Supporting Information

A post-grafting strategy to modify g-C$_3$N$_4$ with aromatic heterocycles for enhanced photocatalytic activity

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H$_2$N-C-NH$_2$ $\xrightarrow{\Delta}$

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**Fig. S1** Scheme of the synthesis of CNTE-x sample

**Fig. S2** (a) XRD patterns and (b) FT-IR spectra of CN and CNTE-x samples.

**Fig. S3** O 1S XPS spectra of CN and CNTE-1.
**Fig. S4** Zeta potentials of CN and CNTE-1.

**Fig. S5** The corresponding band gap of CN and CNTE-x samples estimated by related curves of $(\alpha h\nu)^{1/2}$ vs photon energy plotted.

**Fig. S6** The BET surface area ratios and H$_2$ evolution rate ratios of CNTN-x/CN.
Fig. S7 Mott–Schottky plots collected for CN (a) and CNTE-1(b) at a frequency of 962 Hz in the dark.

Mott–Schottky tests were carried out in order to confirm the electronic potentials of CN and CNTE-1. The measured potentials can be converted to the reversible hydrogen electrode (RHE) scale via the Nernst equation: \( E_{\text{RHE}} = E_{\text{Ag/AgCl}} + 0.05916 \times \text{pH} + E^0_{\text{Ag/AgCl}} \).

Where \( E_{\text{RHE}} \) is the converted potential vs. RHE, \( E_{\text{Ag/AgCl}} \) is the experimental potential measured against the Ag/AgCl reference electrode, and \( E^0_{\text{Ag/AgCl}} \) is the standard potential of Ag/AgCl at 298 K (0.1976 V). The calculated conduction band edges of CN and CNTE-1 are -1.02 eV and -1.15 eV, respectively.

Fig. S8 (a) XRD patterns and (b) FT-IR spectra of fresh CNTE-1 and used CNTE-1 samples.
Fig. S9 (a) XRD patterns and (b) FT-IR spectra and (c) UV-vis absorption spectra and (d) PL spectra (excitation wavelength=380 nm) and (e) Pore size distributions and (f) Hydrogen evolution rates of CN and CN-250.