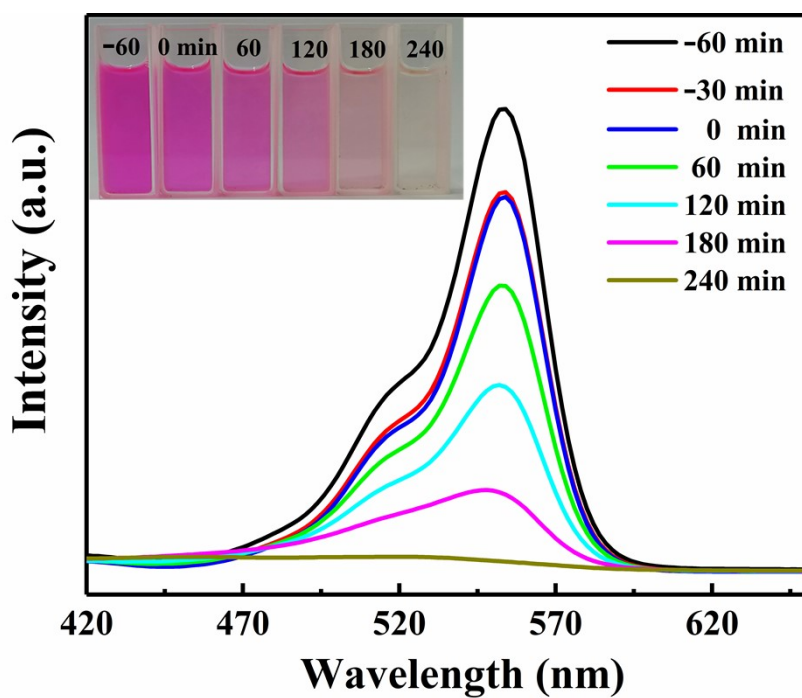


Fig. S3 UV-vis absorbance spectral and photographs changes of RhB after different irradiation time with 6FeOOH/RFS composite. Experimental conditions: 0.5 g L⁻¹ of photocatalysts, 15 ppm of RhB solution, visible light irradiation ($\lambda > 420$ nm).

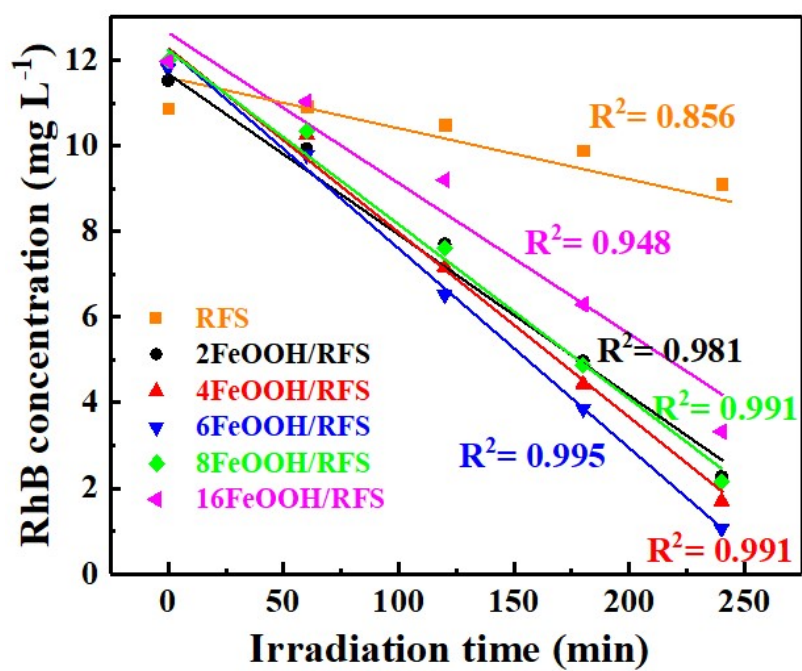


Fig. S4 Zero-order kinetics curves of the degradation of RhB by different photocatalysts.

