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Electronic Supplementary Information

Synthesis of CdS-loaded $(CuC_{10}H_{26}N_6)_3(PW_{12}O_{40})_2$ for enhanced photocatalytic degradation of tetracycline under simulated solar light irradiation

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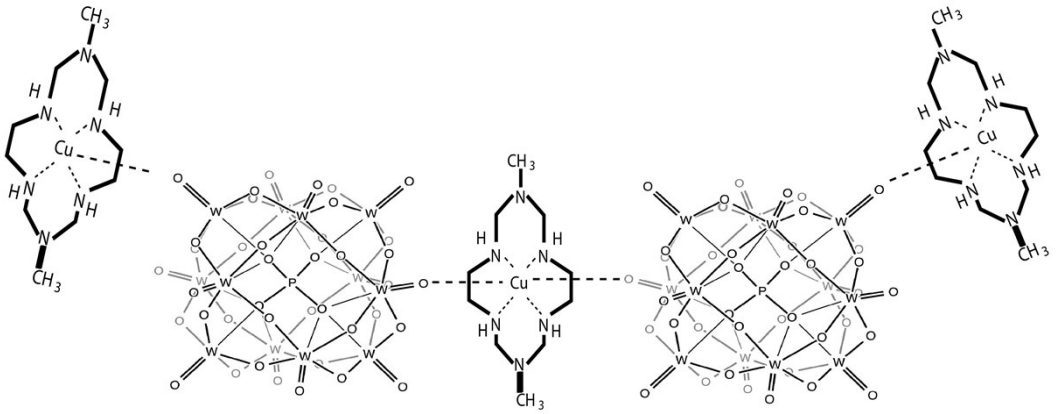

Fig. S1. The possible chemical structure of $(CuC_{10}H_{26}N_6)_3(PW_{12}O_{40})_2$.

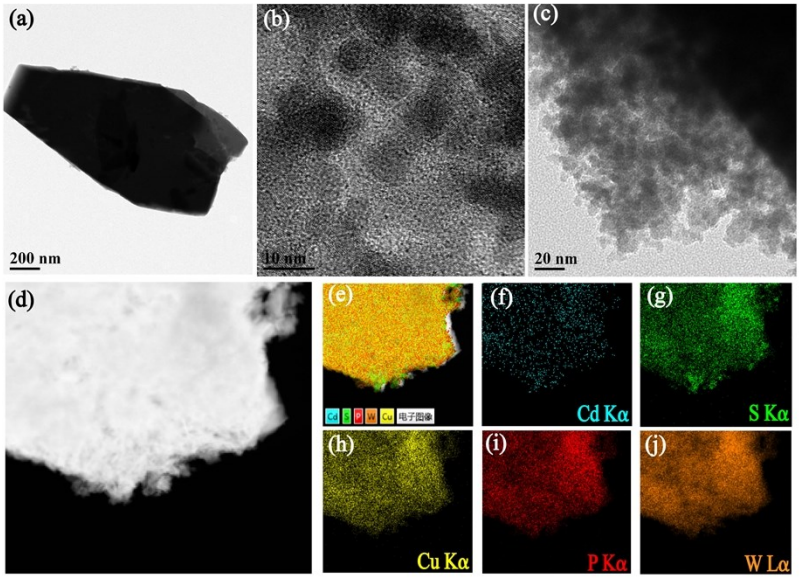

Fig. S2. TEM images of (a) CuPW, (b) CdS, (c) CuPW-CdS-15, (d) CuPW-CdS-10 and (e)-(j) the EDX mapping of CuPW-CdS-10.

