Supporting Information

Photocatalysis by Graphitic Carbon Nitride Modified with 0D, 1D, and 2D Carbon-Based Nanomaterials

Bo-Kai Wang[a], David K Wang[b], Wen-Che Hou[,a]*

[a]Department of Environmental Engineering, National Cheng Kung University, Tainan City, Taiwan, 70101

[b]School of Chemical and Biomolecular Engineering, The University of Sydney, Darlington, New South Wales, Australia

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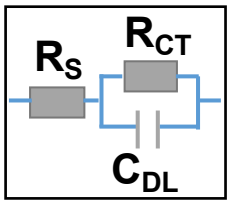

Figure S1. The equivalent circuit model, where R_s is the resistance of electrolyte, R_{CT} is the electron-transfer resistance, and C_{DL} is the double layer capacitance.

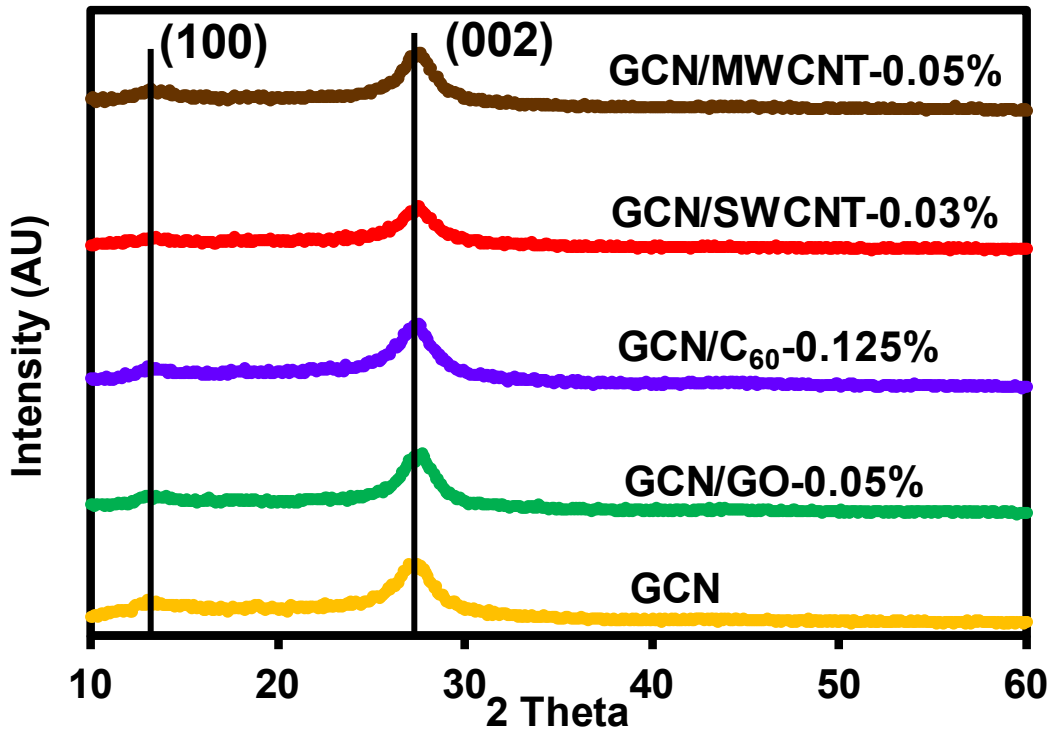

Figure S2. XRD patterns of GCN/CBN composite photocatalysts. The data for photocatalysts containing the CBN contents exhibiting superior photoreactivity in each series of GCN/CBN samples are presented.

