

Graphene-analogue carbon nitride: novel exfoliation synthesis and its application in photocatalysis and photoelectrochemical selective detection of trace amount of Cu²⁺

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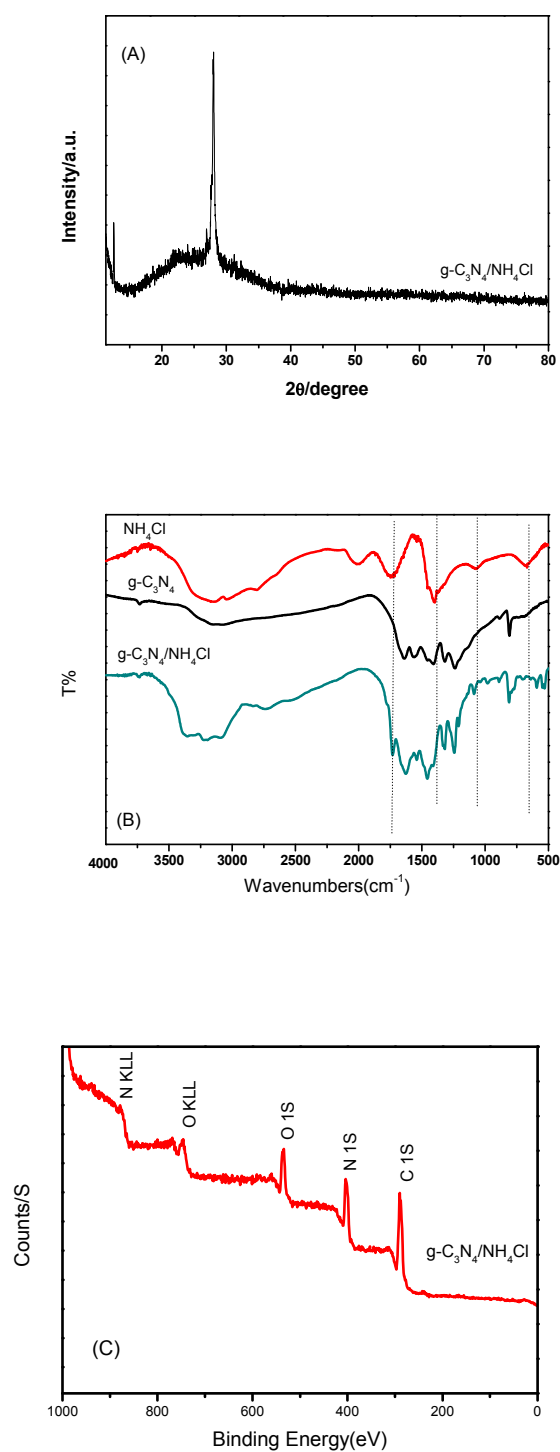
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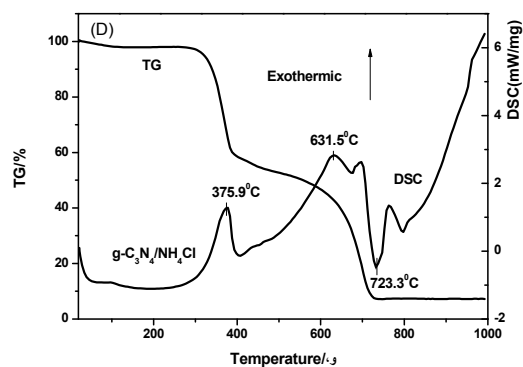


Figure S1 XRD pattern (A), IR spectra (B), XPS (C) and TG-DSC (D) of $g\text{-C}_3\text{N}_4/\text{NH}_4\text{Cl}$.

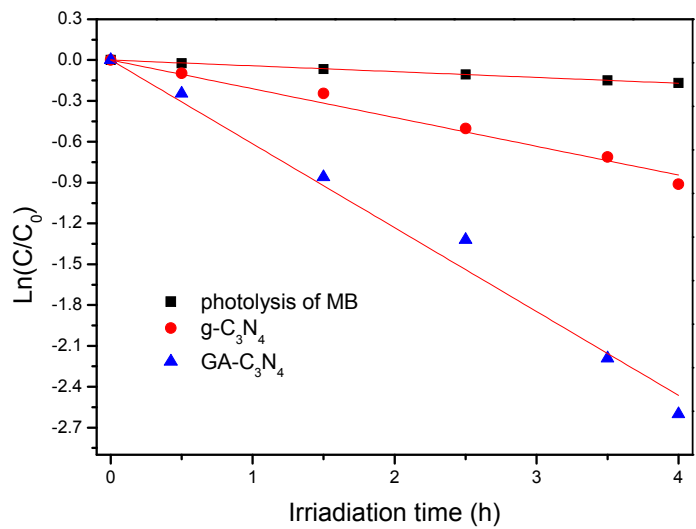


Figure S2. Kinetic fit for the photocatalytic degradation of MB with $g\text{-C}_3\text{N}_4$, blend and $\text{GA-C}_3\text{N}_4$.

