Supplementary Materials

Exploring the Remarkably High Photocatalytic Efficiency of Ultra-Thin Porous Graphitic Carbon Nitride Nanosheets

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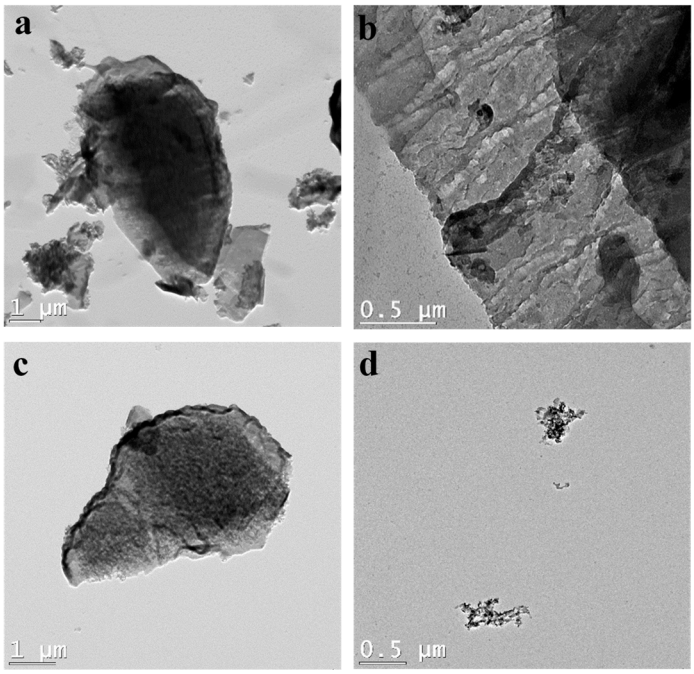

Figure S1. TEM images of thermally exfoliated g-C_3N_4 samples: (**a** and **b**) 550-CN and (**c** and **d**) 600-CN.

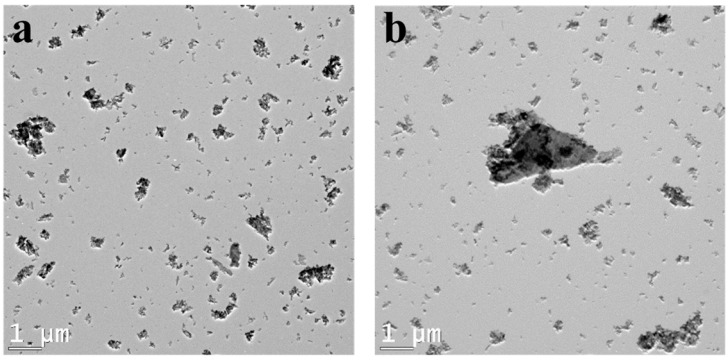

Figure S2. g-C_3N_4 sample ultrasonicated in acid media for 40 min (500-AUCN-40 min).

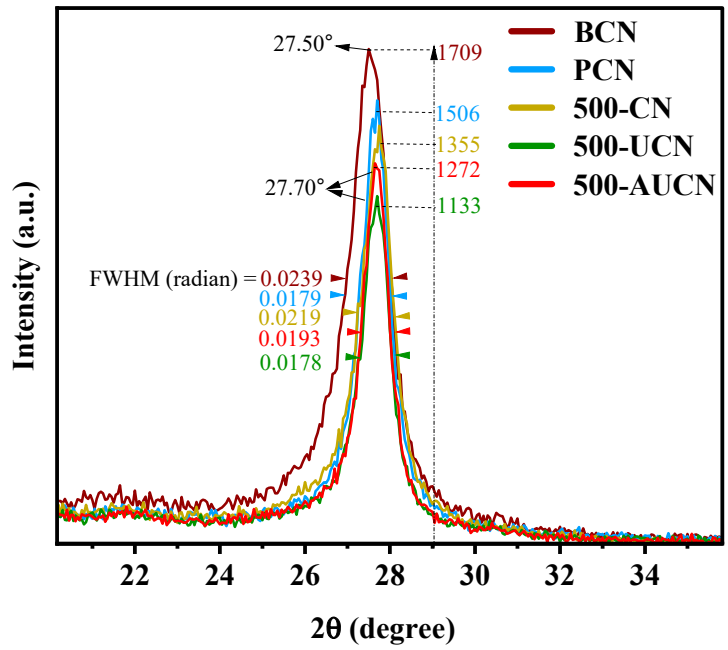

Figure S3. Enlarged view of (002) peak of XRD for g-C_3N_4 samples.

