

Supporting Information

Near-infrared responsive magnetic photocatalyst based on $\text{NaYF}_4:\text{Yb}^{3+}/\text{Er}^{3+}@\text{Cu}_2\text{O}@\text{MoS}_2@\text{Fe}_3\text{O}_4$ for efficient degradation of organic contaminants

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Supporting Figures:



Fig. S1 Schematic diagram of photocatalytic reaction system.

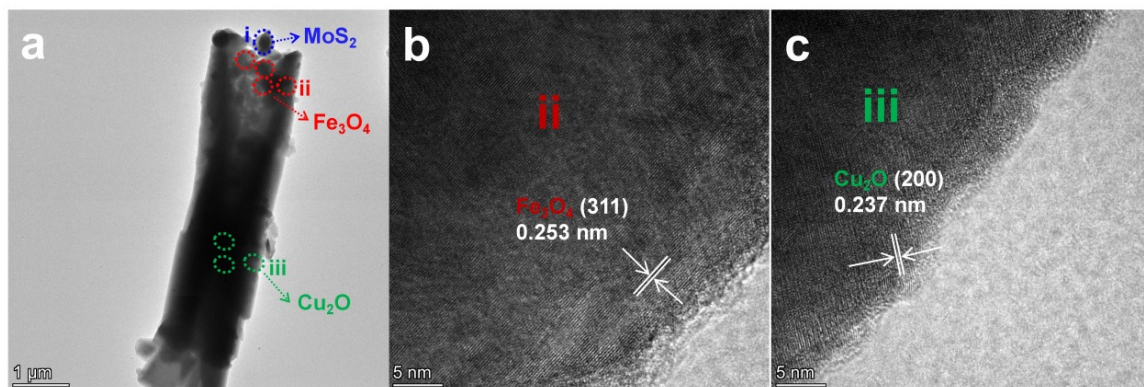


Fig. S2 TEM (a), HR-TEM (b, c) images of the NYE@Cu₂O@MoS₂@Fe₃O₄.



Fig. S3 The photos of NYE@Cu₂O@MoS₂@Fe₃O₄ under the applied magnetic field.

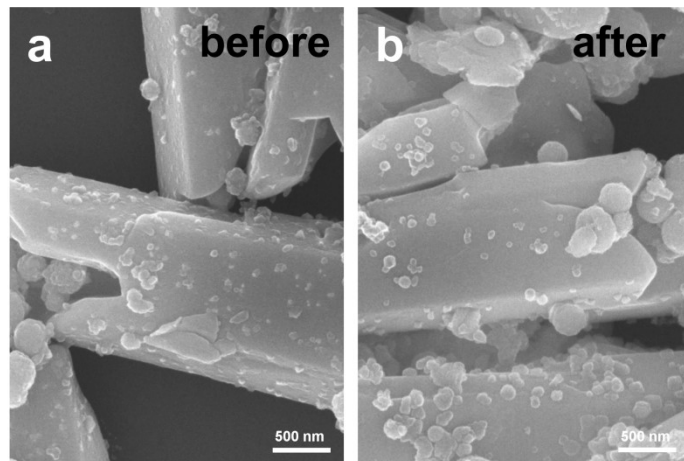


Fig. S4 SEM images of NYE@Cu₂O@MoS₂@Fe₃O₄ (a) before and (b) after cycle experiments of photodegradation of RhB under NIR light radiation.