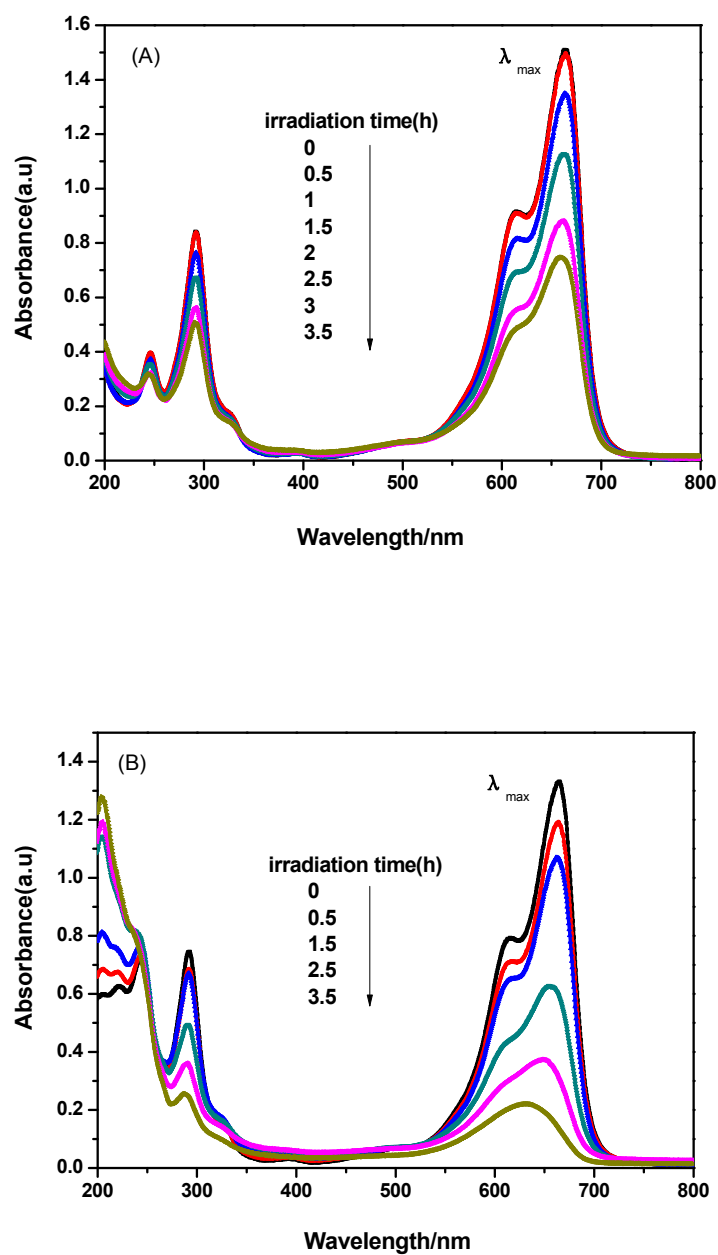


Figure S3. Changes in UV-visible absorption spectra of MB by (A) g-C₃N₄ and (B) GA-C₃N₄.

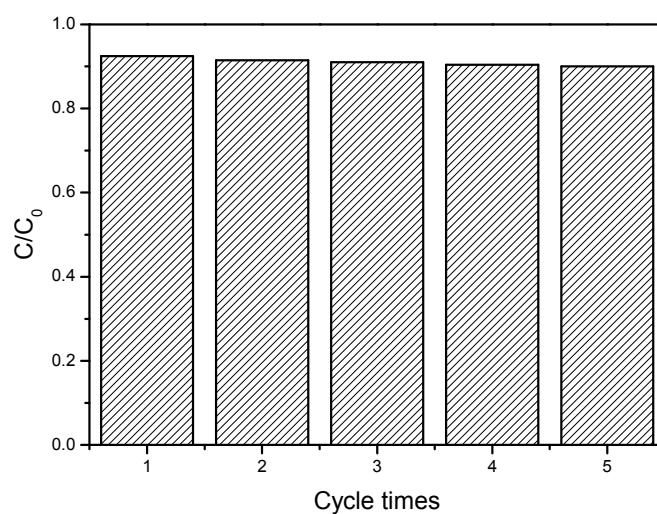


Figure S4. Cycling runs for the photocatalytic degradation of MB in the presence of GA- C_3N_4 sample under visible light irradiation.

