

Supplementary Information

Nitrogen-doped carbon dots modified Ag₃PO₄/GO photocatalyst with excellent visible-light-driven photocatalytic performance and mechanism insight

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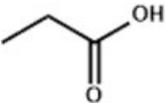
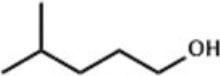
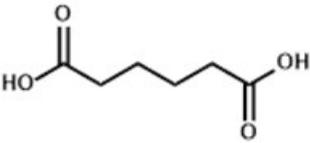
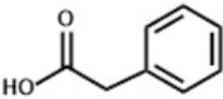
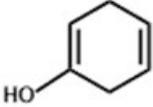
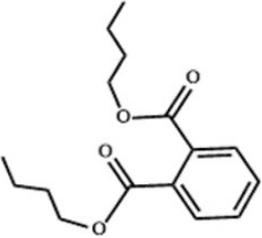
Table S1. The ICP and elemental analysis data and the compositions of the as-prepared samples.

Sample	Elemental contents			The feeding mass ratios of Ag ₃ PO ₄ : GO: NCDs
	Ag (wt%)	C (wt%)	N (wt%)	
GO	0	43.48	0	
NCDs	0	40.91	37.74	
Ag ₃ PO ₄ /GO/NCDs-2	75.38	0.81	0.35	100:1:1

Gas Chromatography-Mass Spectrometer (GC-MS) Analysis.

The GC-MS analysis was conducted on GC-MS-QP2010Plus. The pre-treatment process was as follows: the reaction solution was centrifuged to remove the remnant photocatalyst and the solution was then extracted with 10 mL of ethyl acetate for three times and the extracted solution was dehydrated using anhydrous sodium sulphate. 1.0 mL of the final sample was injected into GC equipped with Rtx-5MS column. GC condition: inlet: 230°C, oven: start at 50°C, 20°C/min to 250°C, hold 8.5 min.

Table S2. Identification of the degradation intermediates of RhB by GC/MS.

m/z	Retention time	Identified intermediates	Structural formula
74	5.411	Propanoic acid	
102	6.329	4-Methyl-pentan-1-ol	
146	4.795	Adipic acid	
136	2.386	Benzeneacetic acid	
98	3.513	Cyclohex-1-enol	
278	10.588	Dibutyl phthalate	

