

## Test S1

### Preparation of g-C<sub>3</sub>N<sub>4</sub>

All reagents here are analytically pure and can be used without further purification. 5g of melamine was added to a crucible loosely covered by a lid, heated at 550°C for 4h (5°C/min), and after cooling to room temperature, the yellow block g-C<sub>3</sub>N<sub>4</sub> was ground into powder. Then put the g-C<sub>3</sub>N<sub>4</sub> powder into an open crucible without a lid, and calcinate at 530°C (10°C/min) for 3 hours, and finally obtain a fine and fluffy g-C<sub>3</sub>N<sub>4</sub> powder.

### Preparation of CoFe<sub>2</sub>O<sub>4</sub> and g-C<sub>3</sub>N<sub>4</sub>/CoFe<sub>2</sub>O<sub>4</sub>

CoFe<sub>2</sub>O<sub>4</sub> nanoparticles were synthesised by a simple hydrothermal method. The procedure was as follows: 3.06 g FeCl<sub>3</sub>•6H<sub>2</sub>O and 1.35 g CoCl<sub>2</sub>•6H<sub>2</sub>O were added to 40 mL of ethanol solution, where the volume fraction of ethanol was 25%. The pH was adjusted to 9 by adding a certain amount of 30% ammonia solution, and then the obtained mixed solution was stirred magnetically for 30 min. A certain amount of g-C<sub>3</sub>N<sub>4</sub> powder was added and stirring was continued for 1 h. Finally, the solution was transferred to a reaction vessel and kept at 180 °C for 20 h. When the solution cooled to room temperature, the g-C<sub>3</sub>N<sub>4</sub>/CoFe<sub>2</sub>O<sub>4</sub> nanoparticles were separated from the solution by an external magnetic field. were separated from the solution by an external magnetic field and washed with deionised water. Finally, the resulting product was dried at 60 °C for 12 h until constant weight. Pure CoFe<sub>2</sub>O<sub>4</sub> nanoparticles can be prepared without the addition of g-C<sub>3</sub>N<sub>4</sub> during the above process.

### Preparation of Bi<sub>2</sub>MoO<sub>6</sub> and g-C<sub>3</sub>N<sub>4</sub>/CoFe<sub>2</sub>O<sub>4</sub>/Bi<sub>2</sub>MoO<sub>6</sub>

Bi<sub>2</sub>MoO<sub>6</sub> is prepared by a simple solvothermal method. In short, under magnetic stirring, 1.94 g Bi(NO<sub>3</sub>)<sub>3</sub>•5H<sub>2</sub>O and 0.484 g Na<sub>2</sub>MoO<sub>4</sub>•2H<sub>2</sub>O are dissolved in 50 mL of mixed solution (V ethylene glycol: V ethanol = 1:1). Stir until the solution is clear and transparent, add the prepared g-C<sub>3</sub>N<sub>4</sub>/CoFe<sub>2</sub>O<sub>4</sub> powder, and continue to stir for 1 h. The solution was then transferred to a 100 mL autoclave and kept at 160 °C for 12 hours. The final product was washed several times with absolute ethanol and dried overnight at 70 °C. In the above process, pure Bi<sub>2</sub>MoO<sub>6</sub> powder is obtained without adding g-C<sub>3</sub>N<sub>4</sub>/CoFe<sub>2</sub>O<sub>4</sub> powder.