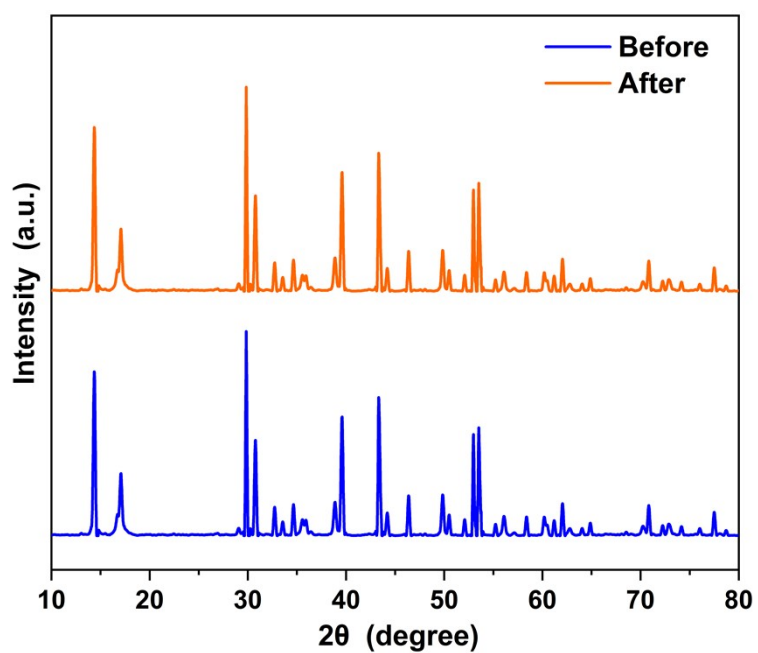


Fig. S5 XRD patterns of NYE@Cu₂O@MoS₂@Fe₃O₄ before and after cycle experiments of photodegradation of RhB under NIR light radiation.

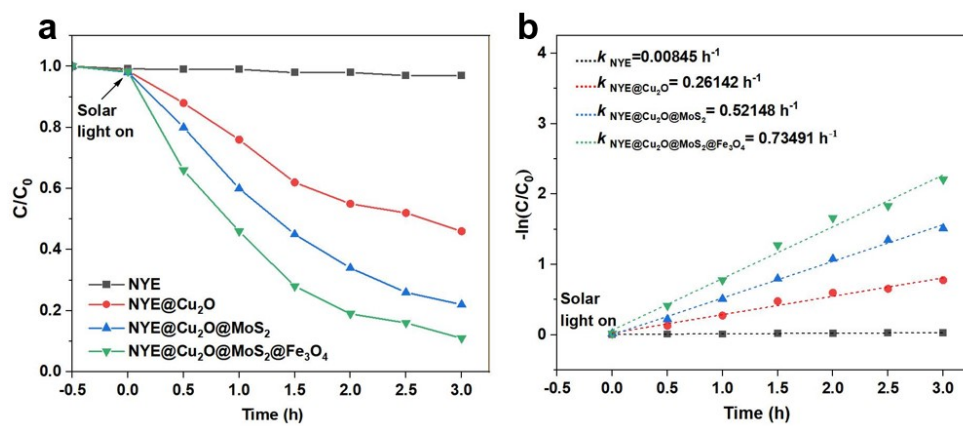


Fig. S6 Photodegradation of RhB (a) and the corresponding degradation rate constant (b) over different photocatalysts under simulated solar light.

Supporting Tables:

Table S1 The elements analysis of NYE@Cu₂O@MoS₂@Fe₃O₄ by the EDS analysis.

Element	Atomic fraction (%)	Mass fraction (%)
O	3.22	1.06
F	33.9	13.3
Na	7.38	3.5
S	0.549	0.363
Fe	2.83	3.26
Cu	37.7	49.4
Y	12.9	23.7
Mo	0.0502	0.0995
Er	0.316	1.09
Yb	1.19	4.27

Table S2 Corresponding normalized photocatalytic degradation rates of bare RhB and in the presence of the samples under simulated solar and NIR irradiation.

Light	Solar / h	NIR / h
NYE	0.00845	0.00239
NYE@Cu ₂ O	0.26142	0.03821
NYE@Cu ₂ O@MoS ₂	0.52148	0.09983
NYE@Cu ₂ O@MoS ₂ @Fe ₃ O ₄	1.03445	0.12834