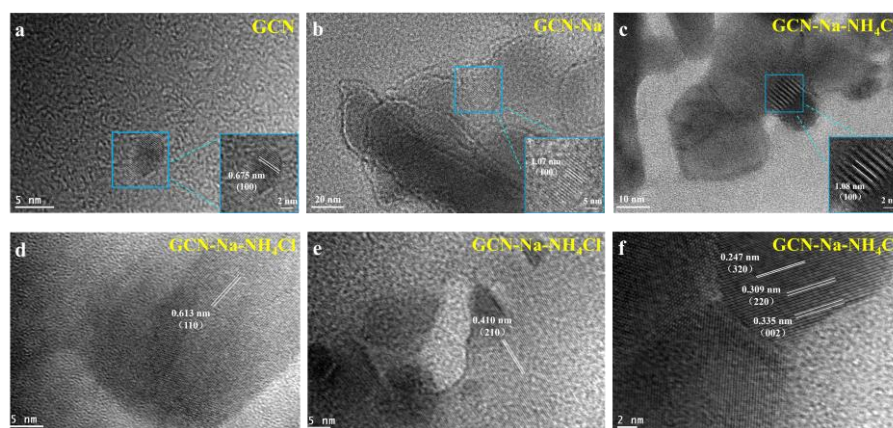


Electronic supplementary information for  
**Sodium ion doped graphitic carbon nitride with high  
crystallinity for superior photocatalytic hydrogen evolution  
efficiency**

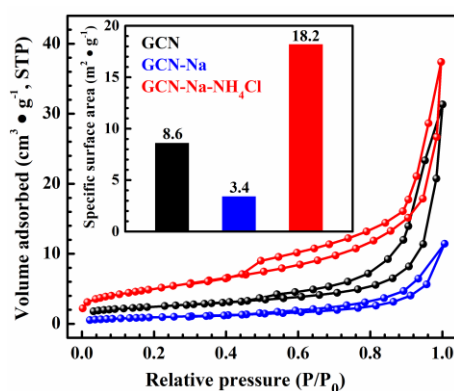
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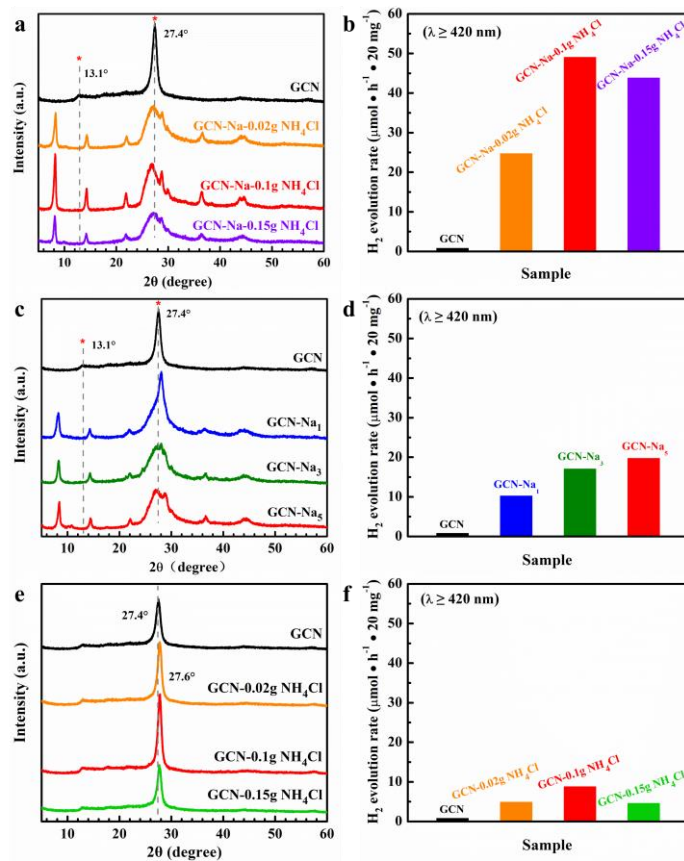
**Additional figures:**