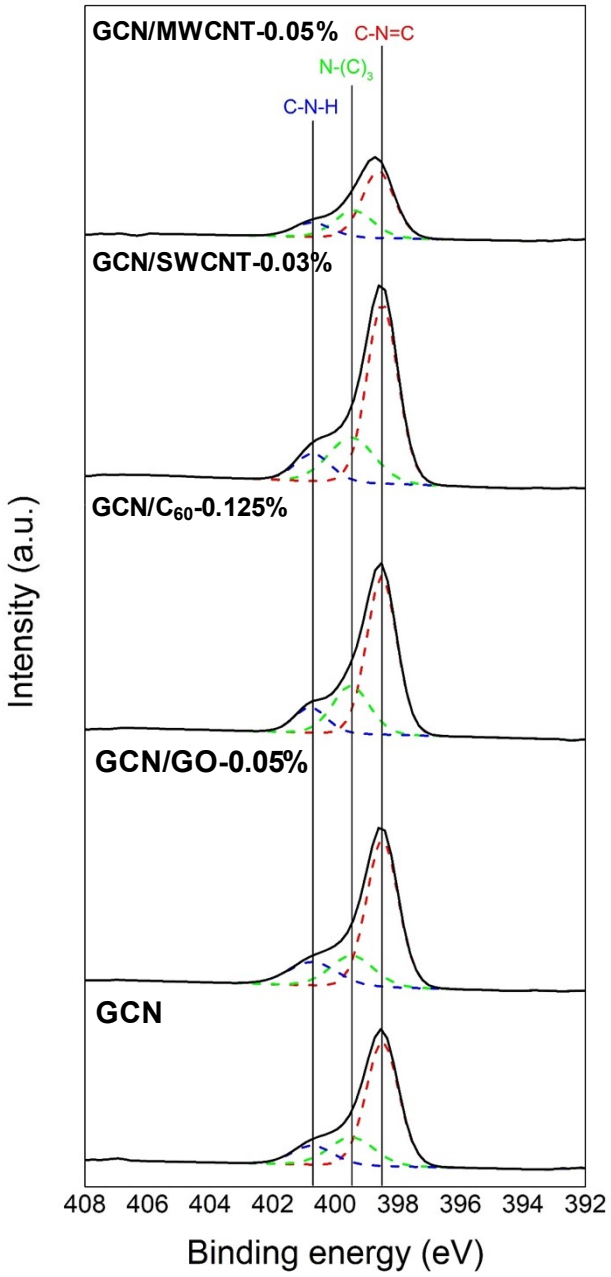

Figure S3. XP spectra of GCN and GCN/CBN composite photocatalysts.

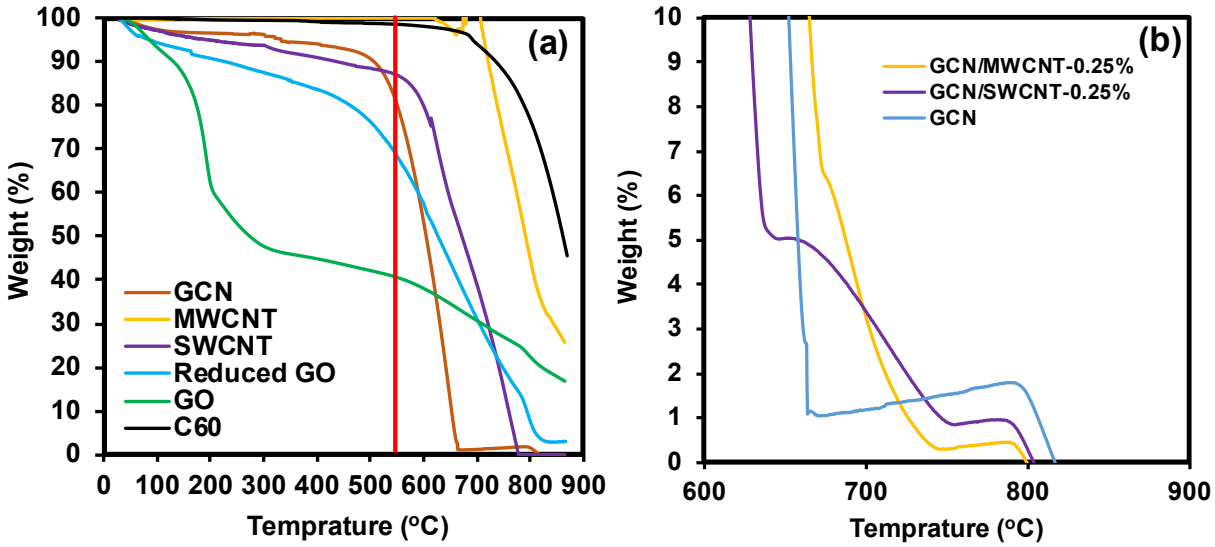

Figure S4. Thermogravimetric analysis of CBNs, pure GCN, and GCN/CBNs.