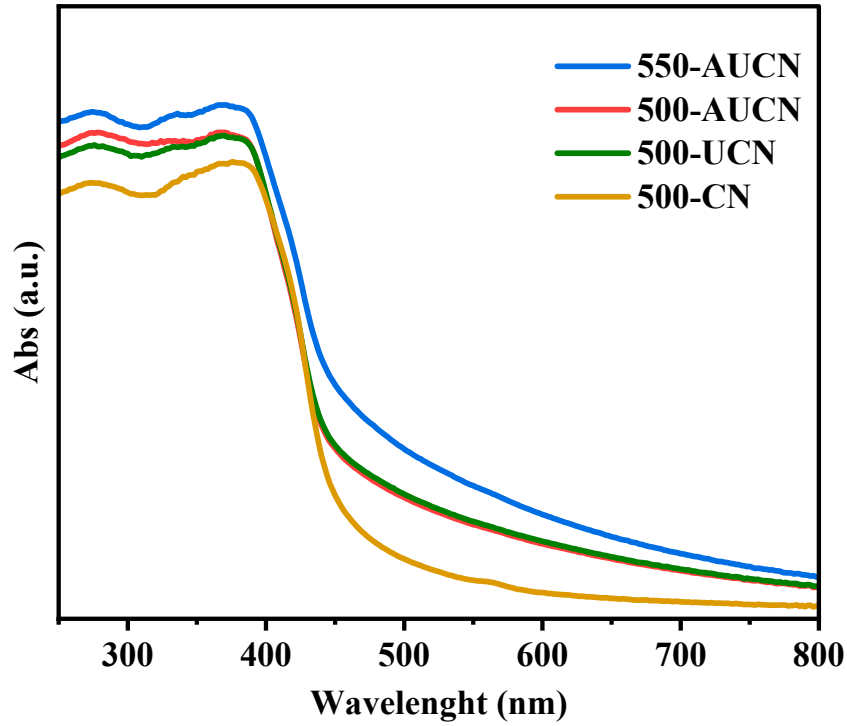

Figure S4. DRS spectra of g-C_3N_4 samples prepared under different conditions.

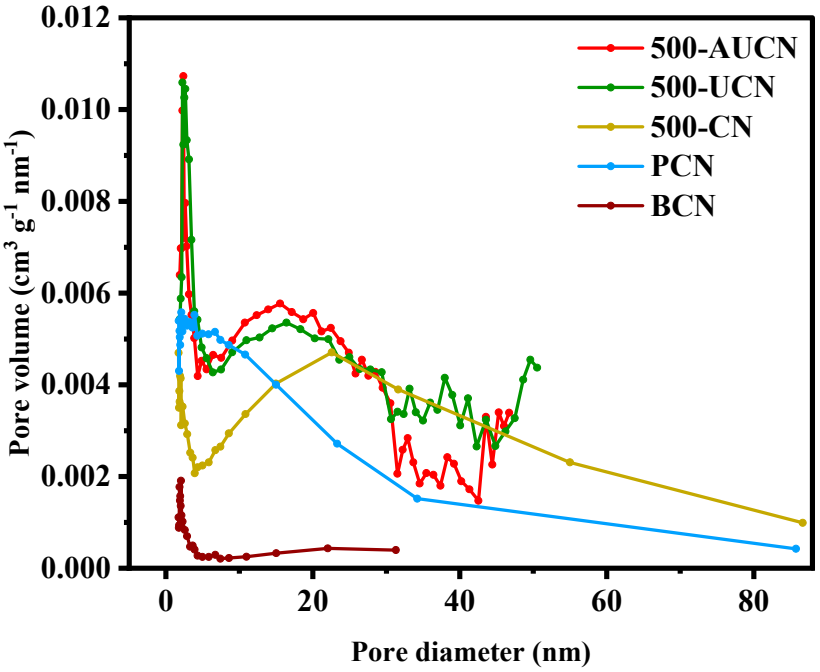

Figure S5. Pore size distribution curves of different g-C_3N_4 samples.