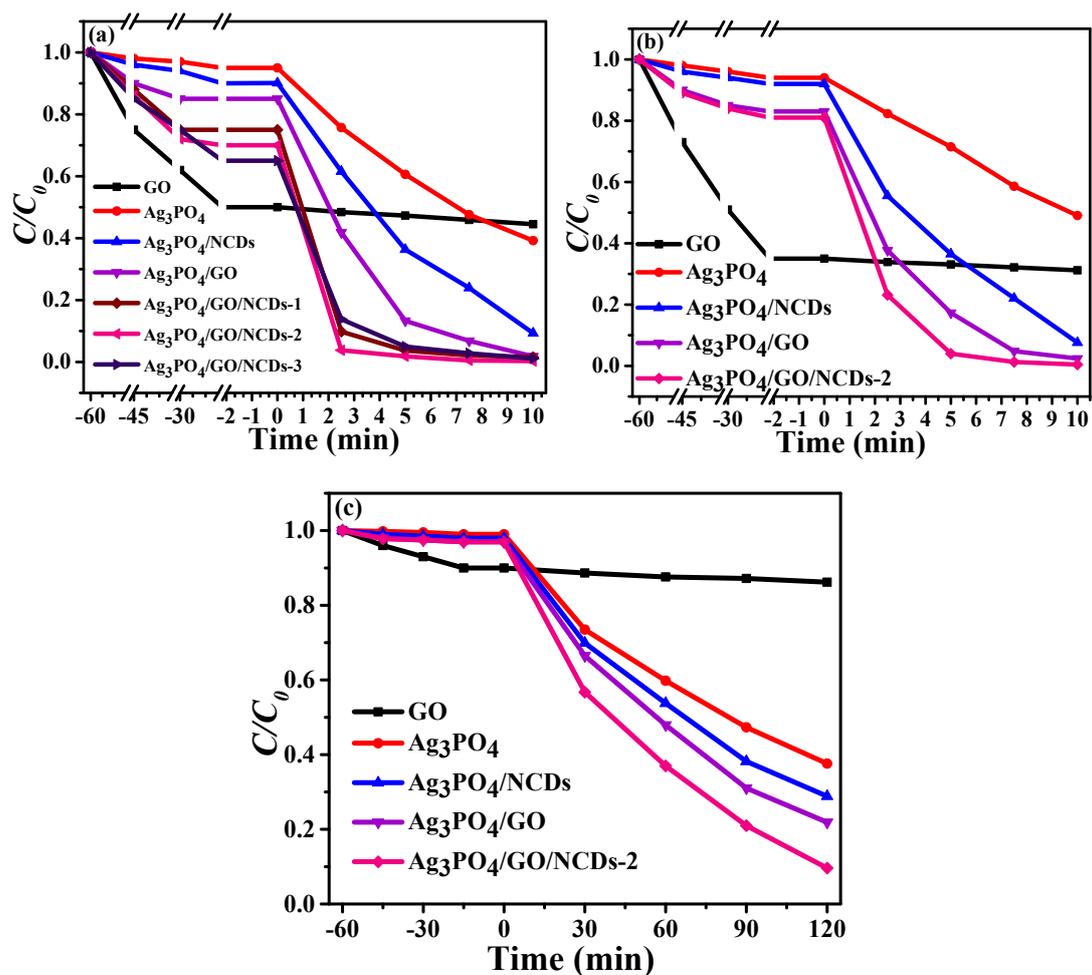


Fig. S1. The adsorption–desorption and photocatalytic degradation plots of (a) MB, (b) RhB and (c) phenol based on the as-prepared photocatalysts.

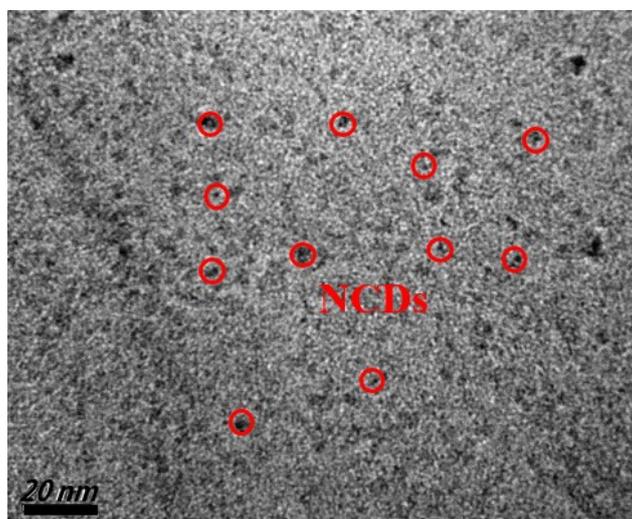


Fig. S2. TEM images of the as-prepared NCDs.

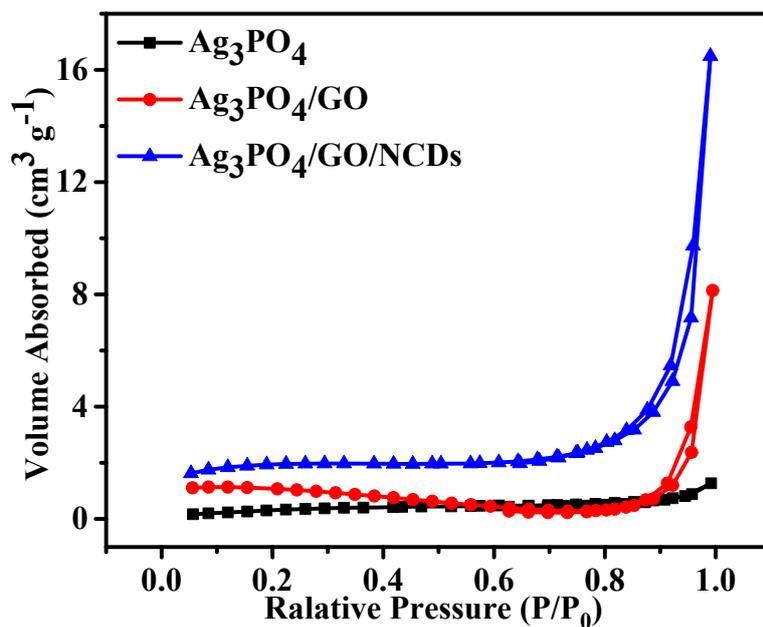


Fig. S3. The nitrogen adsorption-desorption isotherms of Ag_3PO_4 , $\text{Ag}_3\text{PO}_4/\text{GO}$ and $\text{Ag}_3\text{PO}_4/\text{GO}/\text{NCDs}$.