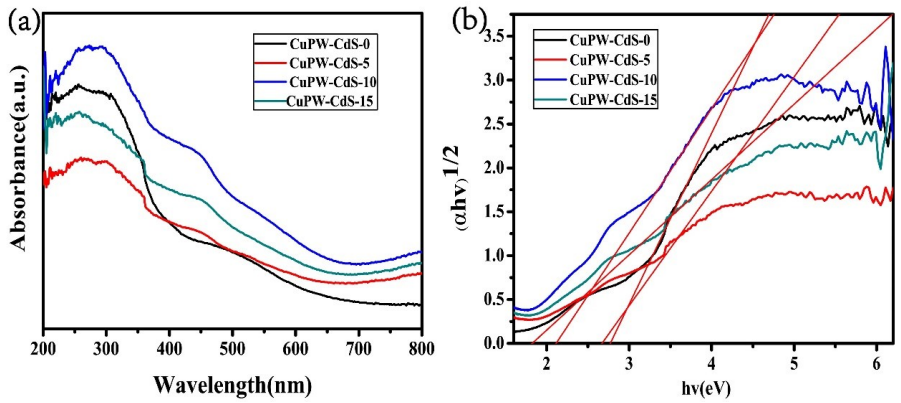

Fig. S3. (a) UV-vis DRS of CuPW-Cds samples. (b) Plot of transformed KM function vs. hv for the corresponding samples.

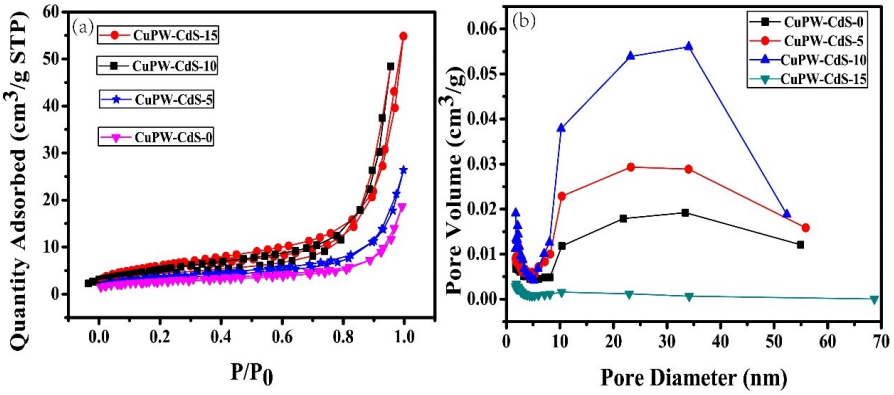

Fig. S4. (a) N_2 adsorption-desorption isotherms and (b) pore size distribution of the obtained samples.

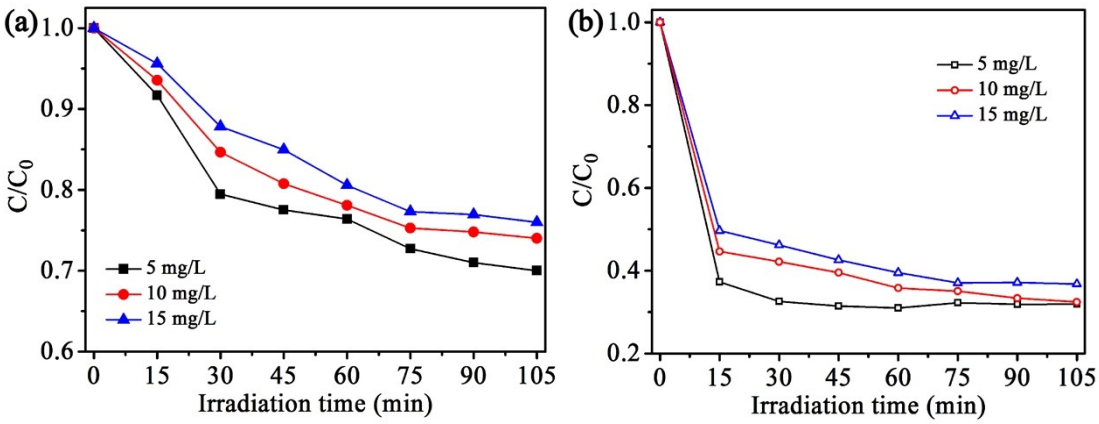

Fig. S5. Absorption ability evaluation of CuPW-CdS-10 for different (a) TC (b) RhB concentration in the dark condition.

