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A one-step process for preparing a phenyl-modified g-C_3N_4 green phosphor with a high quantum yield

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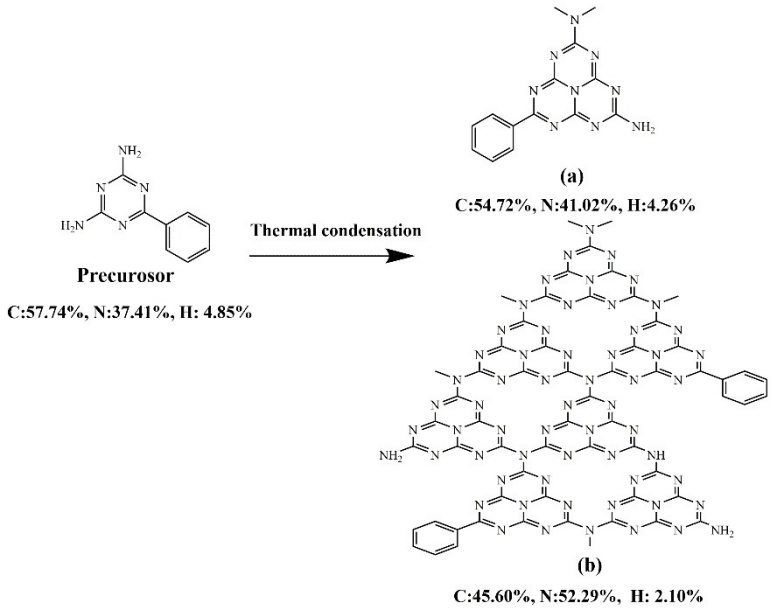

Scheme S1. A schematic of PhCN prepared via the one-step thermal polymerization process from the precursor.

Table S1. Element analysis of Precursor and PhCN prepared at different temperature.

Annealing temperature	C (%)	N (%)	H (%)	C/N Ratio
Precursor	57.91	37.85	4.68	1.53
380 °C	53.14	42.30	3.34	1.26
400 °C	45.35	49.51	2.78	0.92
420 °C	44.95	49.02	2.79	0.92
450 °C	42.09	49.32	2.79	0.85
480 °C	41.04	50.05	2.75	0.82

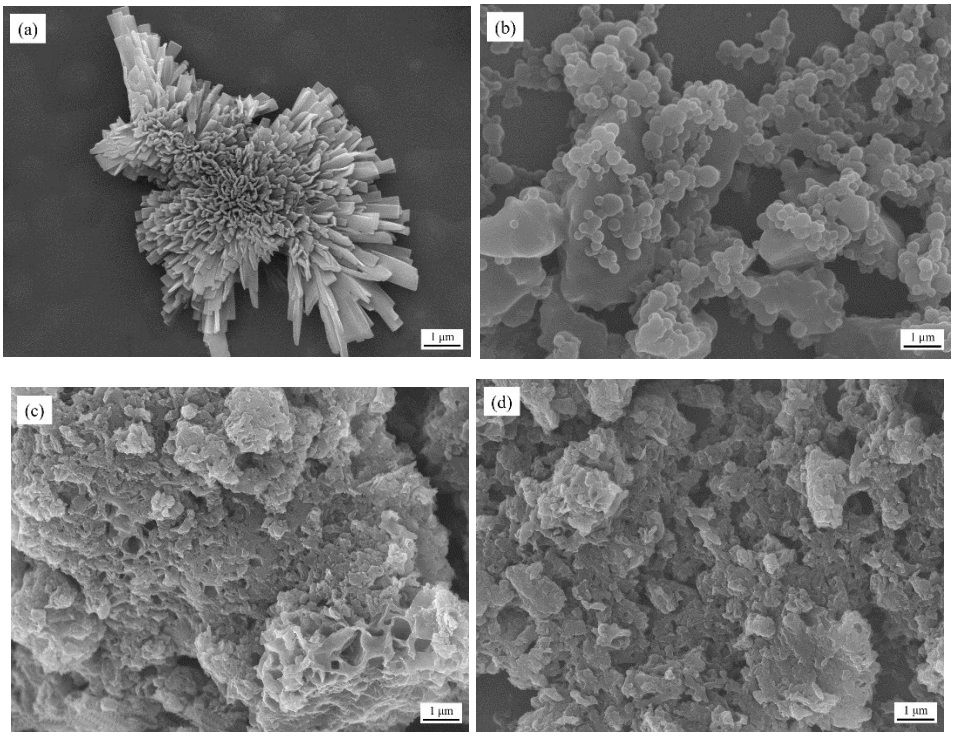

Figure S1. SEM images of the precursor (a) and the samples prepared at 380 °C (b), 400 °C (c) and 420 °C (d).