Text S1. Additional TGA discussion.

GO showed about 55% of weight loss during heating to 550°C, and that can be attributed to the removal of oxygen-containing functionalities[1]. As a reference, reduced GO (rGO) whose oxygen-containing functionalities have been removed exhibited 30% weight loss.

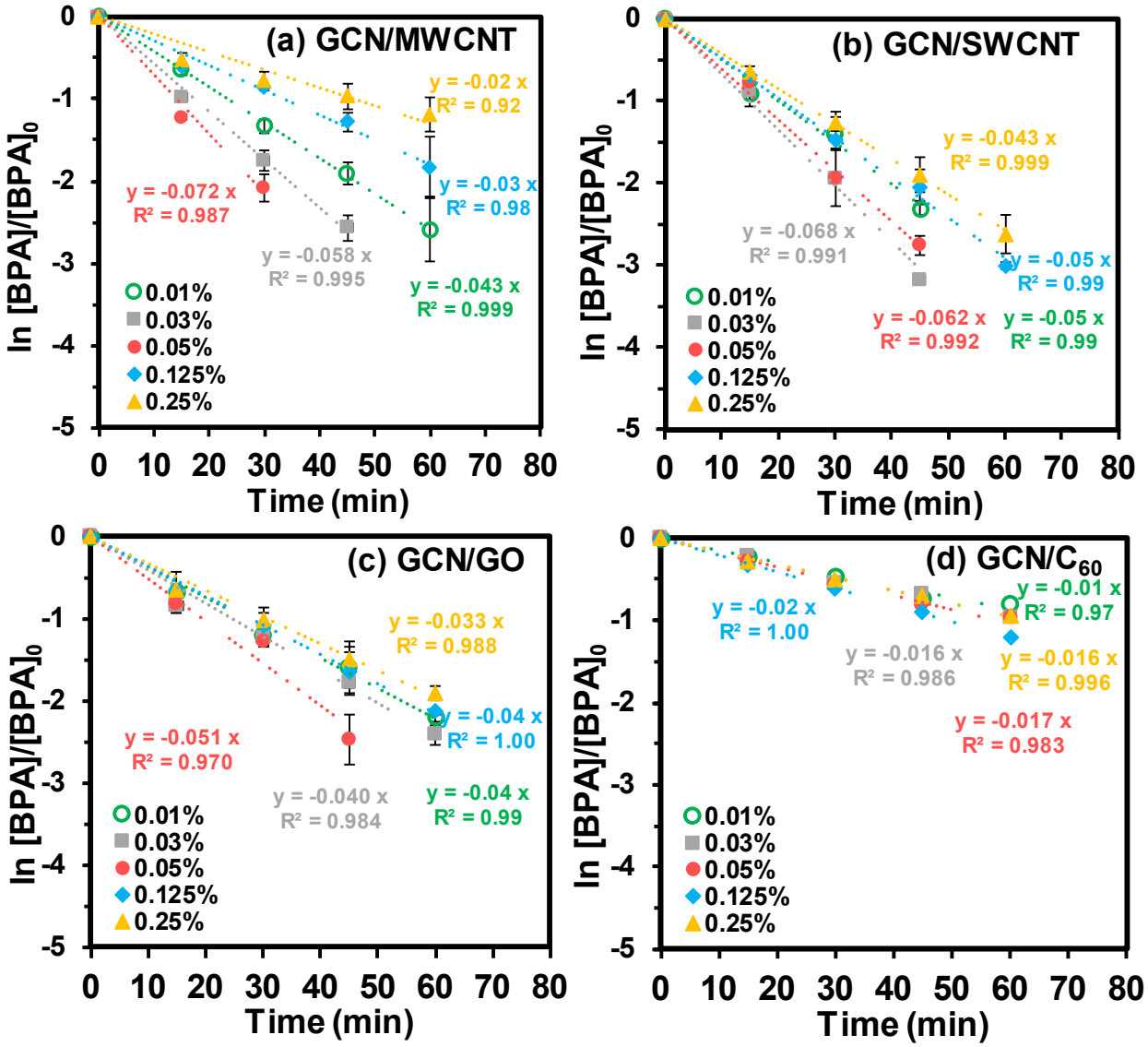

