

Electronic Supplementary Information

Template-free fabrication of hierarchical graphitic carbon nitride via self-assembled aggregates for enhanced photocatalytic hydrogen evolution activity under visible light

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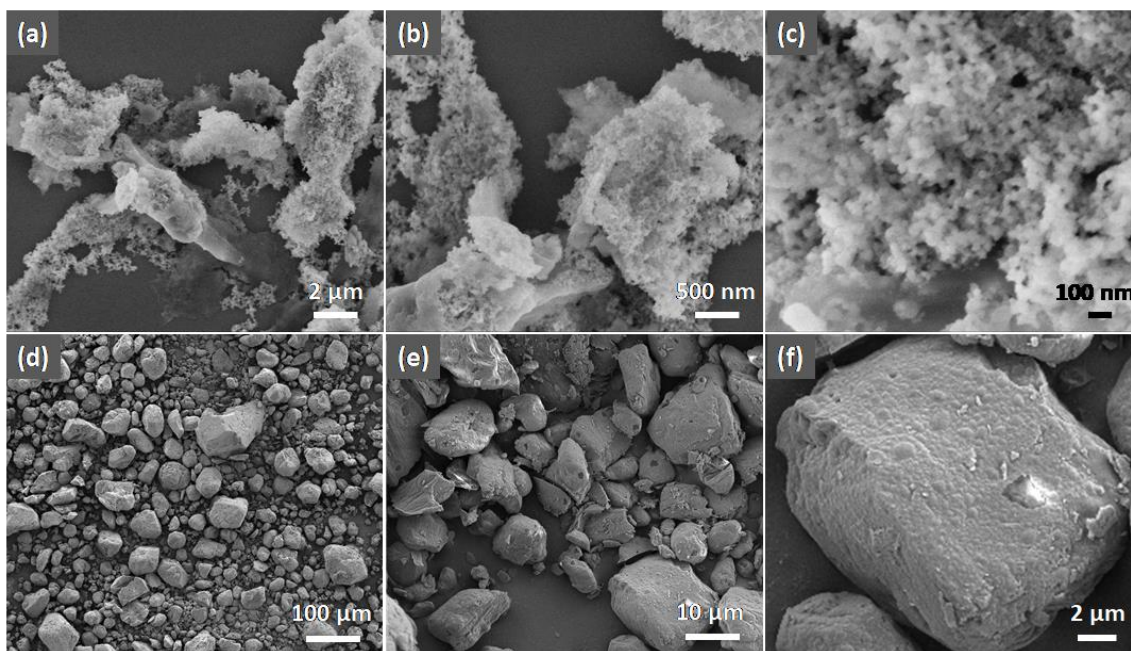


Fig. S1 Low-resolution (a) and high-resolution (b, c) SEM images of MA; low-resolution (d) and high-resolution (e, f) SEM images of commercial melamine.

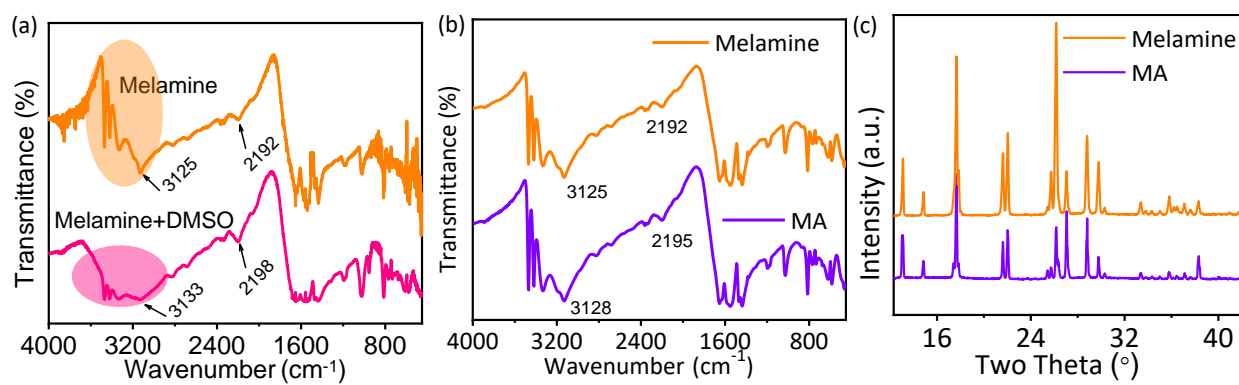


Fig. S2 (a, b) FT-IR spectra of melamine, “melamine+DMSO”, and MA; (c) XRD pattern of melamine and MA.

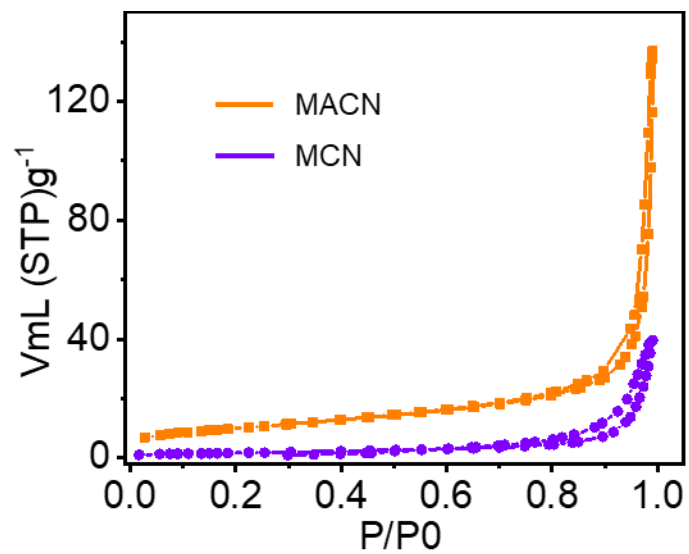


Fig. S3 Brunner Emmet Teller (BET) specific surface area of MCN and MACN.