## Test S2

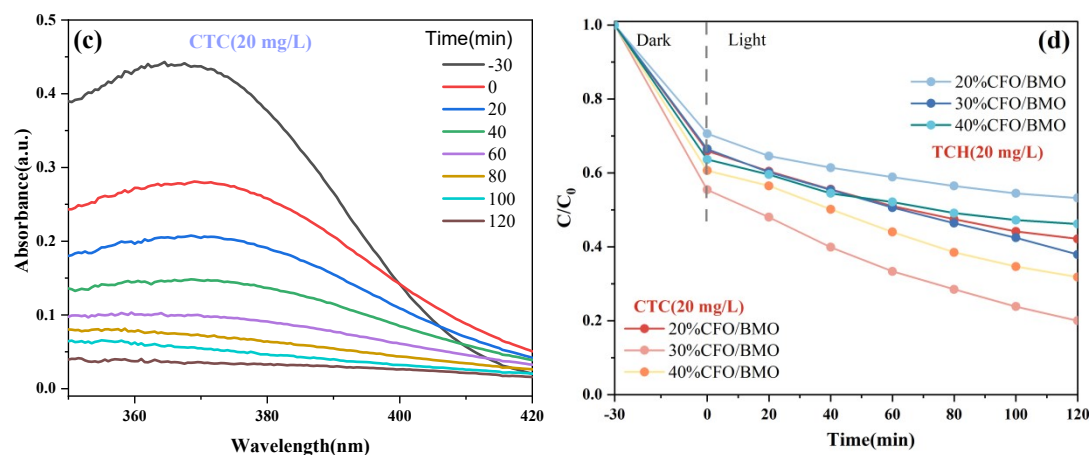
The effects of g-C<sub>3</sub>N<sub>4</sub> and CoFe<sub>2</sub>O<sub>4</sub> content on the photocatalytic degradation of CTC and TCH were also investigated. In the CoFe<sub>2</sub>O<sub>4</sub>/Bi<sub>2</sub>MoO<sub>6</sub> composite, the degradation rate of CTC and TCH by the CoFe<sub>2</sub>O<sub>4</sub>/Bi<sub>2</sub>MoO<sub>6</sub> composite catalyst under visible light irradiation showed a trend of increasing and then decreasing as the CoFe<sub>2</sub>O<sub>4</sub> content increased. When the content of CoFe<sub>2</sub>O<sub>4</sub> was 30%, the CoFe<sub>2</sub>O<sub>4</sub>/Bi<sub>2</sub>MoO<sub>6</sub> composite showed the best catalytic performance with the degradation rates of 80.0% and 52.0% for CTC and TCH, respectively. However, the overall degradation performance of the material was not significantly improved compared to that of the monomer. After analysis, it was concluded that, firstly, the heterojunction formed by CoFe<sub>2</sub>O<sub>4</sub> and Bi<sub>2</sub>MoO<sub>6</sub> allowed more reactive species to be produced to improve the photocatalytic efficiency. Secondly, the more fluffy Bi<sub>2</sub>MoO<sub>6</sub> increased the specific surface area of the heterojunction and improved the adsorption performance. However, the photocatalytic activity of the g-C<sub>3</sub>N<sub>4</sub>/CoFe<sub>2</sub>O<sub>4</sub>/Bi<sub>2</sub>MoO<sub>6</sub> composite catalyst decreases as the CoFe<sub>2</sub>O<sub>4</sub> content increases from 30% to 40%. This is because the excessive amount of brown-black CoFe<sub>2</sub>O<sub>4</sub> blocks part of the incident light and to some extent hinders the generation of photogenerated carriers of CoFe<sub>2</sub>O<sub>4</sub> and Bi<sub>2</sub>MoO<sub>6</sub>, covering the active sites on the surface. Therefore, the introduction of the right amount of CoFe<sub>2</sub>O<sub>4</sub> is required to obtain the best photocatalytic activity. In addition, the content of g-C<sub>3</sub>N<sub>4</sub> also has a significant influence

on the photocatalytic performance of the composites. It can be observed that after the successful introduction of g-C<sub>3</sub>N<sub>4</sub>, the ternary composites as a whole show better photocatalytic performance than the binary composites, and when the content increases from 4% to 6%, the photocatalytic performance of the material shows a trend of increasing and then decreasing, and when the content is 5%, the g-C<sub>3</sub>N<sub>4</sub>/CoFe<sub>2</sub>O<sub>4</sub>/Bi<sub>2</sub>MoO<sub>6</sub> composite has the photocatalytic performance of g-C<sub>3</sub>N<sub>4</sub>/CoFe<sub>2</sub>O<sub>4</sub>/Bi<sub>2</sub>MoO<sub>6</sub> composites was optimal when the content was 5%. Fig. 10c UV dynamic curves obtained when g-C<sub>3</sub>N<sub>4</sub>/CoFe<sub>2</sub>O<sub>4</sub>/Bi<sub>2</sub>MoO<sub>6</sub> was used to degrade CTC separately and the contaminant solutions obtained at each time point were tested with a UV-Vis spectrophotometer. It can be seen that the peak at the maximum absorption wavelength of CTC gradually decreases with increasing light exposure time.

In addition, to investigate the photo-degradation rate of CTC and TCH by the prepared catalysts, a quasi-level kinetic model was used to calculate the photocatalytic reaction rate constants by the following equation