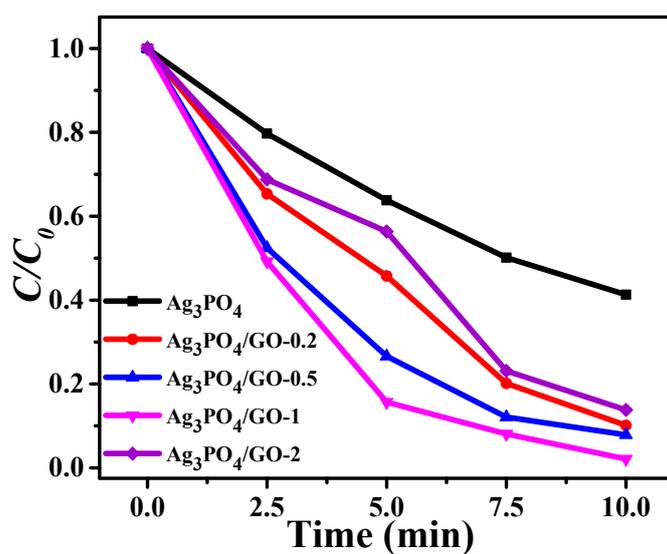


Fig. S4. The photocatalytic degradation of MB with the Ag_3PO_4 and $\text{Ag}_3\text{PO}_4/\text{GO}$ photocatalysts. The feeding mass ratios of GO to Ag_3PO_4 in $\text{Ag}_3\text{PO}_4/\text{GO}-0.2$, $\text{Ag}_3\text{PO}_4/\text{GO}-0.5$, $\text{Ag}_3\text{PO}_4/\text{GO}-1$ and $\text{Ag}_3\text{PO}_4/\text{GO}-2$ are 0.2:100, 0.5:100, 1:100 and 2:100, respectively.

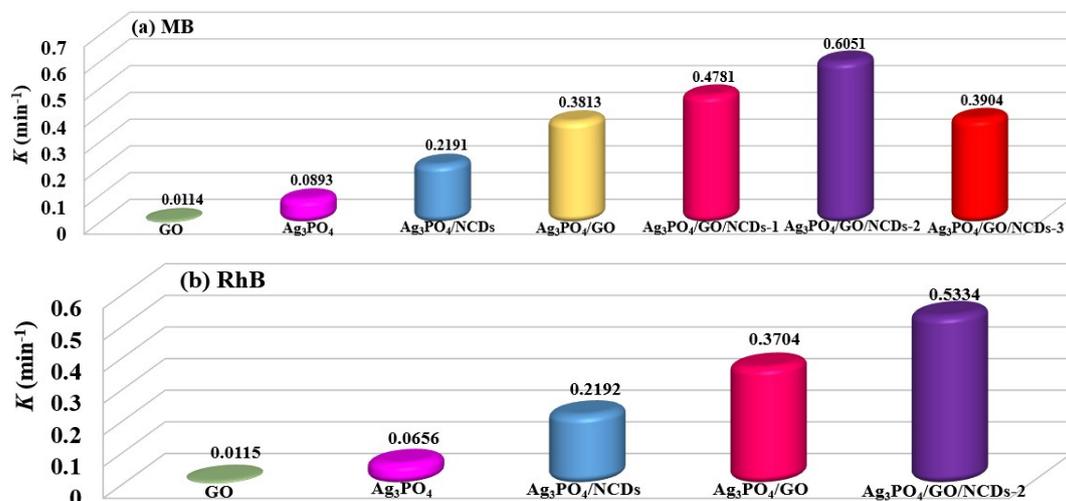


Fig. S5. The rate constants (k) for the photodegradation of (a) MB and (b) RhB with different photocatalysts.

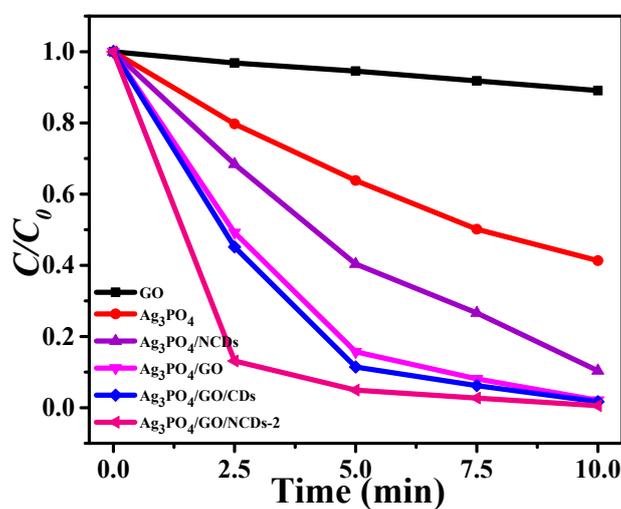


Fig. S6. The photocatalytic degradation of MB based on the as-prepared GO, Ag_3PO_4 , $\text{Ag}_3\text{PO}_4/\text{NCDs}$, $\text{Ag}_3\text{PO}_4/\text{GO}$, $\text{Ag}_3\text{PO}_4/\text{GO/CDs}$ and $\text{Ag}_3\text{PO}_4/\text{GO/NCDs}$ photocatalysts.