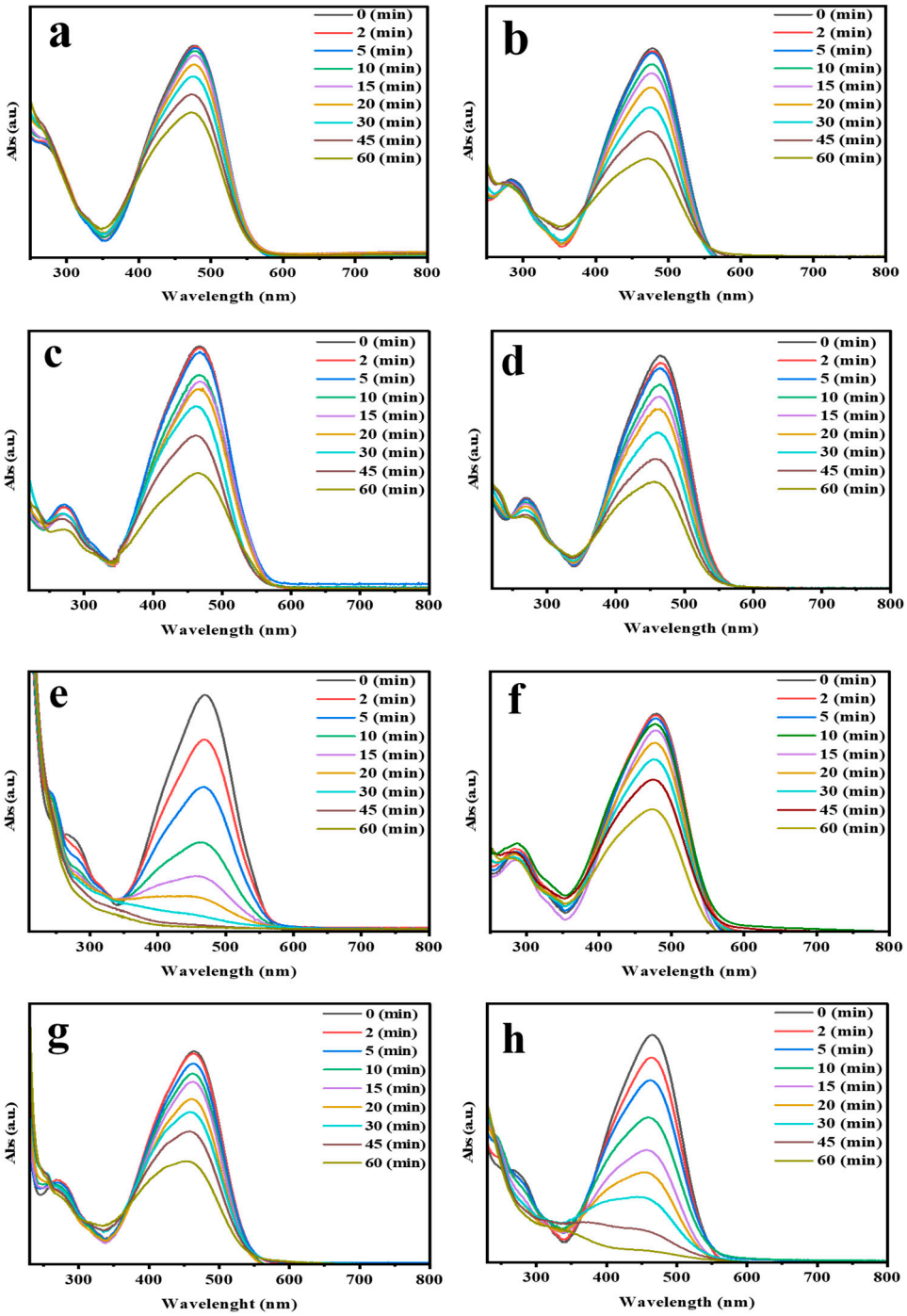

Figure S6. Visible light degradation spectra of MO using samples (a) 500-CN, (b) 500-UCN (c) 550-CN, (d) 550-UCN, (e) 550-AUCN, (f) 600-CN, (g) 600-UCN, and (h) 600-AUCN.

