Supporting Information

Facile regeneration of oxidized porous carbon nitride rods from the de-aromatization of the heptazine network in bulk g-C$_3$N$_4$

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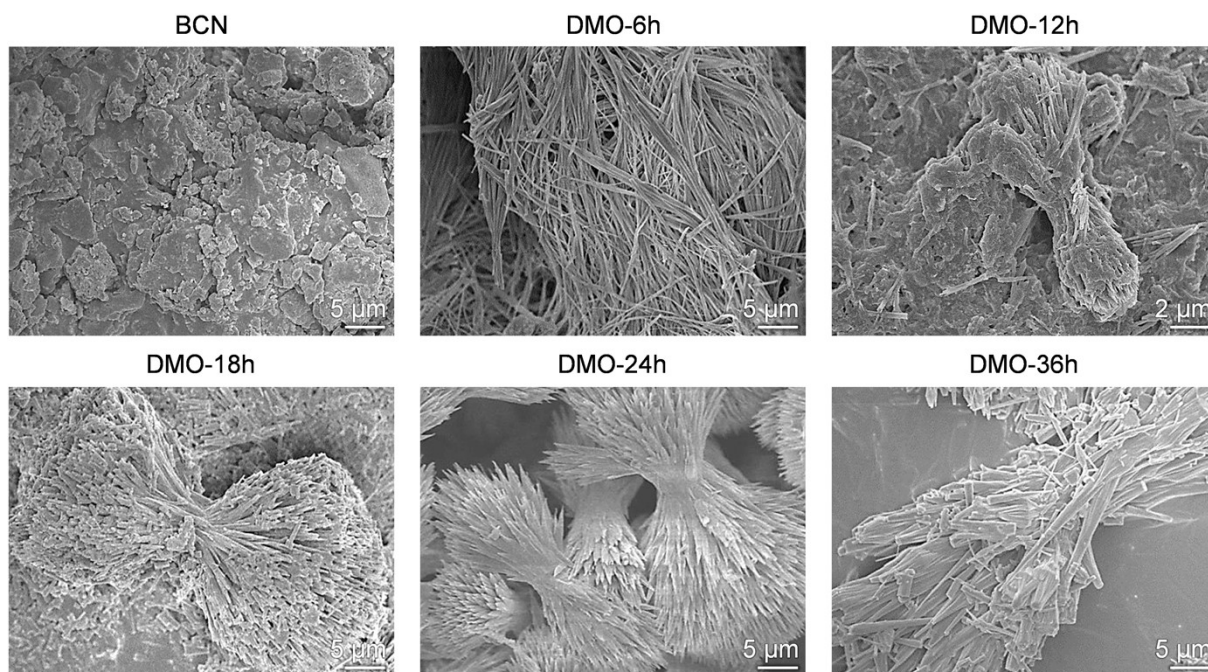
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Fig. S1 SEM images of the de-aromatized melem-containing oligomers (DMO) by hydrothermal treatment of BCN at 473 K for 6-36 h (DMO-x, x denotes the hydrothermal time). BCN was used as a reference.
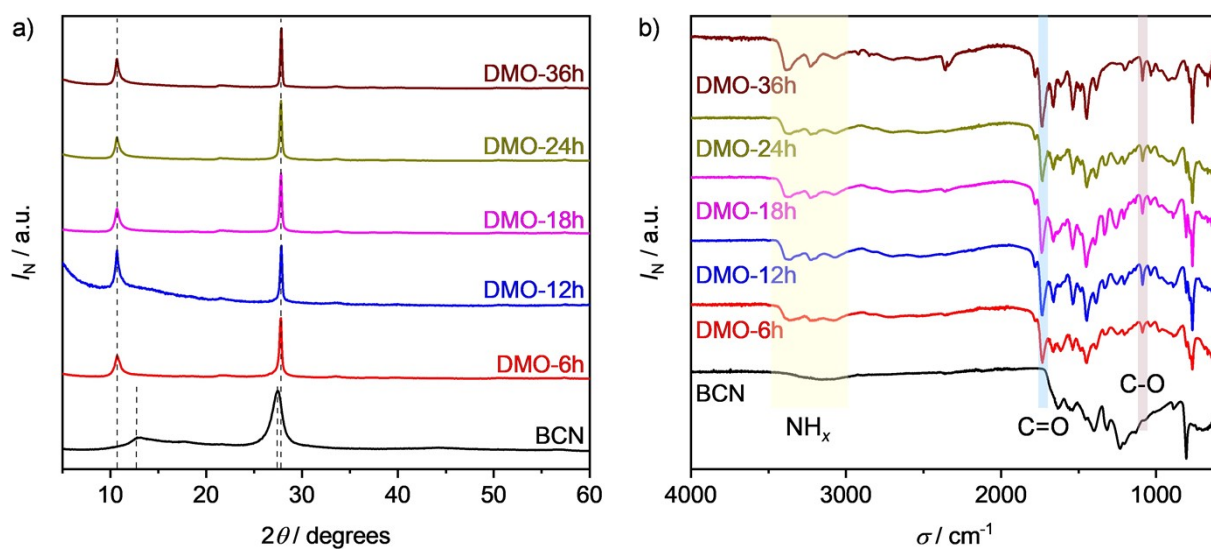
Fig. S2 (a) Normalized XRD patterns and (b) FT-IR spectra of the de-aromatized melem-containing oligomers by hydrothermal treatment of BCN at 473 K for 6-36 h (DMO-*x*, *x* denotes the hydrothermal time). The stretching of the surface groups of $-NH_x$ (3000-3500 cm^{-1}), $-C=O$ (1734 cm^{-1}), and C−OH (1084 cm^{-1}) were highlighted. BCN was used as a reference.
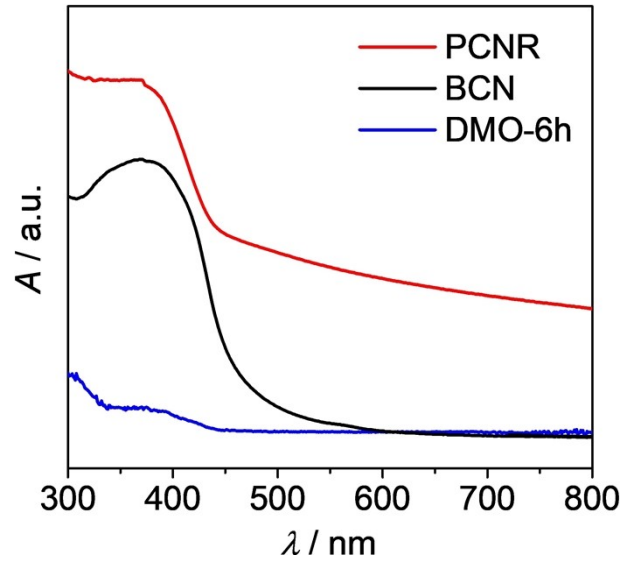
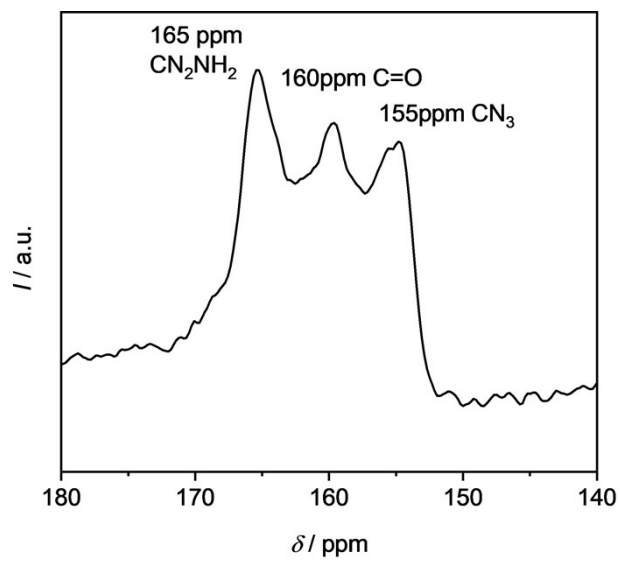**Fig. S3** UV–visible absorption spectra of PCNR, BCN and DMO-6h.