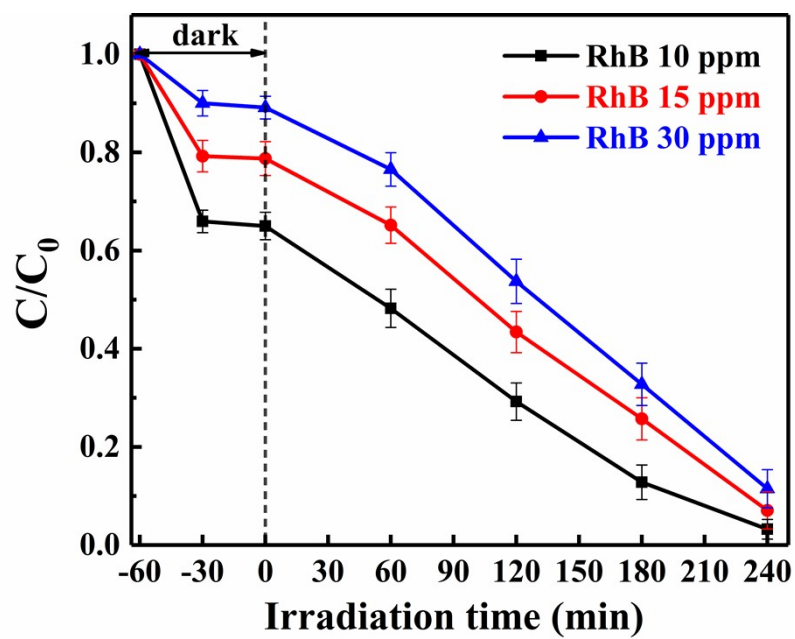


Fig. S5 The degradation rate of RhB with different concentrations by 6FeOOH/RFS composite. Experimental conditions: 0.5 g L⁻¹ of photocatalysts, visible light irradiation ($\lambda > 420$ nm).

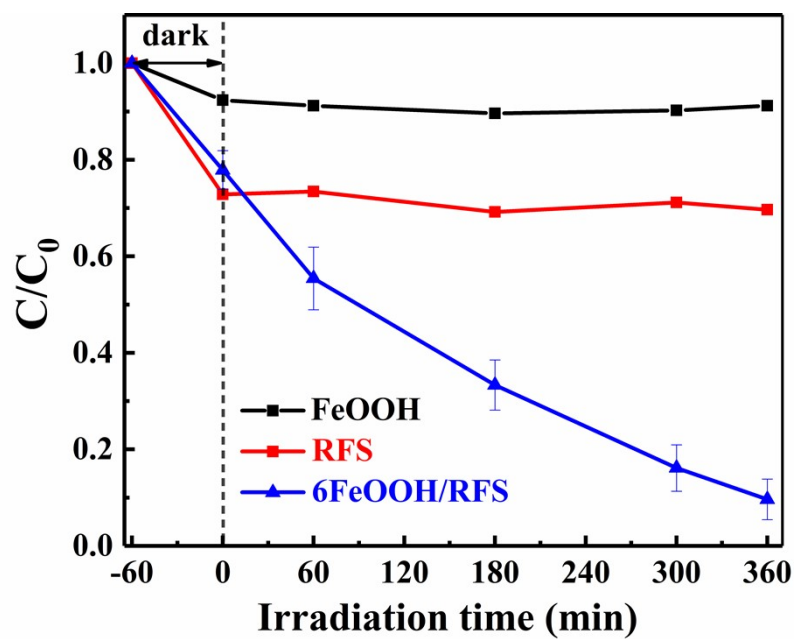


Fig. S6 Degradation rate of DMP with different catalysts. Experimental conditions: 10 ppm of DMP solution, 1 g L⁻¹ of photocatalysts, visible light irradiation ($\lambda > 420$ nm).