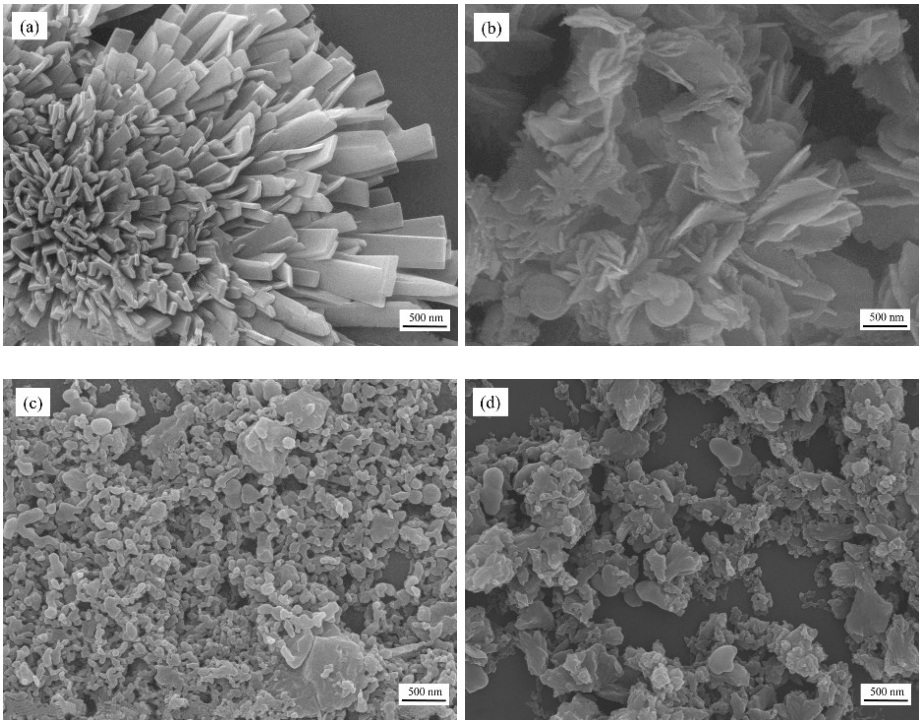

Figure S2. SEM images of the precursor (a) and the samples prepared at 400 °C for 20 min (b), 40 min (c), and 60 min (d).

Table S2. C/N ratio of the samples prepared at 400 °C for different annealing times.

Annealing temperature (min)	C (%)	N (%)	H (%)	C/N ratio
20	56.31	39.57	3.86	1.42
40	52.07	44.17	3.12	1.18
60	50.75	45.57	2.78	1.11
120	45.35	49.51	2.78	0.92
240	43.66	50.45	2.75	0.86

Table S3. Area of four fitted PL peaks for the samples prepared for different times

Fitted peak	Annealing time				
	20	40	60	120	240
Peak 1	5651	4691	2904	3172	475
Peak 2	8094	5393	5904	5690	3075
Peak 3	9144	8423	6504	5922	4875
Peak 4	9749	8753	8304	6290	6375

Table S4. A brief summary of precursor, preparation process, quantum yield of various g-C_3N_4-based materials.

Material	Precursor	Preparation process	State	Quantum yield (%)	Ref.
g-CN nanosheet	Melamine	Thermal polymerization and liquid-exfoliation	Liquid	19.6%	[1]
g-CNQDs	Formamide	Microwave mediated	Liquid	29%	[2]
g-CNQDs	Urea, sodium citrate	Dialyzing CN	Liquid	42%	[3]
CNQDs	DCDA	Chemical tailoring	Liquid	46%	[4]
Ph-CNQDs	cyanuric acid/2,4-diamino-6-phenyl1,3,5-triazine	Thermal polymerization and Ultrasonication	Liquid	48.4%	[5]
g-CN	Melamine	Thermal polymerization	Solid	5.3%	[6]
g-CN	Melamine	Thermal polymerization and acid treatment	Solid	11.8%	[7]
Ph-CN	cyanuric acid/2,4-diamino-6-phenyl1,3,5-triazine	Thermal polymerization	Solid	17.9%	[8]
Ph-CN	2,4-diamino-6-phenyl1,3,5-triazine	Thermal polymerization	Solid	38.68%	This work

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