Figure S5. Data fitting to the 1st-order kinetics, showing the photocatalysis of BPA by GCN embedded with (a) MWCNT, (b) SWCNT, (c) GO, and (d) C_{60}. Condition: [catalyst] = 1 g/L, [BPA] = 5 mg/L, pH = 7.0.

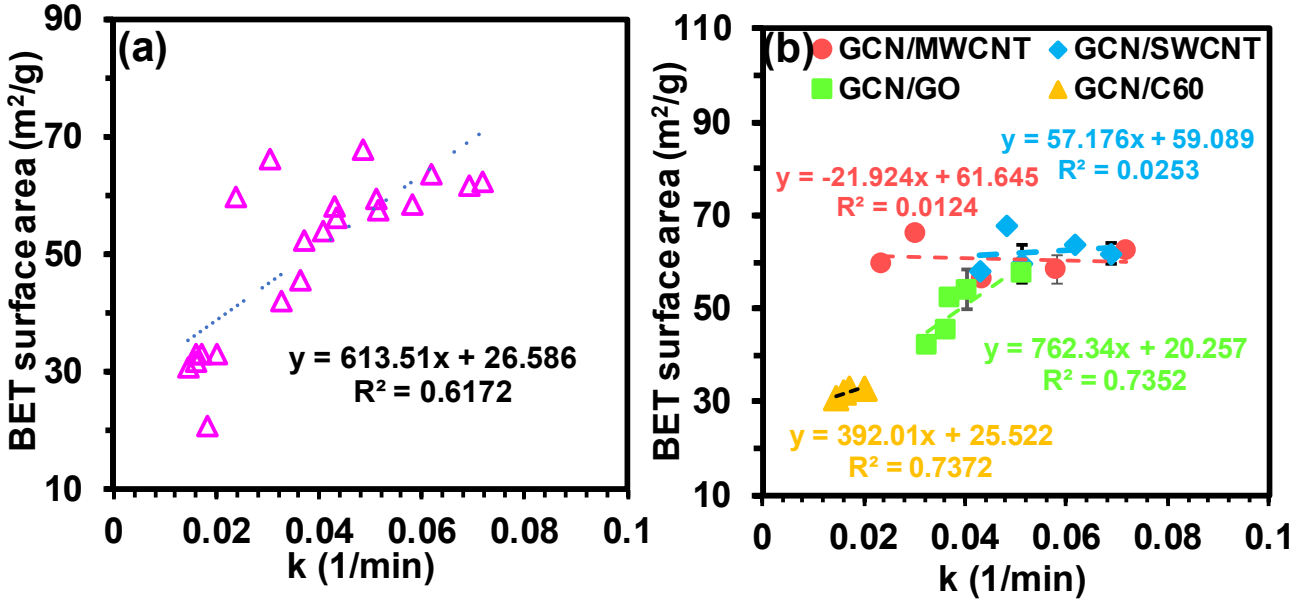

Figure S6. The correlation of surface areas and 1st-order rate coefficients of all GCN/CBNs at various loadings, showing (a) the overall correlation, and (b) the correlation of specific GCN/CBN.