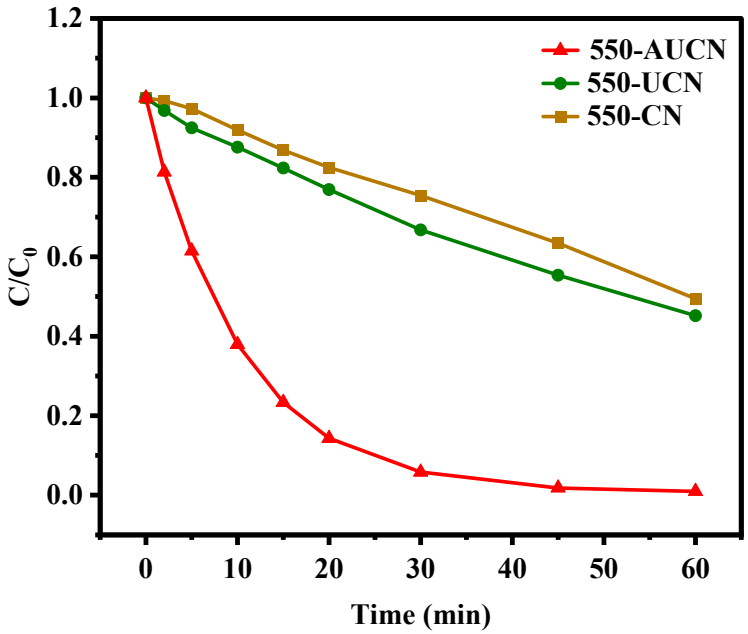

Figure S7. Photocatalytic degradation of MO under visible light using photocatalyst samples exfoliated at 550 °C.

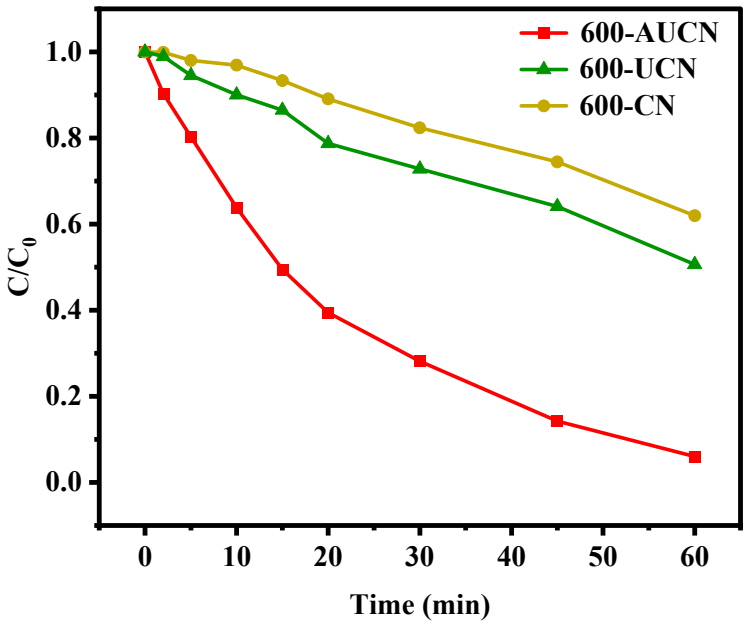

Figure S8. Photocatalytic degradation of MO under visible light, using photocatalyst samples exfoliated at 600 °C.