$$-\ln(C_t/C_0) = kt$$

Among them,  $C_0$  and  $C_t$  are the initial concentration of the organic pollutant solution and the concentration at time  $t$ , respectively, and  $k$  is the pseudo first-order rate constant. The degradation rates of both CTC and TCH antibiotics by the prepared catalysts followed the apparent first order kinetic model. As shown in Fig. 10e and Fig. 10f, the g-C<sub>3</sub>N<sub>4</sub>/CoFe<sub>2</sub>O<sub>4</sub>/Bi<sub>2</sub>MoO<sub>6</sub> composite catalyst had the highest photocatalytic reaction rate constants for the degradation of CTC (0.01702 min<sup>-1</sup>) and TCH (0.01082 min<sup>-1</sup>) among all samples, being 6.7 and 4.9 times higher than that of pure Bi<sub>2</sub>MoO<sub>6</sub> and about twice as high as that of the CoFe<sub>2</sub>O<sub>4</sub>/Bi<sub>2</sub>MoO<sub>6</sub> binary composite, respectively. This indicates that the introduction of g-C<sub>3</sub>N<sub>4</sub> and the formation of CoFe<sub>2</sub>O<sub>4</sub> and Bi<sub>2</sub>MoO<sub>6</sub> heterojunctions significantly improved the photocatalytic degradation rate.



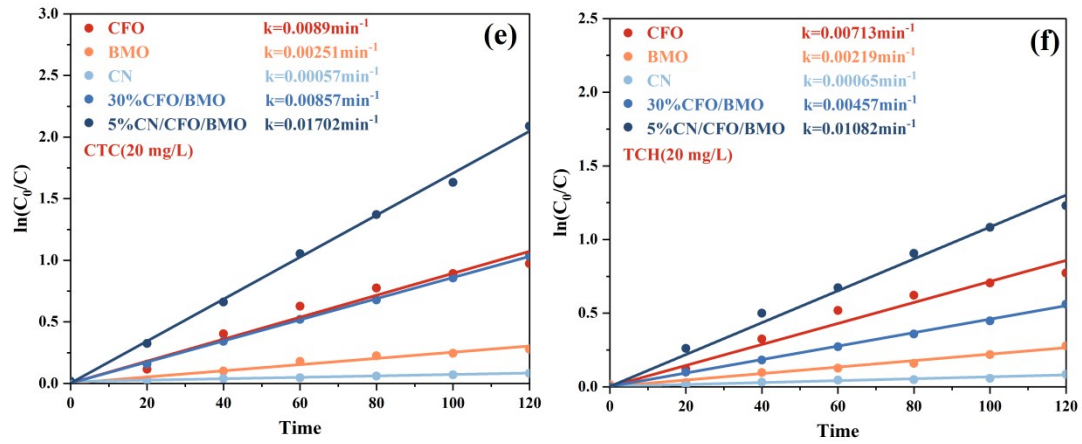


Fig1. First-order kinetics of the photo-degradation curve of CTC and TCH by the prepared photocatalyst under visible light irradiation ([photocatalyst]=0.5 mg/mL; [pollutant]=20 mg/L, 100 mL; initial PH = 7; temperature= $30 \pm 0.5$  °C.

Test S3

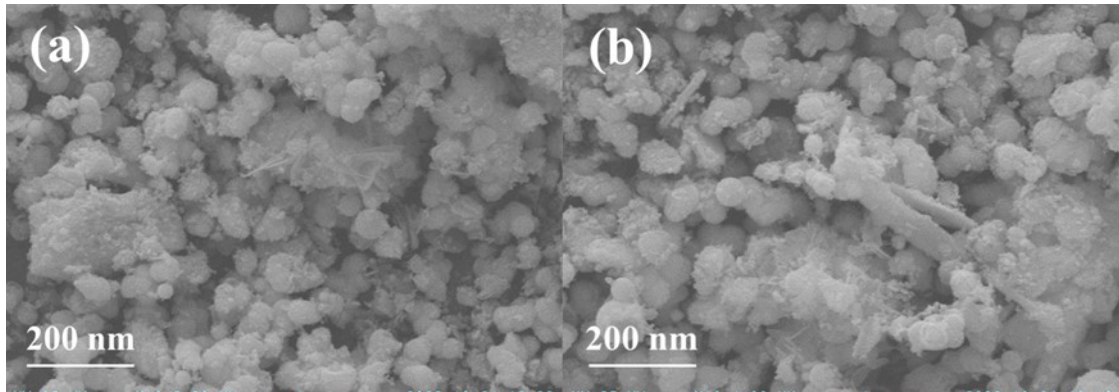


Fig2. SEM images of  $g\text{-C}_3\text{N}_4/\text{CoFe}_2\text{O}_4/\text{Bi}_2\text{MoO}_6$  (a) and after four used-  $g\text{-C}_3\text{N}_4/\text{CoFe}_2\text{O}_4/\text{Bi}_2\text{MoO}_6$  (b)