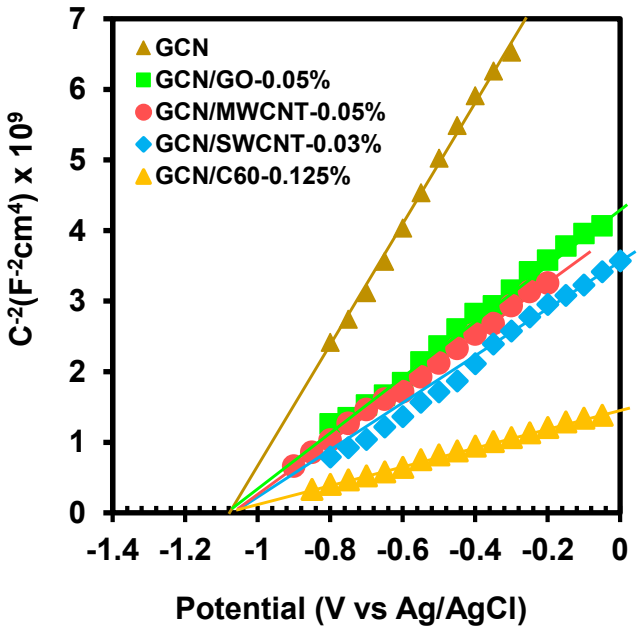

Figure S7. The Mott-Schottky plot. The samples represent the ones that had the greatest photoreactivity in each series of GCN/CBNs with varied loadings.

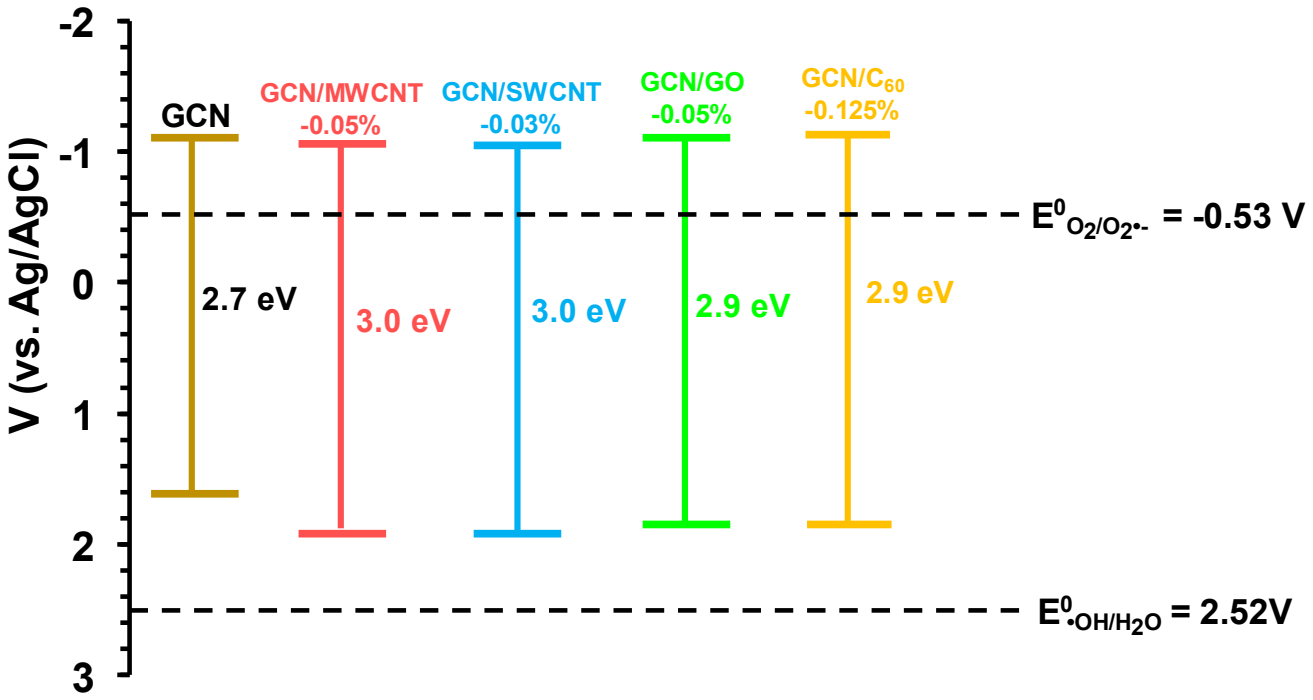

Figure S8. Schematic showing the electropotentials of conduction band and valence band of GCN/CBNs.