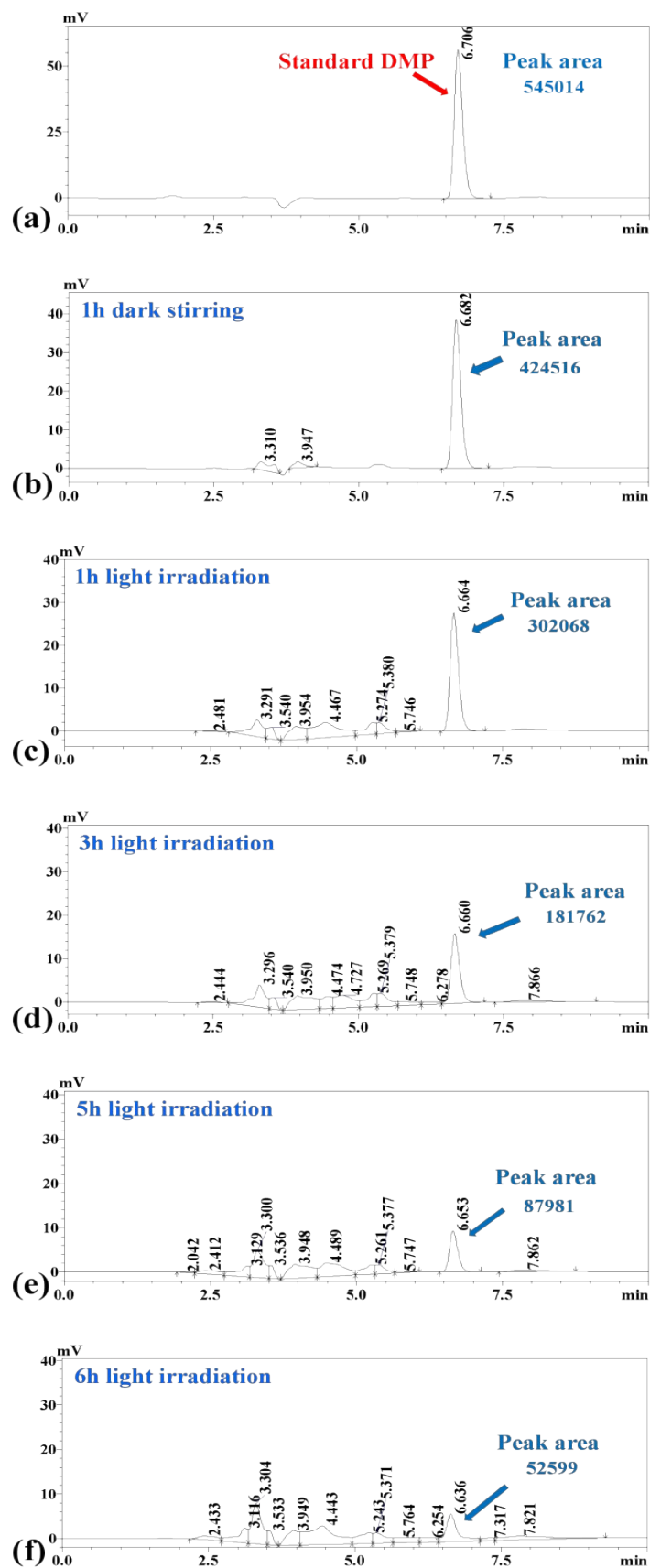


Fig. S7 (a to f) The original HPLC data of **Fig. 4f** (HPLC chromatograms of the degradation of DMP by 6FeOOH/RFS composite after different reaction times).