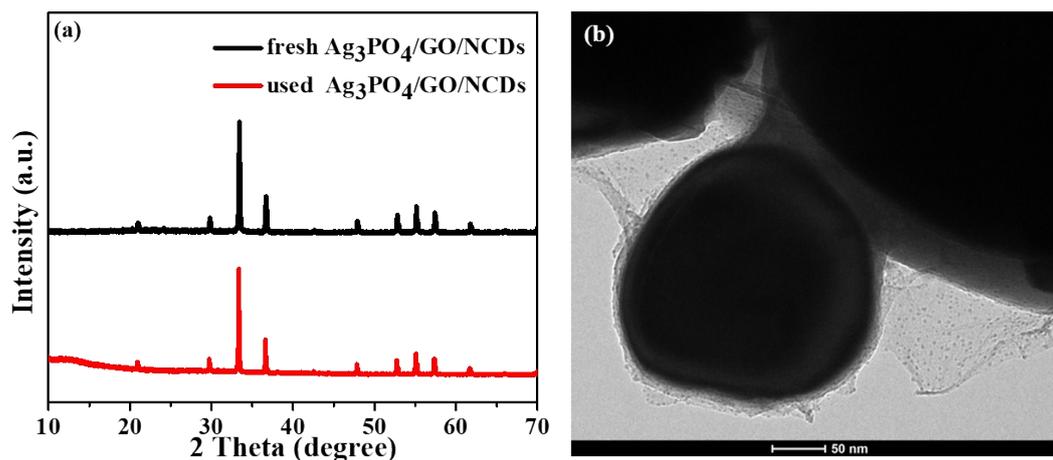


Fig. S7. (a) XRD pattern and (b) TEM image of $\text{Ag}_3\text{PO}_4/\text{GO}/\text{NCDs}$ after four photocatalytic cycles. The XRD pattern of the fresh $\text{Ag}_3\text{PO}_4/\text{GO}/\text{NCDs}$ sample is also shown in (a) for comparison.

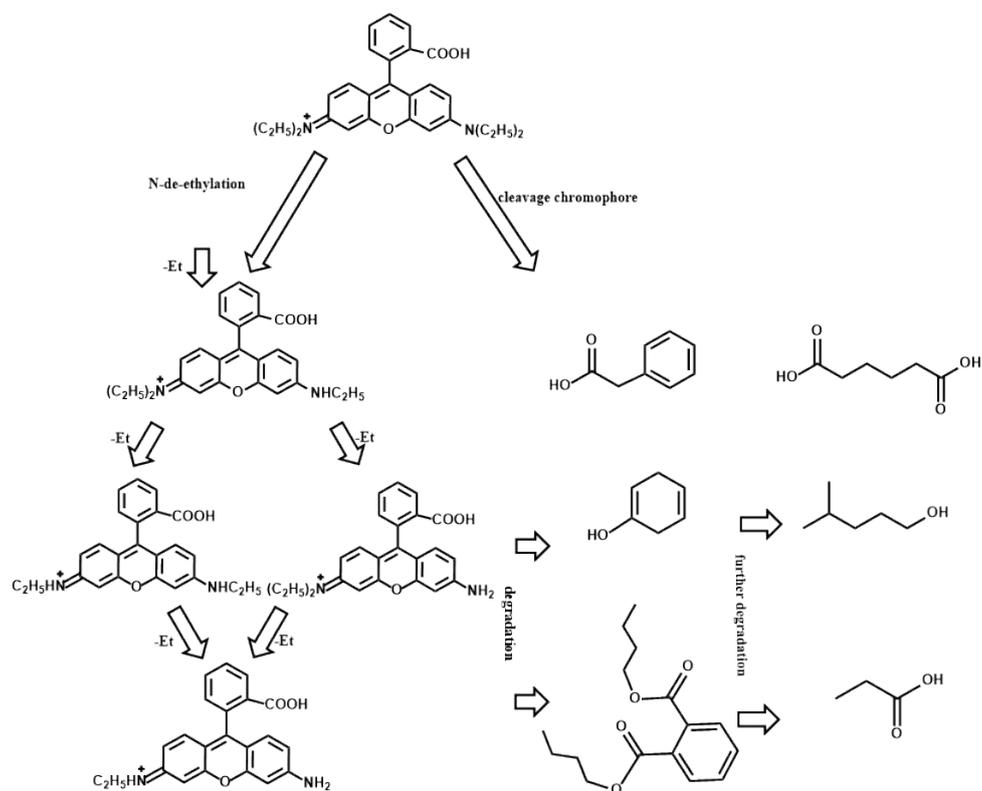


Fig. S8. The photocatalytic degradation pathway of RhB molecules.