Supporting Information

Growth of narrow-bandgap Cl-doped carbon nitride nanofibers on carbon nitride nanosheets for high-efficiency photocatalytic H_2O_2 generation

Tingshuo Ji[a], Yanzhen Guo,*[b] Huili Liu[b], Binbin Chang[b], Xuefeng Wei*[a] and Baocheng Yang*[b]

[a]College of Chemical Engineering & Pharmaceutics, Henan University of Science and Technology, Luoyang, 471023, PR China

[b]Henan Provincial Key Laboratory of Nanocomposites and Applications, Institute of Nanostructured Functional Materials, Huanghe Science and Technology College, Zhengzhou 450006, China

E-mail: baochengyang@infm.hhstu.edu.cn

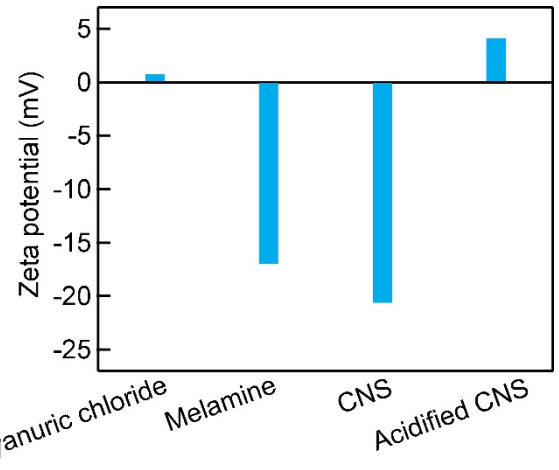

Fig. S1. Zeta potentials of the cyanuric chloride, melamine, CNS and acidified CNS samples.

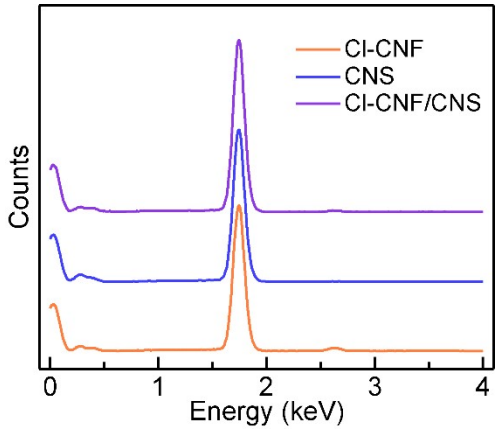

Fig. S2. EDX spectra of Cl-CNF, CNS and Cl-CNF/CNS.

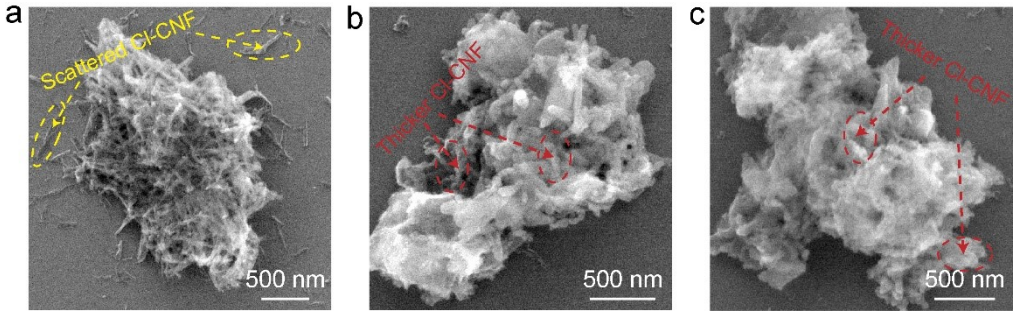

Fig. S3. (a) SEM image of Cl-CNF/CNS0.3 (Representative scattered Cl-CNF are marked in yellow dashed circles in the image). (b) SEM image of Cl-CNF/CNS0.5 (The thicker Cl-CNF are representatively marked in red dashed circles in the image). (c) SEM image of Cl-CNF/CNS0.6 (The thicker Cl-CNF are representatively marked in red dashed circles in the image).