Fig. S4 Solid-state ^{13}C NMR spectrum of DMO-6h carried out at 100.6 MHz and 298 K.
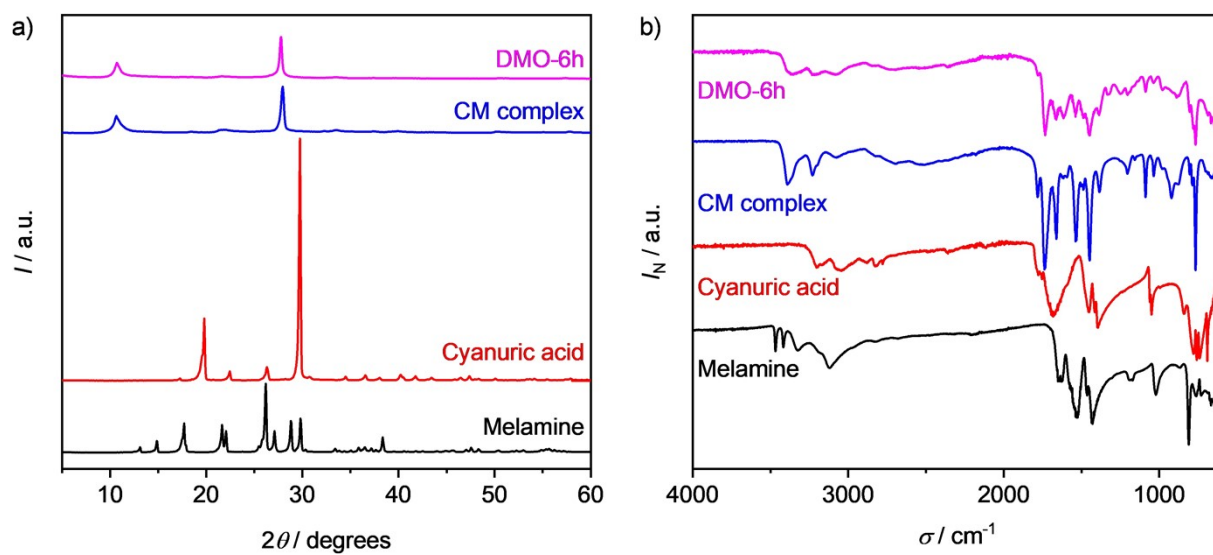
Fig. S5 Comparison of the (a) XRD patterns and (b) FT-IR spectra of DMO-6h with melamine, cyanuric acid, and their supramolecular complex (CM complex), which were embedded in KBr pellet.