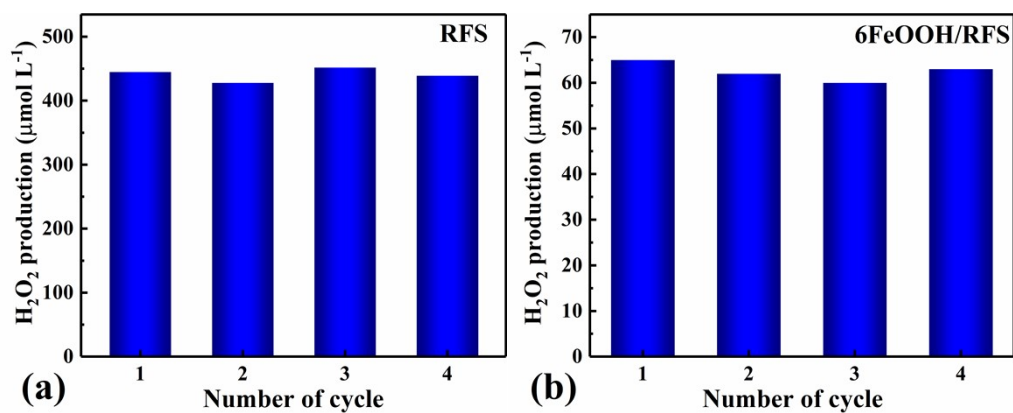


Fig. S8 Photocatalytic production H₂O₂ of the (a) RFS nanospheres and (b) 6FeOOH/RFS composite after four cycling runs. Experimental conditions: 20 mg of catalysts, 40 mL of H₂O, visible light irradiation ($\lambda > 420$ nm).

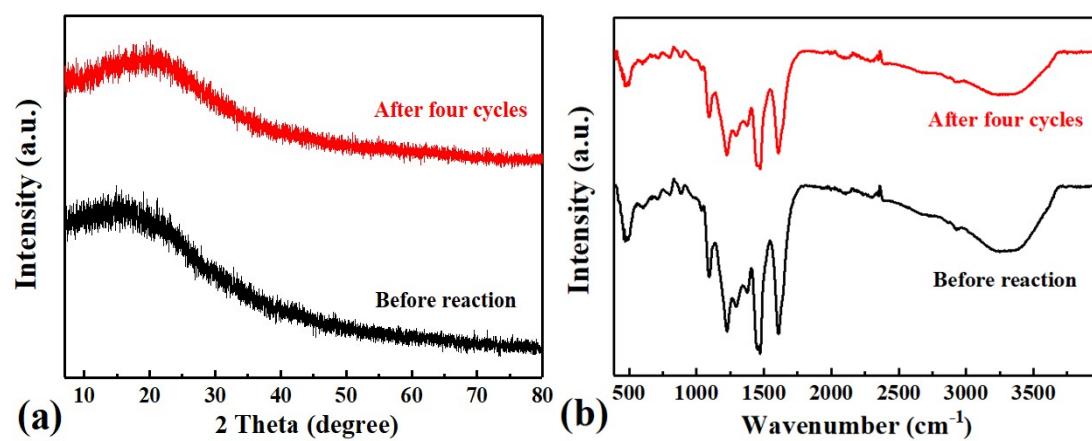


Fig. S9 (a) XRD pattern and (b) FTIR spectrum of the 6FeOOH/RFS composite before and after four cycles of RhB degradation.