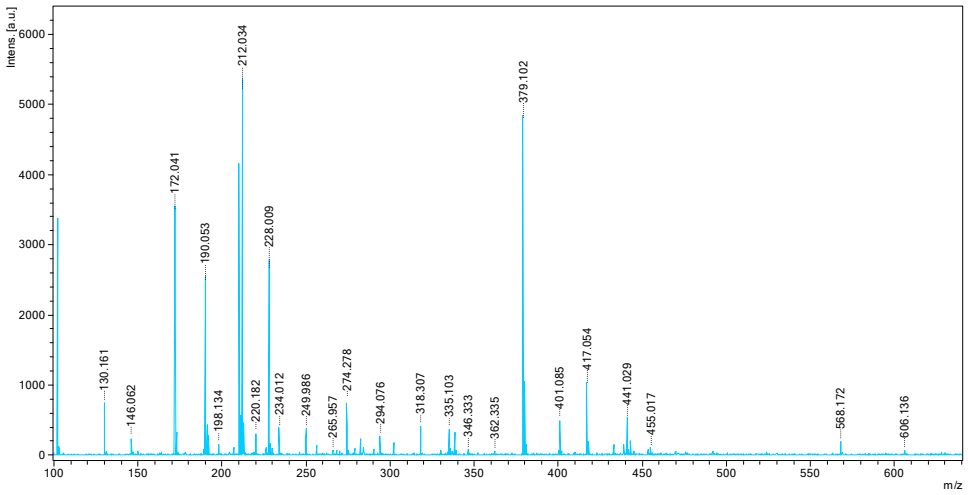

Fig. S6. MS of TC intermediation production.

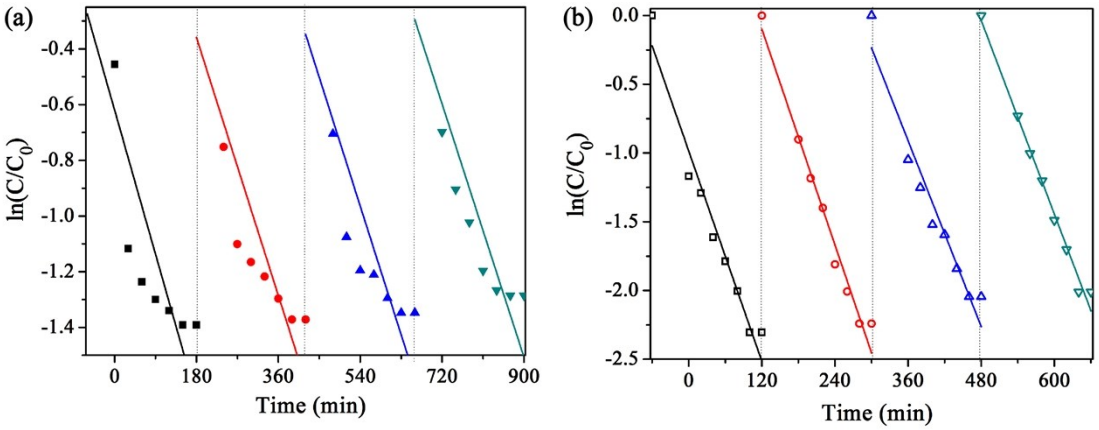

Fig. S7. First-order kinetics of (a) TC and (b) RhB with reusability tests.

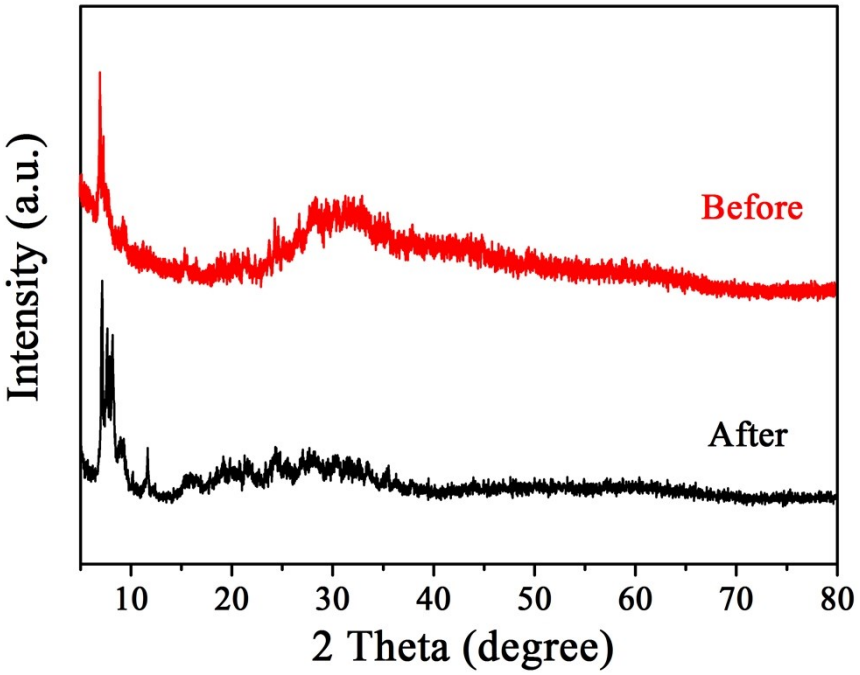

Fig. S8. XRD patterns of the fresh and used CuPW-CdS-10 composite.