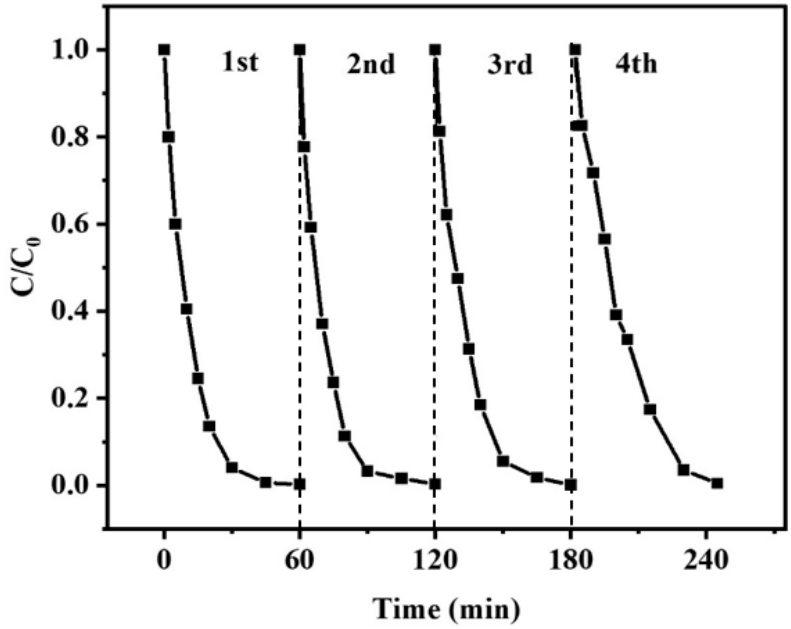

Figure S9. Photocatalytic stability of 500-AUCN in four successive cycling reactions under visible light irradiation.

Table S1. Normalized reaction rate (*k)* values for the MO photodegradation reaction in the presence of photocatalytic samples exfoliated at 550 °C and 600 °C.

Sample	k (10^{-3} min^{-1} mg^{-1})
550-AUCN	8.0
600-AUCN	4.5
550-UCN	1.3
600-UCN	1.0
550-CN	1.1
600-CN	0.7

Table S2. Performance of C_3N_4-based samples for degradation of MO under visible light irradiation in recently published literatures.

References	Photocatalyst	Mass (mg)	Volume (mL)	MO concentration (mg L^{-1})	Light source	k value (10^{-3} min^{-1} mg^{-1})
[1]	Porous Nanosheet	40	80	5	> 420 nm 300 W Xenon lamp	1.95
[2]	Porous Nanosheet	25	50	5	> 420 nm 500 W Xenon lamp	0.31
[3]	PCZ QDs/g-C_3N_4	10	25	10	> 420 nm 300 W Xenon lamp	2.10
[4]	V_2O_5/P-g-C_3N_4	50	50	10	> 420 nm 500 W Xenon lamp	0.43
[5]	Cu/ZnO-g-C_3N_4	50	100	10	Visible light, Mercury lamp	2.80
[6]	Ag/g-C_3N_4	25	100	10	> 420 nm 300 W Xenon lamp	1.00

[7]	Na-doped g-C_3N_4	20	50	10	> 420 nm 500 W Xenon lamp	1.30
[8]	g-C_3N_4/Ag/P_3HT	60	30	10	> 420 nm 100 W LED lamp	0.18
[9]	CNS-TiO_2/g-C_3N_4[a]	20	50	20	> 420 nm 300 W Xenon lamp	3.45
[10]	NG@g-C_3N_4[b]	60	100	10	Visible light	0.45
[11]	MoS_2/Fe_3O_4/g-C_3N_4[c]	40	20	10	Visible light, 60 W LED lamp	6.57
This work	Ultrathin Porous Nanosheet	10	25	10	Visible light 300 W Xenon lamp	11.70

[a] carbon–nitrogen–sulfur co-doped TiO_2/g-C_3N_4, [b] N-doped graphene covalently grafted with g-C_3N_4, [c] quantum dots of graphitic carbon nitride (g-C_3N_4) and Fe_3O_4 nanoparticles were decorated on MoS_2 nan.

References

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