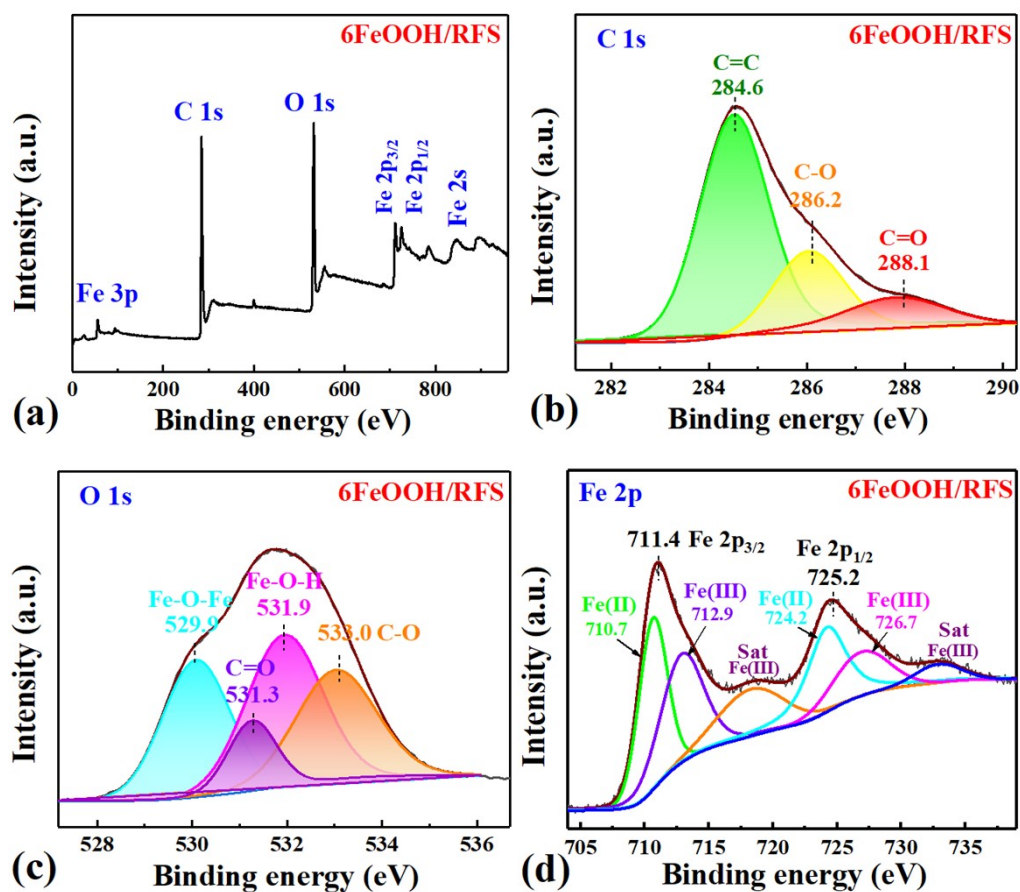


Fig. S10 (a) Survey XPS spectrum, high resolution (b) C1s, (c) O1s and (d) Fe2p XPS spectra of 6FeOOH/RFS composite after four cycles of RhB degradation.

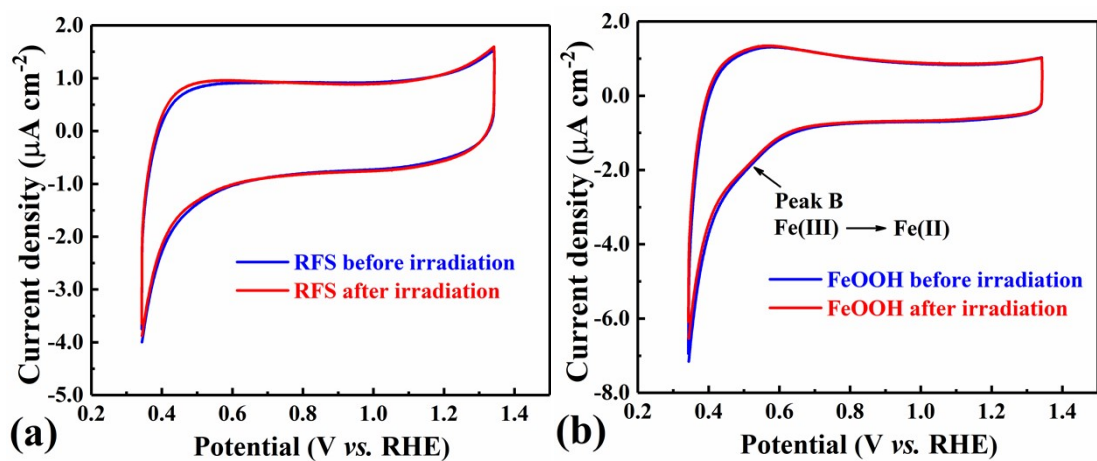


Fig. S11 Cyclic voltammogram of (a) RFS and (b) FeOOH in 0.1 M Na_2SO_4 solution (pH 6.8) before and after AM 1.5G irradiation

Table S1. The atomic ratios of the 6FeOOH/RFS composite before and after four cycles of RhB degradation according to the XPS detection

| Samples | C [<i>atom%</i>] | O [<i>atom%</i>] | Fe [<i>atom%</i>] |
|--------------------------|-------------------------|-------------------------|--------------------------|
| Before reaction | 62.68 | 30.17 | 7.15 |
| After four cycles | 63.82 | 29.74 | 6.44 |