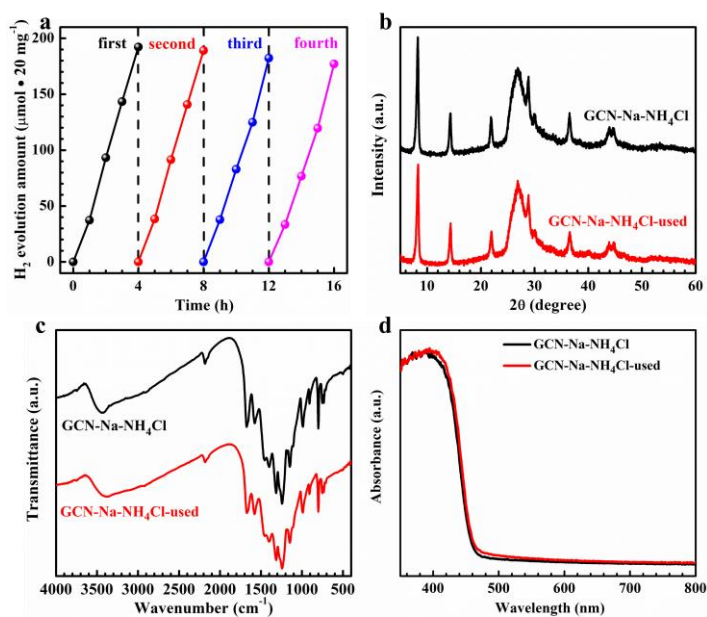
**Fig. S1** High resolution TEM images of GCN (a), GCN-Na (b) and GCN-Na-NH<sub>4</sub>Cl (c-f).



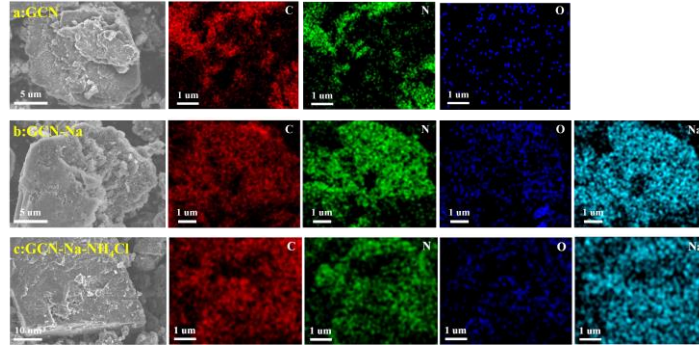
**Fig. S2** BET nitrogen adsorption/desorption isotherms for GCN, GCN-Na and GCN-Na-NH<sub>4</sub>Cl. Inset shows their BET specific surface areas.



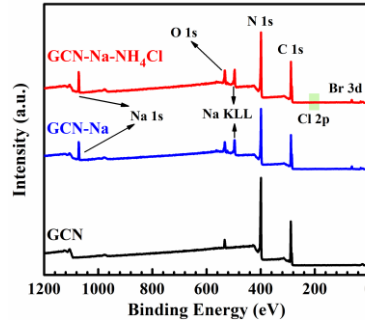
**Fig. S3** XRD patterns (a) and photocatalytic H<sub>2</sub> evolution rates (b) of GCN and GCN-Na-NH<sub>4</sub>Cl with different NH<sub>4</sub>Cl loadings; XRD patterns (c) and photocatalytic H<sub>2</sub> evolution rates (d) of GCN and GCN-Na with different NaCl loadings; XRD patterns (e) and photocatalytic H<sub>2</sub> evolution rates (f) of GCN and GCN-NH<sub>4</sub>Cl with different NH<sub>4</sub>Cl loadings.



