Supplementary Information (SI) for Nanoscale.
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Band structure engineering in porous g-C_3N_4 via tailoring surface carbon for enhanced photocatalytic hydrogen evolution

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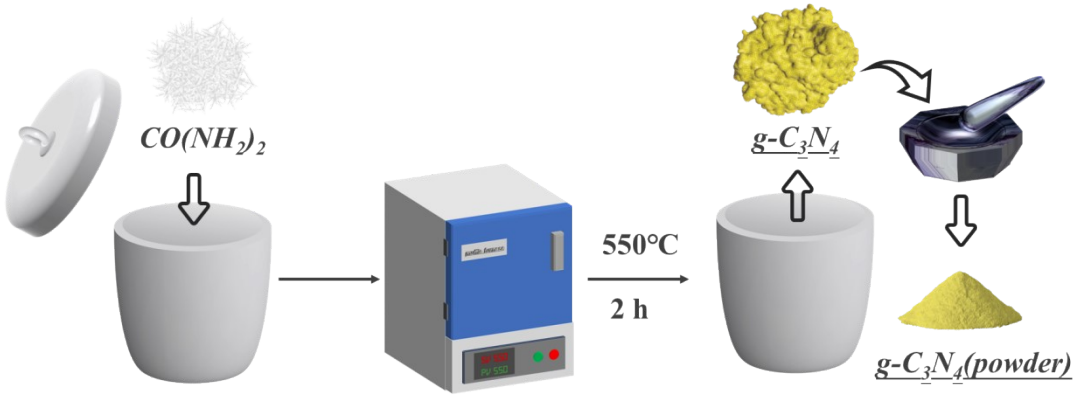

Fig. S1. Schematic diagram of the synthesis process of g-C_3N_4

Fig. S2. The SEM images of (a) CNP350, (b) CNP400, (c) CNP450, (d) CNP500.

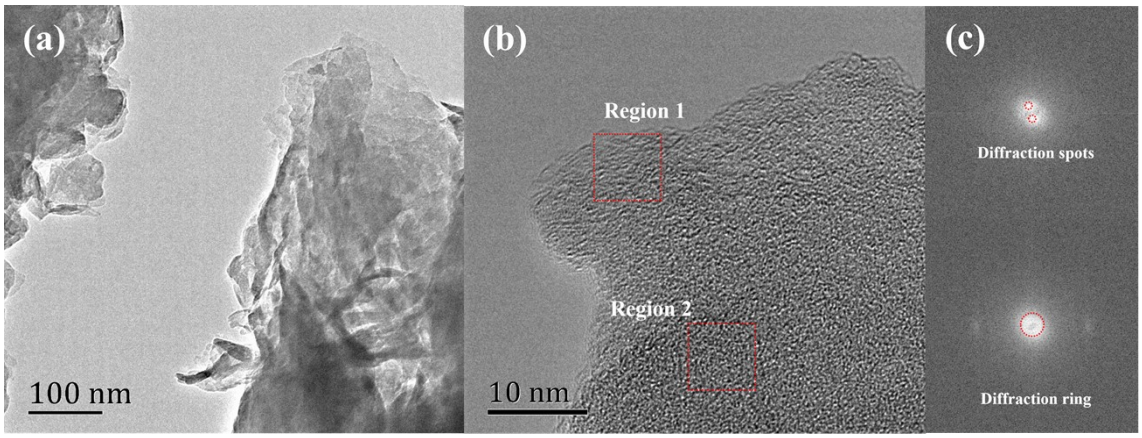

Fig. S3. (a) TEM and (b) HRTEM image of CNP550.(c) Selected area FFT analysis on CNP550

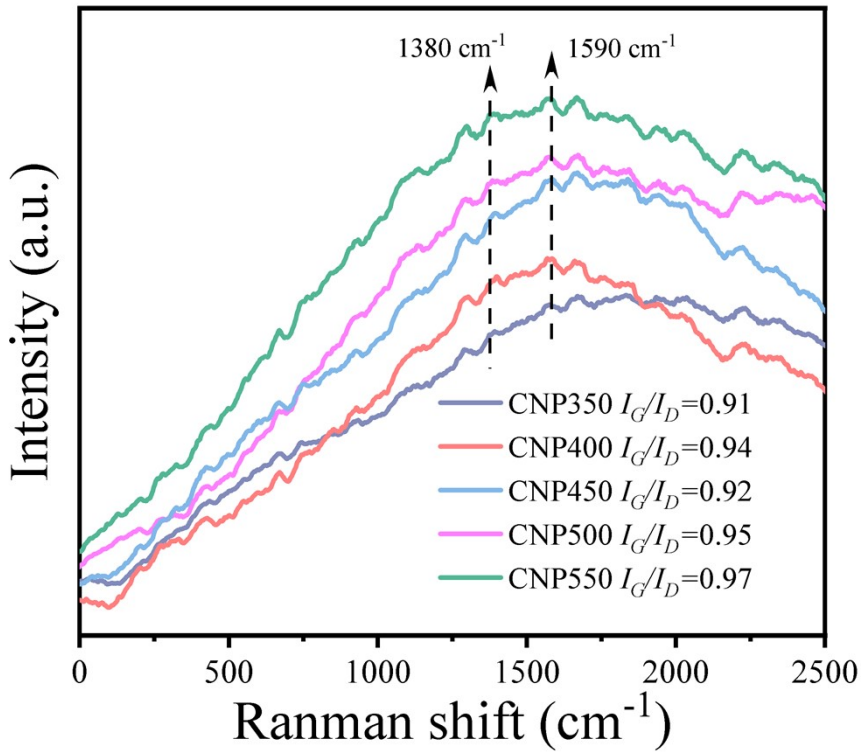

Fig. S4. The Raman spectra of CNP350, CNP400, CNP450, CNP500 and CNP550.