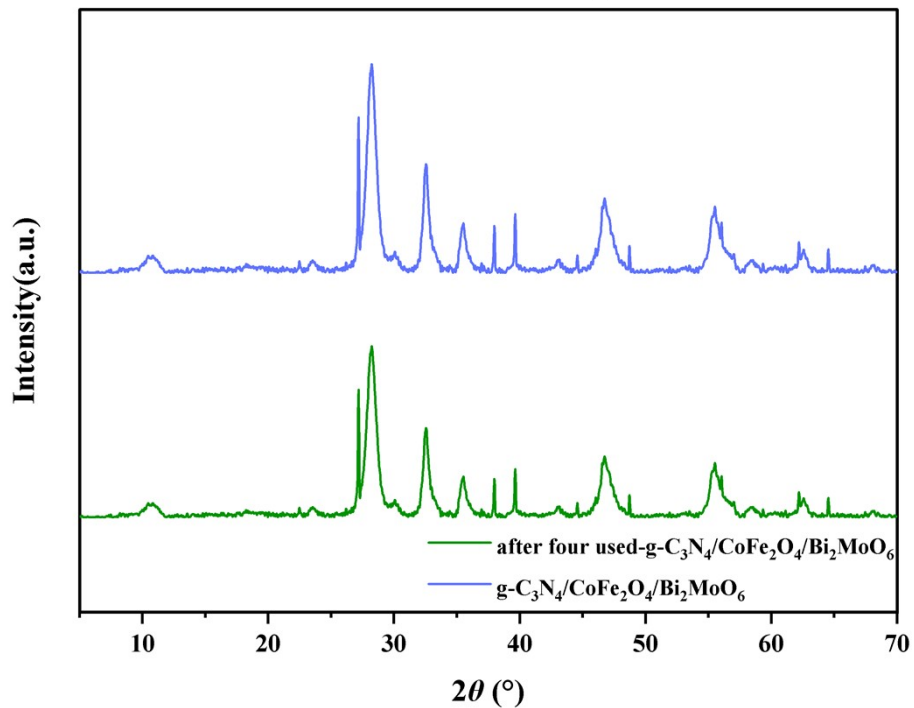


Fig3. XRD patterns of g-C<sub>3</sub>N<sub>4</sub>/CoFe<sub>2</sub>O<sub>4</sub>/Bi<sub>2</sub>MoO<sub>6</sub> and after four used- g-C<sub>3</sub>N<sub>4</sub>/CoFe<sub>2</sub>O<sub>4</sub>/Bi<sub>2</sub>MoO<sub>6</sub>.

**Table S1** Toxicity prediction values and results of CTC and its intermediates calculated by TEST.

names	Fathead minnow LC50 (96 h) (mg/L)	Developmental toxicity		Mutagenicity	
		Predicted value	Predicted result	Predicted value	Predicted result
CTC	0.069	0.85	Developmental toxicant	0.20	Negative
P1	0.30	0.86	Developmental toxicant	0.28	Negative
P2	0.10	0.87	Developmental toxicant	0.35	Negative
P3	0.0264	0.64	Developmental toxicant	0.24	Negative
P4	2.49	0.64	Developmental toxicant	0.40	Negative
P5	4.39	0.64	Developmental toxicant	0.17	Negative
P6	4148.27	0.88	Developmental toxicant	0.17	Negative
P7	0.24	0.80	Developmental toxicant	0.23	Negative
P8	0.026	0.65	Developmental toxicant	0.83	Positive
P9	0.44	0.71	Developmental toxicant	0.51	Positive
P10	15.28	0.95	Developmental toxicant	0.92	Positive
P11	0.18	0.93	Developmental toxicant	0.38	Negative
P12	0.16	0.90	Developmental toxicant	0.25	Negative
P13	1.29	0.80	Developmental toxicant	0.45	Negative
P14	276.27	0.78	Developmental toxicant	0.93	Positive
P15	31.23	0.49	Developmental non- toxicant	0.01	Negative

Table S2 Toxicity prediction values and results of CTC and its intermediates calculated by TEST.

names	Daphnia magna LC50 (48 h)(mg/L)	Oral rat LD50(mg/Kg)	Bioaccumulation factor
			Predicted value
CTC	8.66	1215.65	1.16
P1	6.93	1009.00	1.11
P2	11.87	1046.71	2.24
P3	10.28	1141.35	2.23
P4	6.03	1436.00	1.64
P5	9.11	1296.94	4.29
P6	2292.46	1967.17	0.80
P7	8.45	1191.76	1.81
P8	6.35	1487.14	3.48
P9	34.57	1402.50	1.21
P10	289.80	320.03	5.10
P11	462.23	1248.11	0.14
P12	2091.94	1007.30	0.40
P13	516.40	1679.57	1.00
P14	766.65	9558.77	0.83
P15	14.92	725.18	1.10