Supplementary Information for

Water-Assisted Production of Honeycomb-Like g-C$_3$N$_4$ with Ultralong Carrier Lifetime and Outstanding Photocatalytic Activity

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Fig. S1 XRD patterns of CN-1-10, CN-1-20 and CN-1-30 samples.

Fig. S2 FT-IR spectra of the obtained g-C$_3$N$_4$ products treated under different preparation times, CN-1 (a), CN-3 (b) and CN-5 (c).
Fig. S3 SEM image of CN-1 sample.

Fig. S4 SEM image of CN-3 sample.

Fig. S5 SEM image of CN-5 sample.
Fig. S6 TEM images of CN-1-10 (a, b), CN-1-30 (c, d)

Fig. S7 N₂ adsorption-desorption isotherms of the obtained g-C₃N₄ samples (a) and corresponding pore-size distribution curves (b).
**Fig. S8** Enlarged view of the pore-size distribution curve of the CN-1 samples.

**Fig. S9** \(\text{N}_2\) adsorption-desorption isotherms of CN-1-10, CN-1-20, CN-1-30 (a) and corresponding pore-size distribution curves (b).
**Fig. S10** UV-vis DRS of CN-1-10, CN-1-20 and CN-1-30 samples.

**Fig. S11** Visible light photocatalytic activities of the CN-1-10, CN-1-20, CN-1-30 for removal of NO in air.
Fig. S12 The diagram illustrating the differences between the obtained g-C₃N₄ samples on light reflection.