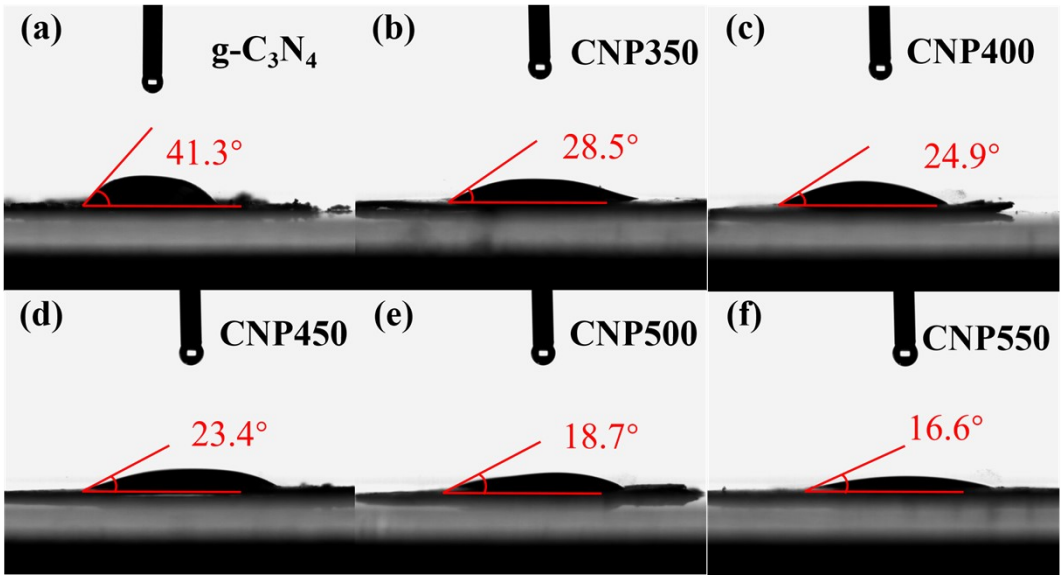

Fig. S5. Complementary contact angle measurements on the sample series.

Table S1. Atomic contents of C, N and O elements and N/C in g-C_3N_4 and CNP samples with different prepared temperatures on the basis of XPS measurement

Sample	g-C_3N_4	CNP350	CNP400	CNP450	CNP500	CNP550

C (at.%)	42.56	58.18	59.26	60.93	61.90	62.65
N (at.%)	56.75	41.13	40.34	38.51	37.79	37.16
O (at.%)	0.69	0.69	0.40	0.56	0.31	0.19
N/C	1.333	0.707	0.681	0.632	0.610	0.593

Table S2. S_{BET}, pore volume and pore size of each sample

Samples	S_{BET} ($m^2 \cdot g^{-1}$)	Pore volume ($cm^3 \cdot g^{-1}$)	Pore size (nm)
g-C_3N_4	68.4	0.56	3.83
CNP350	60.2	0.60	1.42
CNP400	74.0	0.67	1.42
CNP450	89.2	0.74	1.42
CNP500	108.9	1.51	3.81
CNP550	378.0	8.6	3.81

Table S3. Comparison table of hydrogen evolution performance between this work and similar recent work

Sample	HER activity	HER activity ratio	Ref. (year)

		with bulk g-C_3N_4	
HB/g-C_3N_4	216.8 μmol·g^{-1}·h^{-1}	2.9	S1 (2019)
CDCN-20	1266.8 μmol·g^{-1}·h^{-1}	3.4	S2 (2020)
C-CN	40.37 μmol·h^{-1}	2.9	S3 (2018)
C quantum dots/C doped g-C_3N_4	205 μmol·g^{-1}·h^{-1}	9	S4 (2022)
C7.5-MA	8998.7 μmol·g^{-1}·h^{-1}	7.3	S5 (2024)
CCN	1224 μmol·g^{-1}·h^{-1}	4.5	S6 (2021)
U-ECN	836 μmol·g^{-1}·h^{-1}	8.2	S7 (2021)
PAN pyrolysis gas	688.2 μmol·g^{-1}·h^{-1}	7.8	This work

Table S4. E_g, E_{VB} and E_{VB} of g-C_3N_4 and CNP samples with different prepared temperatures

Sample	g-C_3N_4	CNP350	CNP400	CNP450	CNP500	CNP550
E_g (eV)	2.87	2.70	2.68	2.48	2.33	1.94
E_{VB} (V vs. NHE)	1.91	1.87	2.01	2.05	1.91	1.39
E_{CB} (V vs. NHE)	-0.96	-0.83	-0.67	-0.43	-0.42	-0.55

Reference

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