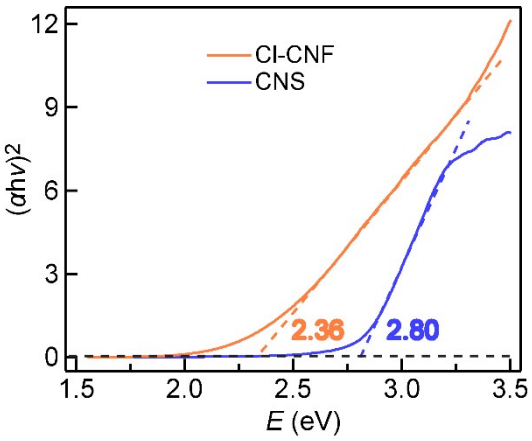

Fig. S4. Tauc plots of Cl-CNF and CNS.

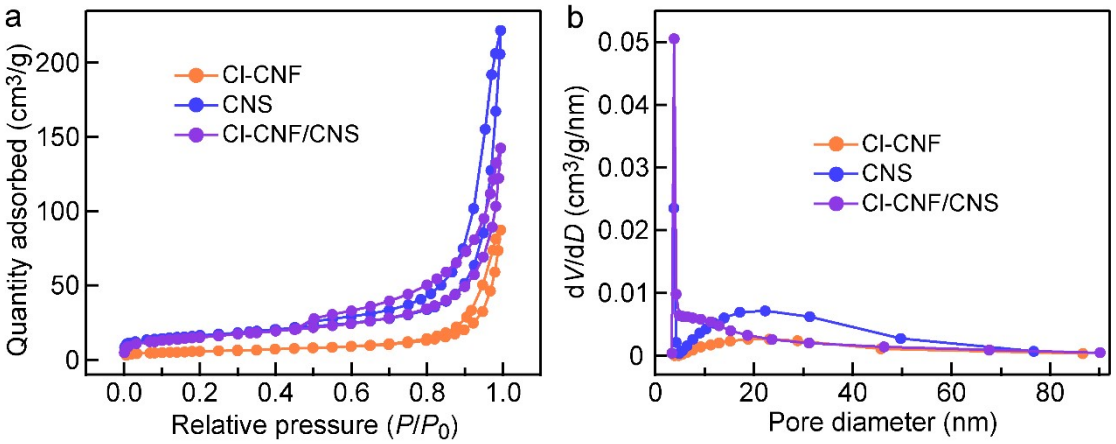

Fig. S5. Surface area and pore structure characterization of the samples. (a) N_2 adsorption-desorption isotherms. (b) Pore size distribution.

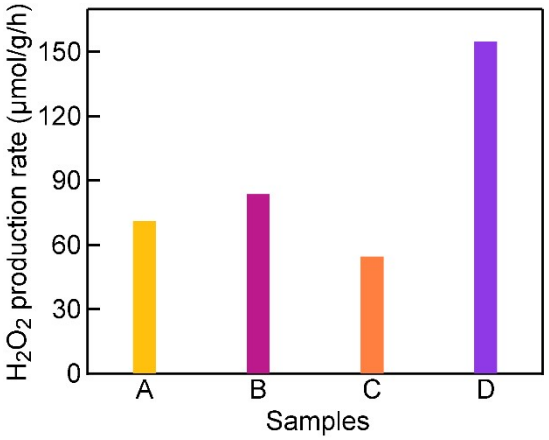

Fig. S6. H_2O_2 evolution rates over various samples. The sample respectively are: (A) Melamine-derived carbon nitride. (B) Cl-CNF/melamine-derived carbon nitride nanohybrid. (C) Dicyandiamide-derived carbon nitride without NH_4Cl. (D) Cl-CNF/ dicyandiamide-derived carbon nitride without NH_4Cl.

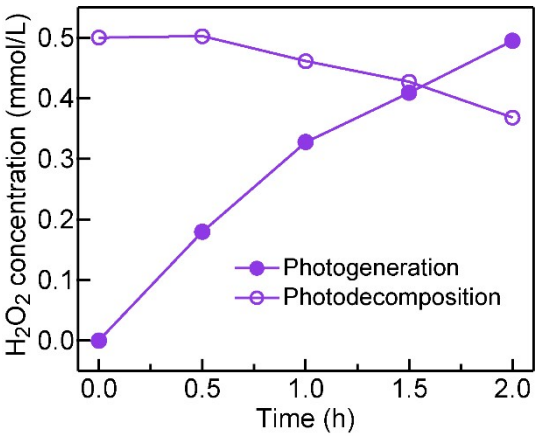

Fig. S7. Photodecompositon and production of H_2O_2 over Cl-CNF/CNS.