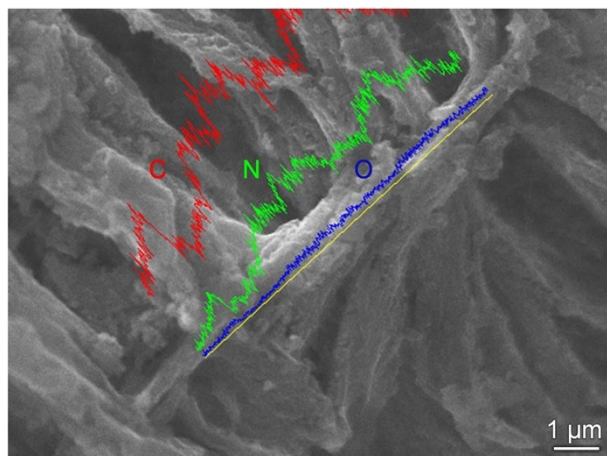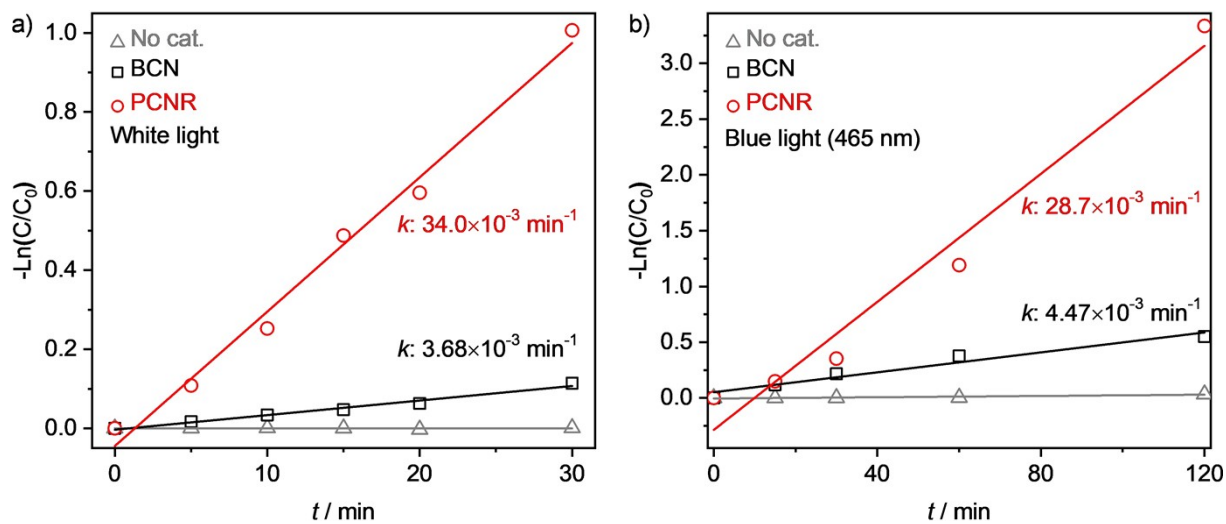**Fig. S6** SEM image and the corresponding linear elemental mappings of PCNR.