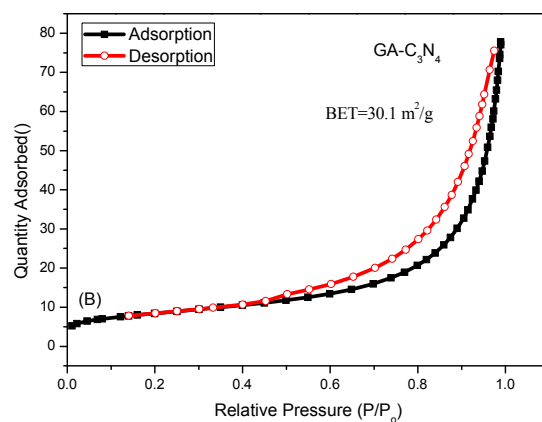
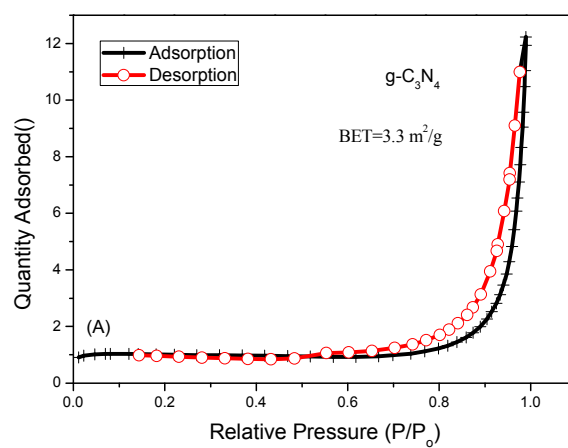


Figure S5. Nitrogen absorption-desorption isotherms of (A) $g-C_3N_4$ and GA- C_3N_4 (B).

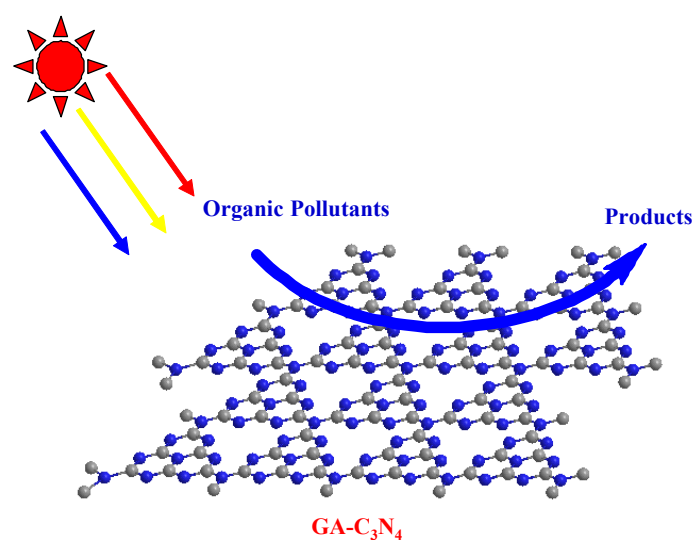


Figure S6. The proposed photocatalytic mechanism.

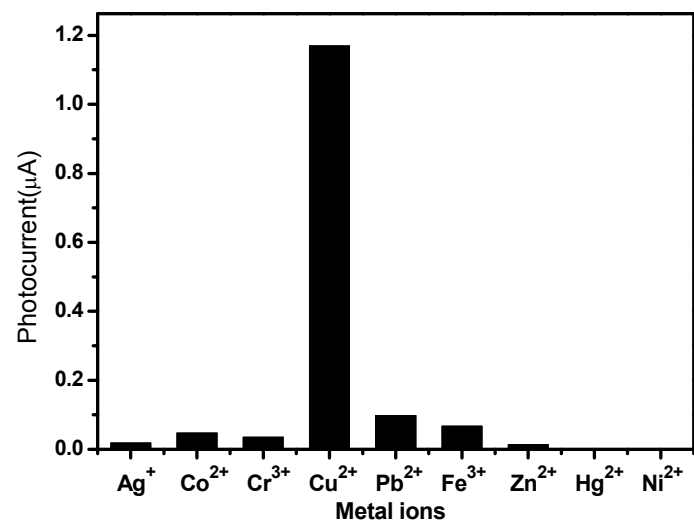


Figure S7. Photocurrent intensity of ITO/GA-C₃N₄ in the presence of 2×10⁻⁶ M solutions of various metal ions.

Table S1. Kinetic Constants (k), the first order kinetic equation and relative coefficient (R) for the degradation of MB under visible light irradiation.

photocatalysts	The first order kinetic equation	k (h^{-1})	R^2
none	$-\ln(C/C_0) = 0.0425 t$	0.0425	0.999
g-C ₃ N ₄	$-\ln(C/C_0) = 0.211 t$	0.211	0.992
GA-C ₃ N ₄	$-\ln(C/C_0) = 0.616 t$	0.616	0.993