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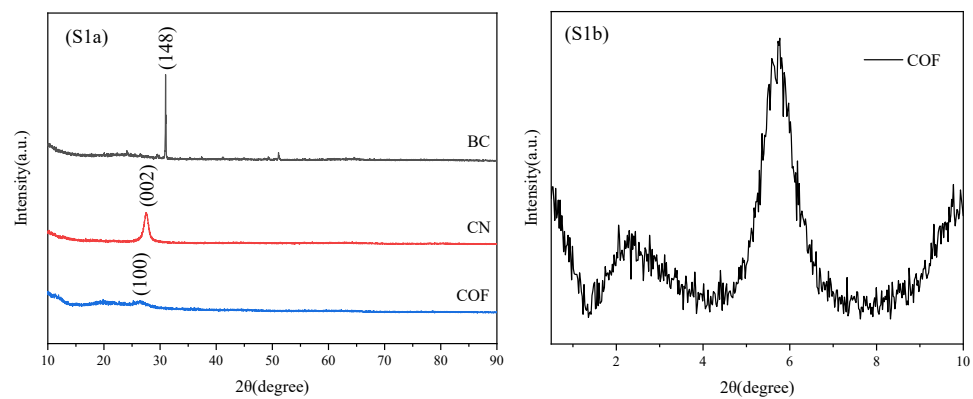


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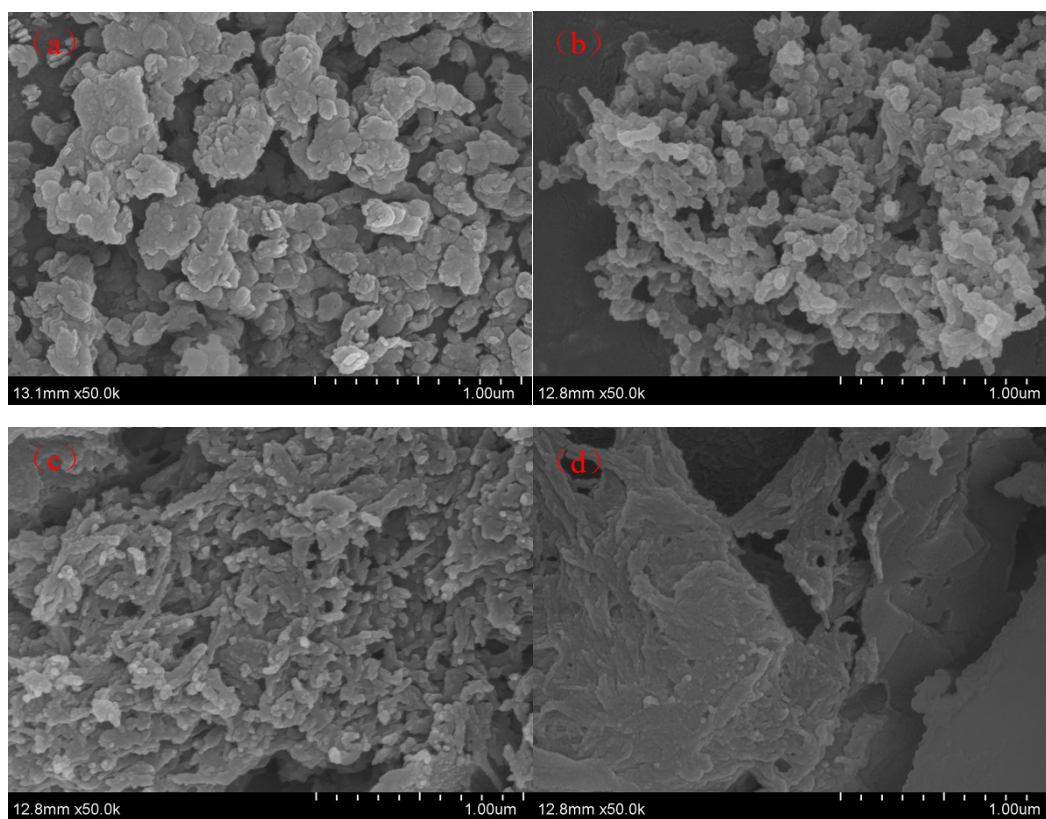


Fig. S2. SEM images of (a) CN, (b) COF, (c) CN10/COF2-12, (d) BC₃-CN₃/COF₄-5.



Fig. S3. Sample physical image of photocatalyst.