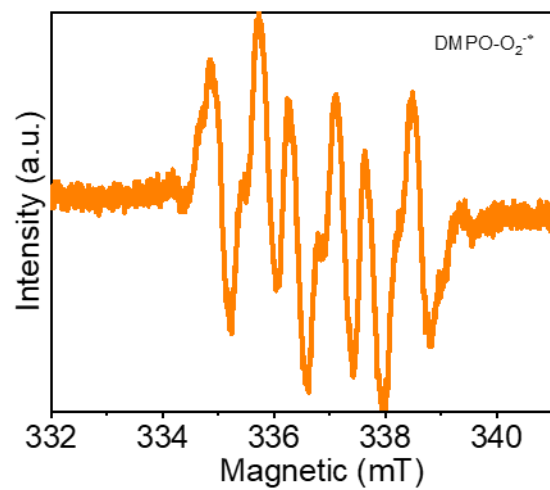


Fig. S4 ESR spectrum of DMPO-O₂^{*} for MACN in methanol under light irradiation.

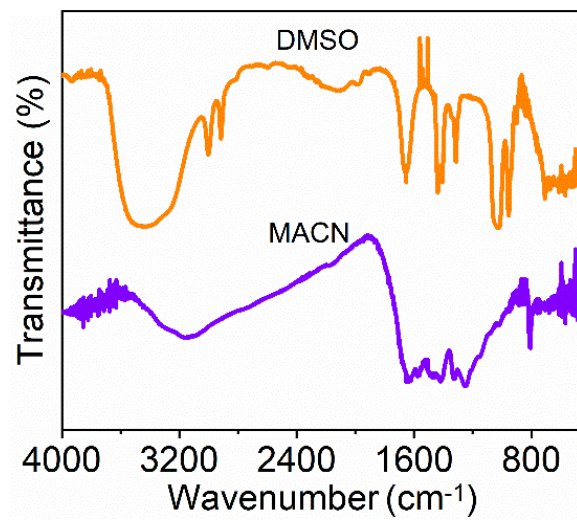


Fig. S5 FT-IR spectra of DMSO and MACN.

Table S1 Time-resolved photoluminescence (TR-PL) of MCN and MACN.

Sample	τ_1 (ns)	τ_2 (ns)	B_1 (%)	B_2 (%)	τ (ns)
MACN	1.76	5.86	32.1	67.9	4.84
MCN	2.25	10.2	34.7	65.3	6.04

Table S2 Comparison of various catalysts for photocatalytic hydrogen evolution reaction.

Photocatalyst	Light source	Co-catalyst	Solution	H ₂ /μmol·h ⁻¹ ·g ⁻¹	AQE /%
g-C ₃ N ₄ ¹	λ>420 nm	Pt	20 vol% TEOA	5289.9	32.4 (400 nm)
g-C ₃ N ₄ /In ₂ O ₃ ²	λ≥420 nm	Au	10 vol% MeOH	5648	2.5
g-C ₃ N ₄ / graphdiyne ³	λ>420 nm	Pt	15 vol% TEOA	792	-
g-C ₃ N ₄ ⁴	λ>420 nm	Ni ₂ P	10 vol% TEOA	2849.5	18.8 (420 nm)
g-C ₃ N ₄ ⁵	λ>420 nm	Pt	10 vol% TEOA	1619	-
g-C ₃ N ₄ ⁶	λ>420 nm	Pt	10 vol% TEOA	1540	1.1 (420 nm)
g-C ₃ N ₄ ⁷	λ>400 nm	-	TEOA	28000	23.3 (420 nm)
g-C ₃ N ₄ ⁸	UV-visible	Pt	10 vol% TEOA	66 (0.3 g)	-
g-C ₃ N ₄ ⁹	λ>420 nm	Pt	10 vol% TEOA	13 (0.1 g)	-
g-C ₃ N ₄ ¹⁰	λ≥420 nm	Pt/CoTPP	10 vol% TEOA	46.9 (0.05 g)	-
g-C ₃ N ₄ ¹¹	λ≥400 nm	Fe ₂ N	10 vol% TEOA	88.7	-
g-C ₃ N ₄ ¹²	Solar light	Carbon/Pt	5 vol% TEOA	5573	-
g-C ₃ N ₄ ¹³	λ>420 nm	Ni	25 vol% TEOA	2989.5	-
g-C ₃ N ₄ ¹⁴	UV-visible	Cu/THPP	16.7 vol% TEOA	7.5 (0.01 g)	-
g-C ₃ N ₄ ¹⁵	λ≥420 nm	NHPI/Pt	10 vol% TEOA	1145.4	4.86 (420 nm)
g-C ₃ N ₄ ¹⁶	λ≥400 nm	Pt	10 vol% TEOA	793 (2 mg)	-
Our work	λ≥420 nm	Pt	15 vol% TEOA	164 (50 mg)	1.4%

Table S3 BET surface area of MCN and MACN.

Sample	Specific surface area (m ² ·g ⁻¹)
MCN	6.0
MACN	35.3

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