Supporting Information

Precursor-dependent distinctive polymerization process controls optoelectronic properties in graphitic carbon nitride photocatalyst

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Table S1: XRD peak positions and calculated d-spacing values obtained for GCN-D and GCN-C after the fit.

Sample	(002)		(100)	
	2θ (degree)	**d-spacing (nm)**	**2θ (degree)**	**d-spacing (nm)**
GCN-D	27.45	0.324	13.13	0.673
GCN-C	27.46	0.324	13.23	0.668

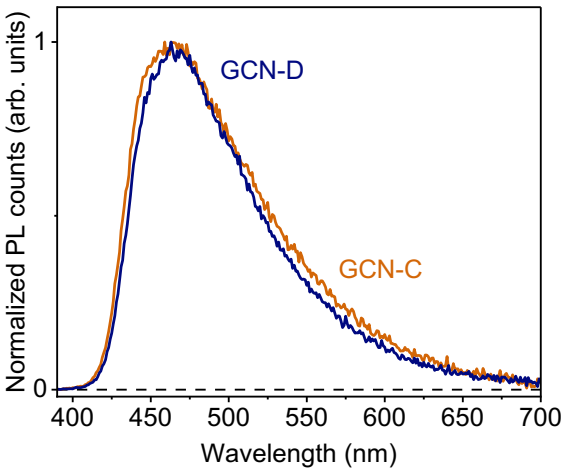

Figure S1: Steady state photoluminescence emission spectra of GCN derived from DCDA and CYN.

Table S2: Lifetime of the photoexcited charge carriers obtained from tr-PL spectra shown in Figure 1d.

Sample	τ_1 (ns)	A_1	τ_2 (ns)	A_2
GCN-D	1.176 ± 0.021	5.287 ± 0.133	4.927 ± 0.155	0.426 ± 0.024
GCN-C	1.222 ± 0.021	4.925 ± 0.112	5.001 ± 0.161	0.407 ± 0.024

The two-exponential function,

$$y_0 + A_1 \times exp^{\frac{-x}{\tau_1}} + A_2 \times exp^{\frac{-x}{\tau_2}} \quad \textbf{(1)}$$

was used to fit the tr-PL decay profiles.

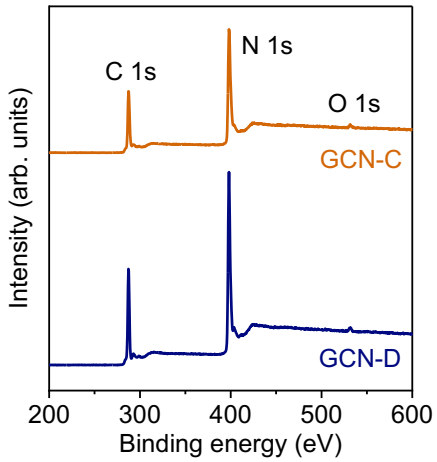

Figure S2: Survey spectra of synthesized samples from XPS analysis.

Table S3: Peak parameters obtained after C and N 1s spectral deconvolution of GCN derived from CYN and DCDA.

a. C 1s spectrum of GCN-D and GCN-C.

	Adv. C		**C-NH$_x$ (C$_1$)**		**N-C=N (C$_2$)**	
	Position (eV)	**Peak area %**	**Position (eV)**	**Peak area %**	**Position (eV)**	**Peak area %**
GCN-D	284.8	3	286.8	1	288.3	96
GCN-C	284.8	3	286.5	2	288.3	95

b. N 1s spectrum of GCN-D and GCN-C.

	C=N-C (N$_1$)		**N-(C)$_3$ (N$_2$)**		**-NH$_x$ (N$_3$)**	
	Position (eV)	**Peak area %**	**Position (eV)**	**Peak area %**	**Position (eV)**	**Peak area %**
GCN-D	398.8	76	400.2	14	401.3	10
GCN-C	398.9	64	400.1	21	401.3	15

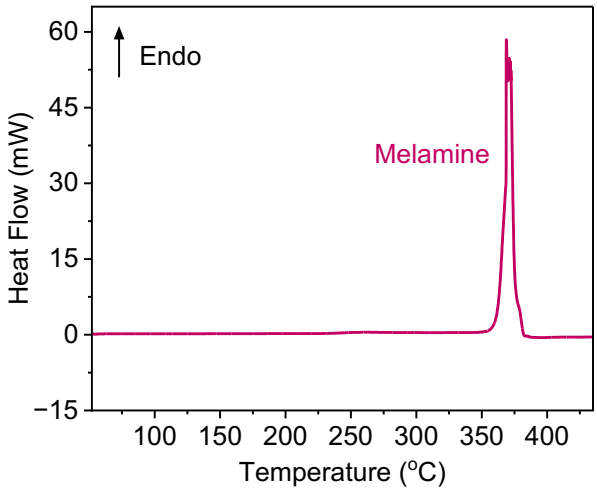

Figure S3: DSC thermogram of melamine.

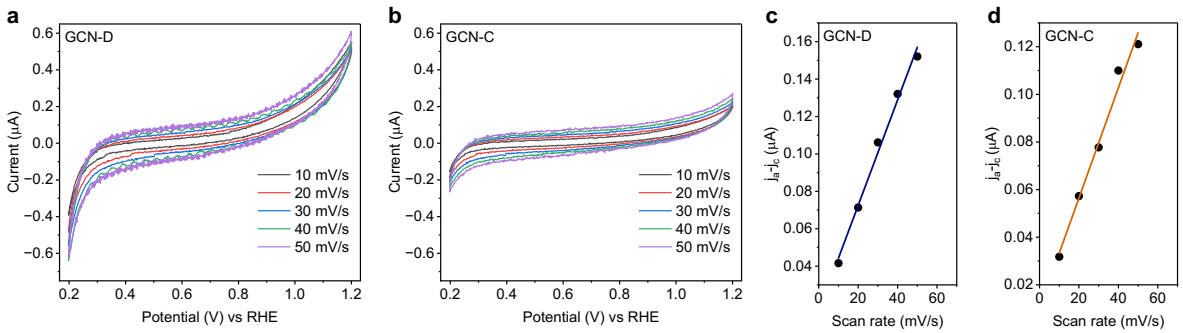

Figure S4: a,b) CV of GCN-D and GCN-C at different scan rates to measure ECSA. c,d) Plots of current and scan rate to calculate the C_{dl} value.