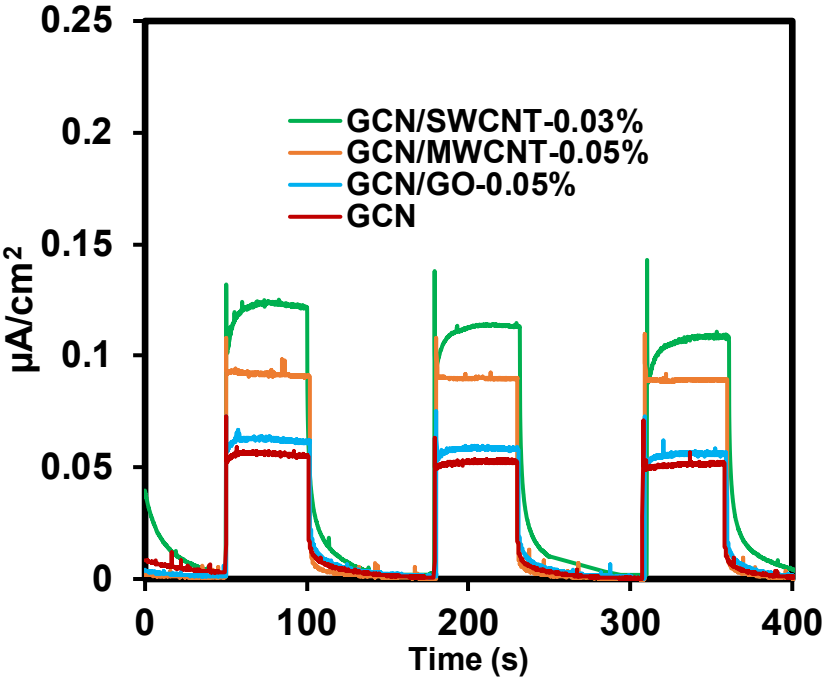

Figure S9. Photocurrent analysis of pure GCN, and GCN/CBN composites.

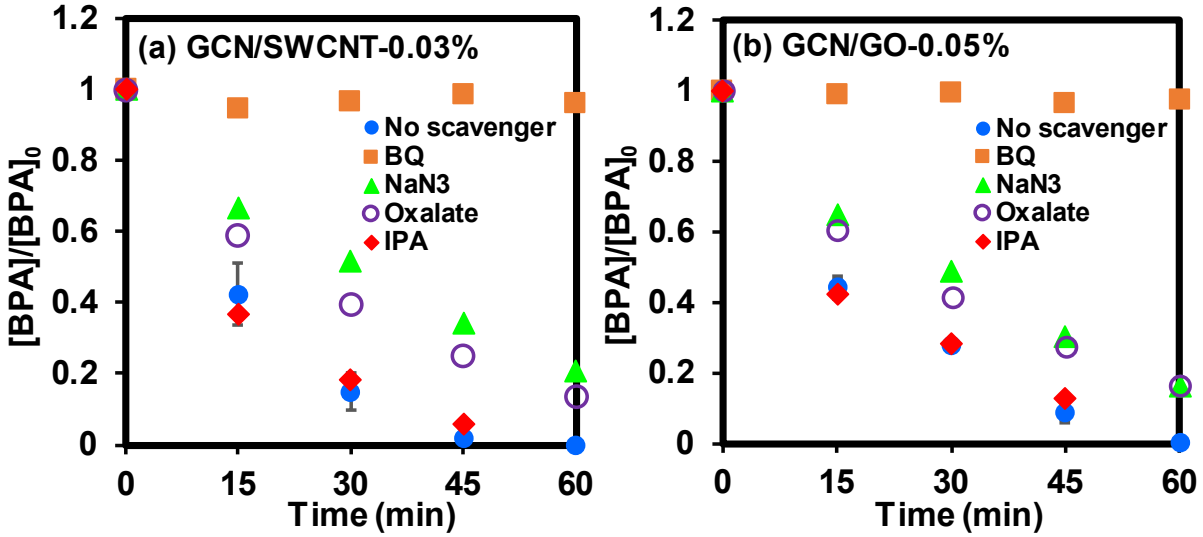

Figure S10. Photocatalysis of BPA by GCN/CBN photocatalysts in the presence of different quenchers.