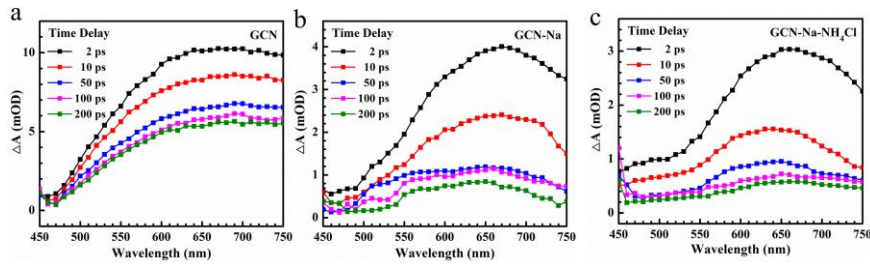
**Fig. S4** Stability test of photocatalytic H<sub>2</sub> evolution (a) for GCN-Na-NH<sub>4</sub>Cl under visible light irradiation; XRD patterns (b), FTIR spectra (c), and DRS spectra (d) for GCN-Na-NH<sub>4</sub>Cl before and after photocatalytic H<sub>2</sub> evolution.



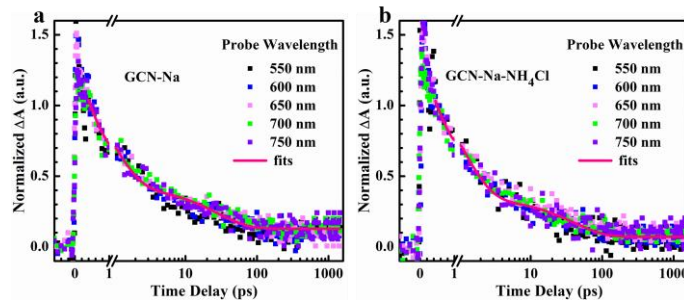
**Fig. S5** Element mapping images of GCN (a), GCN-Na (b) and GCN-Na-NH<sub>4</sub>Cl (c).



**Fig. S6** XPS survey spectra of GCN, GCN-Na and GCN-Na-NH<sub>4</sub>Cl.



**Fig. S7** Femtosecond transient absorption spectra of GCN (a), GCN-Na (b), and GCN-Na-NH<sub>4</sub>Cl (c) aqueous dispersions at various time delays under pump density of 50 μJ/cm<sup>2</sup>. The pump wavelength is 398 nm.



**Fig. S8** Normalized transient absorption kinetic traces of GCN-Na (a) and GCN-Na-NH<sub>4</sub>Cl (b) aqueous dispersions at various probe wavelengths under pump density of 50 μJ/cm<sup>2</sup>. The pump wavelength is 398 nm. The coherence spikes at ~200 fs time delay come from water solvent. The solid line is the fitting curve with a combination function of a stretched-exponential decay function and a single exponential decay function. The fitting function with one set of fitting parameters could fit all the transient absorption kinetic traces of GCN-Na at various probe wavelengths. Similarly, the fitting function with one set of fitting parameters could also fit all the transient absorption kinetic traces of GCN-Na-NH<sub>4</sub>Cl at various probe wavelengths.

**Additional tables:****Table S1** Elemental compositions determined by SEM-EDS.

Sample	C/N	O (at. %)	Na (at. %)
GCN	0.69	2.7±0.56	--
GCN-Na	0.75	4.5±0.65	4.7±0.95
GCN-Na-NH <sub>4</sub> Cl	0.67	4.4±0.63	5.4±1.80

**Table S2** Elemental compositions determined by XPS.

Sample	C 1s (at. %)	N 1s (at. %)	O 1s (at. %)	Na 1s (at. %)	Br 3d (at. %)	Cl 2p (at. %)
GCN	45.65	51.27	3.08	--	--	--
GCN-Na	47.37	44.52	4.05	4.02	0.04	--
GCN-Na-NH <sub>4</sub> Cl	46.03	45.44	4.67	3.74	0.02	0.09