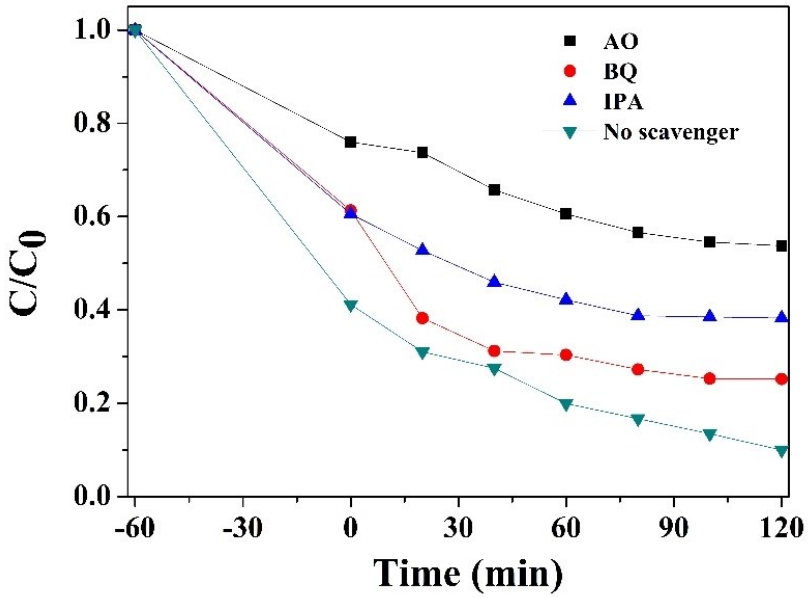

Fig. S9. Reactive specie trapping experiments of CuPW-CdS-10.

Table S1. The comparison of photocatalytic performance of different materials.

Materials	Synthetic method	Photocatalytic degradation	Reference
CDs/g-C_3N_4/MoO_3 composites	Hydrothermal and calcination method	88.4% TC removed	[S1]
g-C_3N_4/Ag/P3HT composites	Two-step deposition technique	~80% TC and ~95% MO removed	[S2]
Ag/g-C_3N_4 plasmonic photocatalysts	Thermal exfoliation strategy and photo-reduction method	~83% TC removed	[S3]
Modified red mud	Calcination treatment	88.4% TC removed	[S4]
γ-Bi_2MoO_6/$Bi_{12}GeO_{20}$ heterostructure	Heat treatment	77% TC and 97% MBT removed	[S5]
ZnO/g-C_3N_4 nanocomposite	Thermal condensation and hydrothermal in situ growth	78.4% TC and 63.5% OTC removed	[S6]
(NGQDs)-$BiVO_4$/g-C_3N_4	Calcine and low temperature process	91.5% TC, 72.4% CIP and 66.7% OTC removed	[S7]
Hybrid BiOBr/UiO-66-NH_2 composite	Co-precipitation method	83% RhB removed	[S8]
CdS-loaded $(CuC_{10}H_{26}N_6)_3(PW_{12}O_{40})_2$ composites	**one-pot self-assembly process**	**79% TC and 91% RhB removed**	**This work**

Abbreviations: TC--Tetracycline; MO--Methyl Orange; MBT--2-Mercaptobenzothiazole; OTC--Oxytetracycline; CIP--Ciprofloxacin; RhB--Rhodamine B

Table S2. Specific surface area analysis and textural parameters of the samples.

Samples	S_{BET} ($m^2 g^{-1}$)	Pore Volume (cm^3/g)	Pore Size (nm)
CuPW-CdS-0	10.4532	0.029112	11.14009
CuPW-CdS-5	13.0224	0.040793	12.53004
CuPW-CdS-10	19.2756	0.075276	15.62093
CuPW-CdS-15	22.2850	0.084863	15.23240

Reference

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