Condition：[catalyst] = 1 g/L, [BPA] = 5 mg/L, [quenchers] = 1 mM, pH = 7.0.

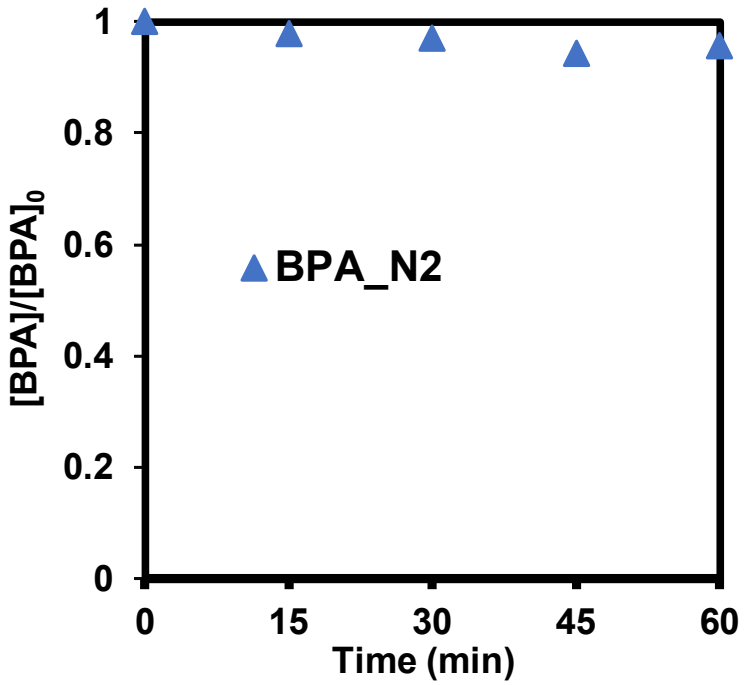

Figure S11. Photocatalysis of BPA by GCN/MWCNT-0.05% in N_2-purged reaction solution.

Condition：[catalyst] = 1 g/L, [BPA] = 5 mg/L, pH = 7.0.

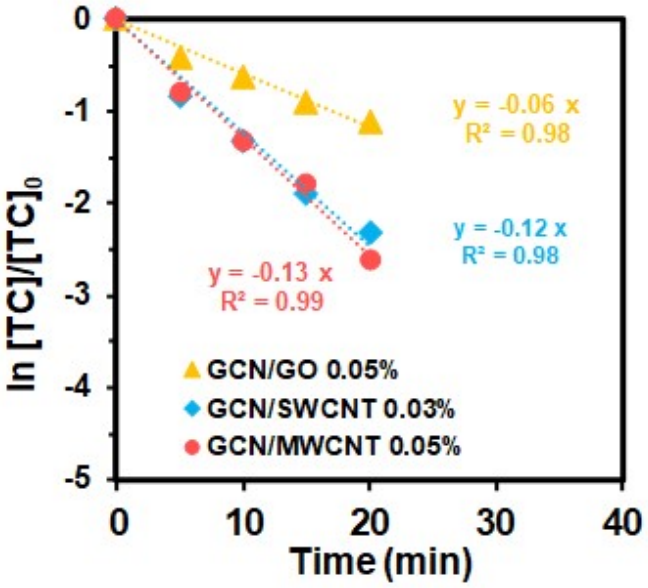

Figure S12. Data fitting to the 1st-order kinetics, showing the photocatalysis of tetracycline (TC) by various GCN/CBNs. Condition: [Catalyst] = 1 g/L, [TC] = 50 mg/L, pH = 7.0.

Reference

1 F. Farivar, P. L. Yap, K. Hassan, T. T. Tung, D. N. H. Tran, A. J. Pollard and D. Losic, *Carbon*, 2021, **179**, 505–513.