Supporting Information

Near-infrared Light-Triggered $NaYF_4$: Yb^{3+}, Tm^{3+}@ZnO@RGO@Ag photocatalyst for efficient degradation of tetracycline

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Supporting Figures:

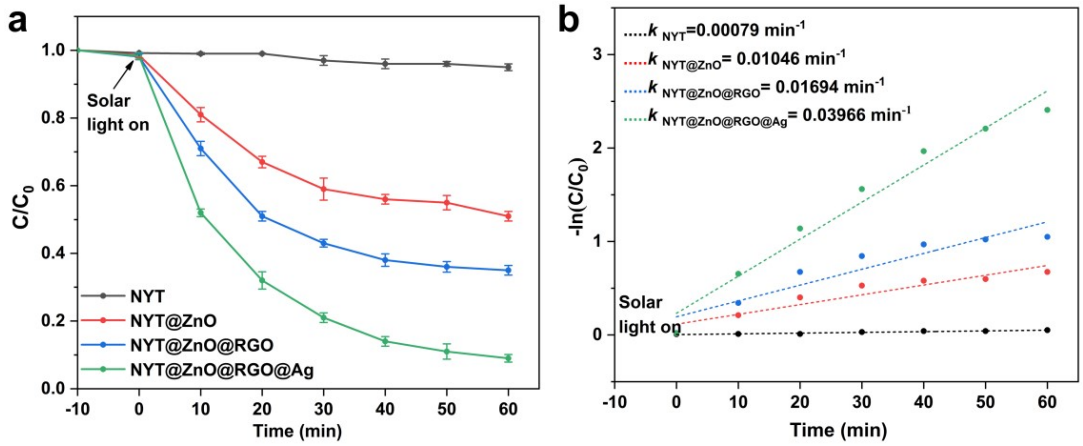

Fig. S1 Photodegradation of TC (a) and the corresponding degradation rate constant (b) over different photocatalysts under simulated solar light.

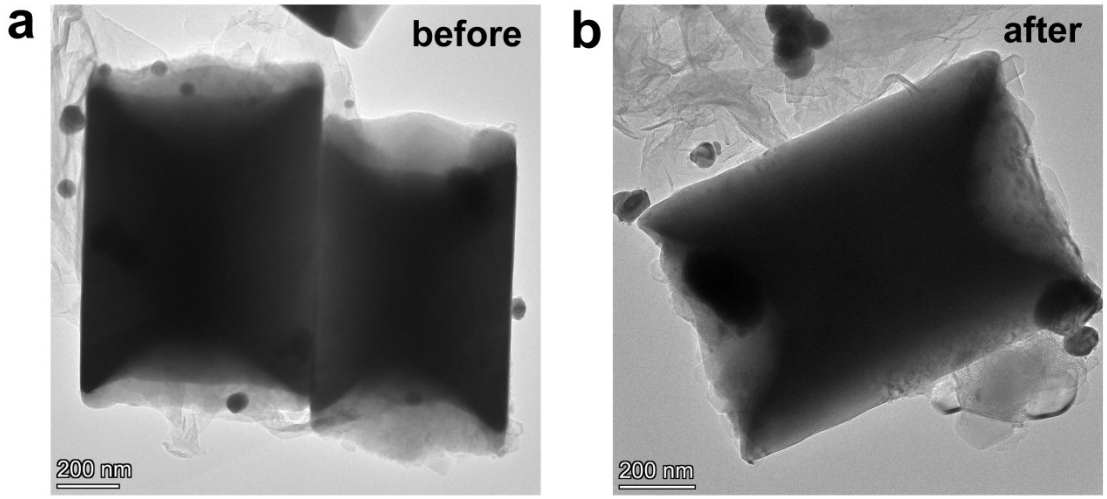

Fig. S2 TEM images of NYT@ZnO@RGO@Ag (a) before and (b) after cycle experiments of photodegradation of TC under NIR light radiation.