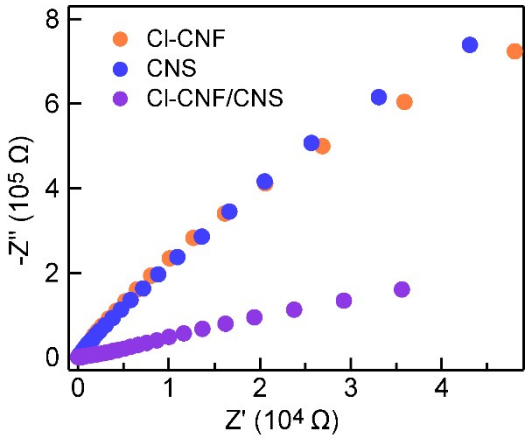

Fig. S8. EIS plots of the samples in dark.

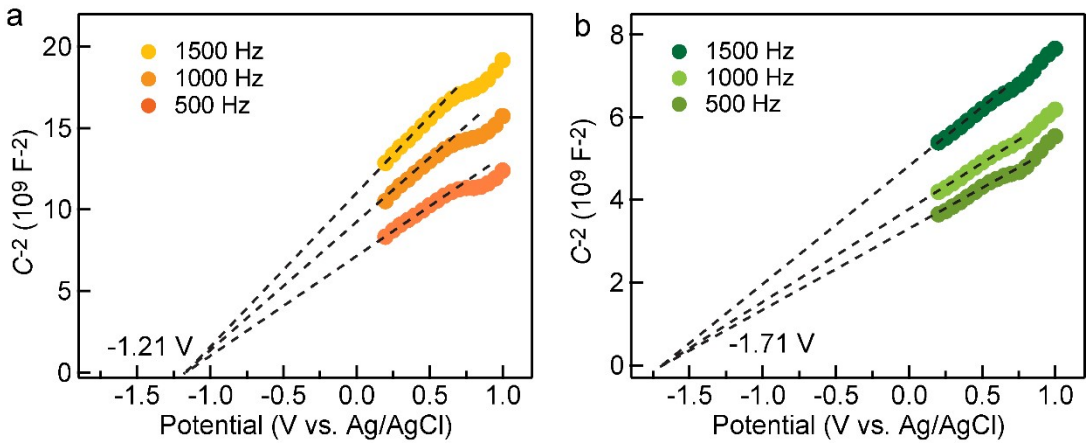

Fig. S9. Mott-Schottky curves of the samples. (a) Cl-CNF, (b) CNS.

Table S1. Atomic ratio of Cl-CNF, CNS and Cl-CNF/CNS.

Sample	C (%)	N (%)	Cl (%)
Cl-CNF	39.08	58.25	2.67
CNS	52.97	47.00	0.03
Cl-CNF/CNS	30.7	68.1	1.12

Table S2. Comparison of photocatalytic H_2O_2 production activity over different samples.

Catalysts	Reaction conditions	H_2O_2 rate (μmol/g/h)	AQY (%)	Ref.
DCN-15A	50 mg catalyst, 60 mL 20 vol% IPA, $\lambda > 420$ nm	96.8	10.7 at 420nm	S1
CTF-BDDBN	30 mg catalyst, 50 ml H_2O, $\lambda > 420$ nm	97.2		S2
PT-g-C_3N_4	30 mg catalyst, 60 ml H_2O, $\lambda > 400$ nm	28.92		S3
g-C_3N_4-450	100 mg catalyst, 100 ml H_2O, $\lambda > 420$ nm	170	4.3 at 420 nm	S4
GCN (56)	20 mg catalyst, 5 mL 90 vol% ethanol, $\lambda > 420$ nm	188		S5
50-Co/CN	20 mg catalyst, 20 mL 10 vol% ethanol, $\lambda > 420$ nm	70		S6
g-C_3N_4-SiW_{11}	100 mg catalyst, 100 mL 5 vol% methanol, AM 1.5, pH=3	178	6.5 at 420nm	S7
Cl-CNF/CNS	50 mg catalyst, 50 mL 10 vol% ethanol, $\lambda > 420$ nm	247.5	23.67 at 420 nm	This work

References

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