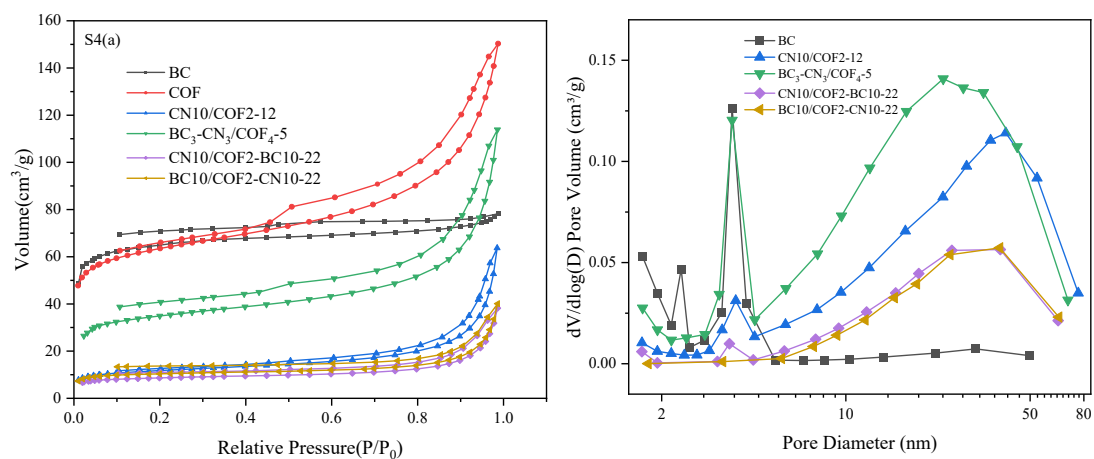


Fig. S4. The pore structure characteristics of photocatalyst. (a) Nitrogen adsorption-desorption isothermal. (b) Pore size distribution.

Table S1 Table of naming correspondence of photocatalysts with fixed component masses

Sample Name	Composition (quality)	Composite method
CN10/COF2-12	CN:10 mg, COF:2 mg CN10/COF2-12:12 mg	Chemical combination
BC10/COF2-12	BC:10 mg, COF:2 mg CN10/COF2-12:12 mg	Chemical combination
BC10-CN10-20	BC:10 mg, CN:10 mg CN10/COF2-12:12 mg	Physical mixture
BC10-CN10/COF2-22	BC:10 mg, CN:10 mg, COF:2 mg CN10/COF2-12:12 mg	Physical mixing first and then chemical compounding Chemical
BC10/COF2-CN10-22	BC:10 mg, CN:10 mg, COF:2 mg CN10/COF2-12:12 mg	compounding first and then physical mixing Chemical
CN10/COF2-BC10-22	BC:10 mg, CN:10 mg, COF:2 mg CN10/COF2-12:12 mg	compounding first and then physical mixing

Table S2 Table of naming correspondence of photocatalysts with fixed total mass

Sample Name	Composition (mass ratio)	Composite method
CN ₃ /COF ₂ -5	CN: COF=3:2	Physical mixture
BC ₃ /COF ₂ -5	BC: COF=3:2	Physical mixture
BC ₃ -CN ₃ /COF ₄ -5	BC: CN: COF=3:3:4	Physical mixing first and then chemical compounding
BC ₃ /COF ₃ -CN ₄ -5	BC: CN: COF=3:3:4	Chemical compounding first and then physical mixing

Table S3 Performance comparison of different catalysts in TC photodegradation and associated kinetic parameters

Catalyst	R _{ad} /%	R _{pd} /%	R _{tot} /%	k	R ²
BC-10	6.18±5.45	31.04±4.02	37.22±1.44	0.00107	0.92
CN-10	2.41±5.42	47.59±0.79	50.00±6.22	0.00185	0.99
COF-2	4.09±2.11	45.03±12.7	49.12±14.8	0.00184	0.99
BC10/COF2-12	27.46±1.51	72.41±3.59	99.87±2.08	0.00973	0.99
CN10/COF2-12	10.50±5.44	88.52±6.48	99.02±1.04	0.02144	0.98
BC10-CN10-20	6.20±0.76	25.95±3.20	32.15±2.42	0.000879	0.98
BC10-CN10/COF2-22	22.50±2.98	77.05±0.20	99.55±3.17	0.01385	0.96
BC10/COF2-CN10-22	14.09±3.22	63.19±2.02	77.28±1.20	0.00395	0.99
CN10/COF2-BC10-22	19.27±3.50	79.06±2.81	98.33±0.69	0.01286	0.99
CN ₃ /COF ₂ -5	6.81±2.09	77.53±0.22	84.34±2.31	0.00508	0.99
BC ₃ /COF ₂ -5	6.40±9.95	77.09±10.3	83.49±0.40	0.00511	0.99
BC ₃ -CN ₃ /COF ₄ -5	11.63±0.45	82.93±3.06	94.56±3.51	0.00765	0.98
BC ₃ /COF ₃ -CN ₄ -5	6.23±1.93	80.91±10.5	87.11±1.39	0.00543	0.99