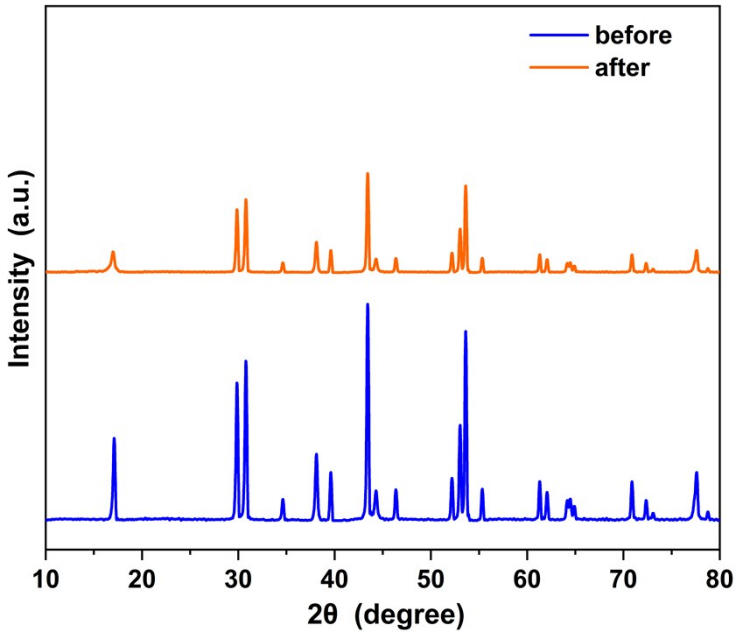

Fig. S3 XRD patterns of NYT@ZnO@RGO@Ag before and after cycle experiments of photodegradation of TC under NIR light radiation.

Supporting Tables:

Table S1 The elements analysis of NYT@ZnO@RGO@Ag 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
C	12.59	3.96
O	2.2	0.92
F	51.09	20.55
Na	12.74	7.66
Zn	1.26	5.46
Y	12.96	30.14
Ag	0.35	0.98
Tm	4.67	20.65
Yb	2.14	9.68

Table S2 Comparison of photocatalytic performance of NIR-driven photocatalysts for the removal of tetracycline pollutants.

Catalyst	Pollutant	Light source	Operating conditions	Degradation rate (%)/time (h or min)	Ref.
$NaGdF_4$:Yb^{3+}/Er^{3+}@$Bi_4O_5I_2$/Bi_5O_7I	tetracycline hydrochloride	λ≧800 nm	Initial concentration: 5 mg L^{-1} Catalyst dosage: 200 mg L^{-1}	28.47%/3 h	**J. Alloys Compd. 2024, 1002, 175473.**
$NaYF_4$:Yb,Tm@TiO_2-Acetylacetone	tetracycline	Full-spectrum	Initial concentration: 10 mg L^{-1} Catalyst dosage: 200 mg L^{-1}	79.8%/6 h	**Int. J. Mol. Sci. 2023, 24, 9441.**
TmErNd@Nd(20%)/NMF	tetracycline hydrochloride	300W Xe lamp	Initial concentration: 20 mg L^{-1} Catalyst dosage: 500 mg L^{-1}	65%/3 h	**J. Environ. Chem. Eng. 2022, 10, 107908.**
Tm@Yb@Y/NMF(2:1)	tetracycline hydrochloride	300 W Xe lamp, λ＞200 nm	Initial concentration: 20 mg L^{-1} Catalyst dosage: 500 mg L^{-1}	47%/150 min	**Cryst. Growth Des. 2022, 22, 4864-4873.**
$BiVO_4$:Er/Yb@Ag/Ag_3PO_4	tetracycline hydrochloride	980 nm laser 2 W	Initial concentration: 10 mg L^{-1} Catalyst dosage: 1 g L^{-1}	69.5%/9 h	**Ceram. Int. 2023, 49, 26589-26603.**
BiOBr/BiVO4:Yb^{3+},Er^{3+}	tetracycline hydrochloride	980 nm laser 2 W	Initial concentration: 10 mg L^{-1} Catalyst dosage: 1000 mg L^{-1}	72.3%/12 h	**J. Alloys Compd. 2022, 929, 167330.**
NYT@ZnO@RGO@Ag	tetracycline	300 W Xe lamp, λ＞800 nm	Initial concentration: 10 mg L^{-1} Catalyst dosage: 500 mg L^{-1}	93.6%/8 h	**this work**