Fig. S7 First-order kinetic plots of rhodamine B degradation in the presence of BCN and PCNR, under the irradiation of (a) white LED array and (b) blue light (465 nm) as the light source.
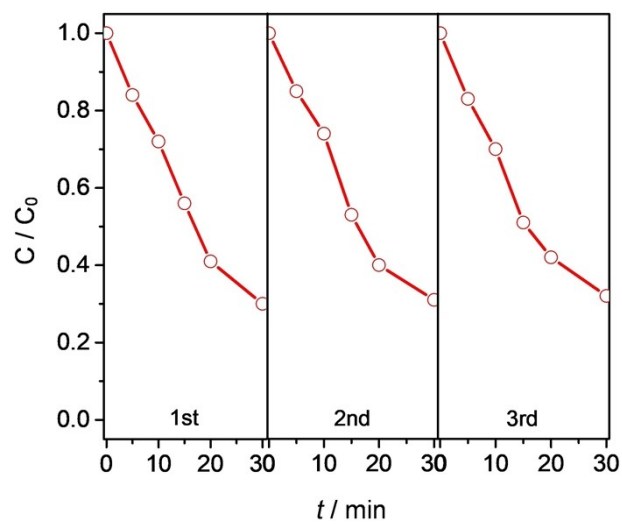
Fig. S8 Reusability of the PCNR in photocatalytic degradation of rhodamine B under the irradiation of 50 W white LED array.

Table S1 Structural properties and photocatalytic performance of BCN and PCNR.

Sample	Band gap[a] [eV]	S_{BET}[b] [m² g⁻¹]	d_{Pore}[c] [nm]	V_{Pore}[d] [cm³ g⁻¹]	k_{White}[e] [×10⁻³ min⁻¹]	k_{Blue}[f] [×10⁻³ min⁻¹]
BCN	2.78	9.5	2.8	0.01	3.68	4.47
PCNR	2.74	47.3	3.2	0.12	34.0	28.7

a) Determined by Tauc plots; b) BET method; c) Average pore diameter from the pore size distribution; d) Volume of N_2 adsorbed at $p/p_0 = 0.98$; e,f) The reaction rate calculated of rhodamine B degradation *via* first-order kinetic model under the irradiation of 50 W (e) white LED array and (f) blue light (465 nm) as the light source.

Table S2 Composition of BCN, PCNR, and DMO with different hydrothermal treatment times (determined by elemental analysis).

Sample	N [wt.%]	C [wt.%]	H [wt.%]	O [wt.%]	C/N[a]	Formula
BCN	60.37	34.70	2.04	2.88	0.57 (0.67)	$C_6N_9H_4O_{0.4}$
PCNR	53.58	32.74	2.32	11.36	0.61 (0.71)	$C_6N_{8.4}H_5O_{1.6}$
DMO-6h	48.53	28.25	3.63	19.59	0.58 (0.68)	$C_6N_9H_9O_3$
DMO-12h	49.30	28.93	3.53	18.24	0.59 (0.68)	$C_6N_9H_9O_3$
DMO-18h	50.77	29.60	3.48	16.14	0.58 (0.68)	$C_6N_9H_9O_{2.5}$
DMO-24h	51.08	29.27	3.34	16.31	0.57 (0.67)	$C_6N_9H_8O_{2.5}$

a) Weight ratio (in parentheses, the corresponding molar ratio).