Supporting Materials

In situ synthesis of ZnO–GO/CGH composites for visible light photocatalytic degradation of Methylene Blue

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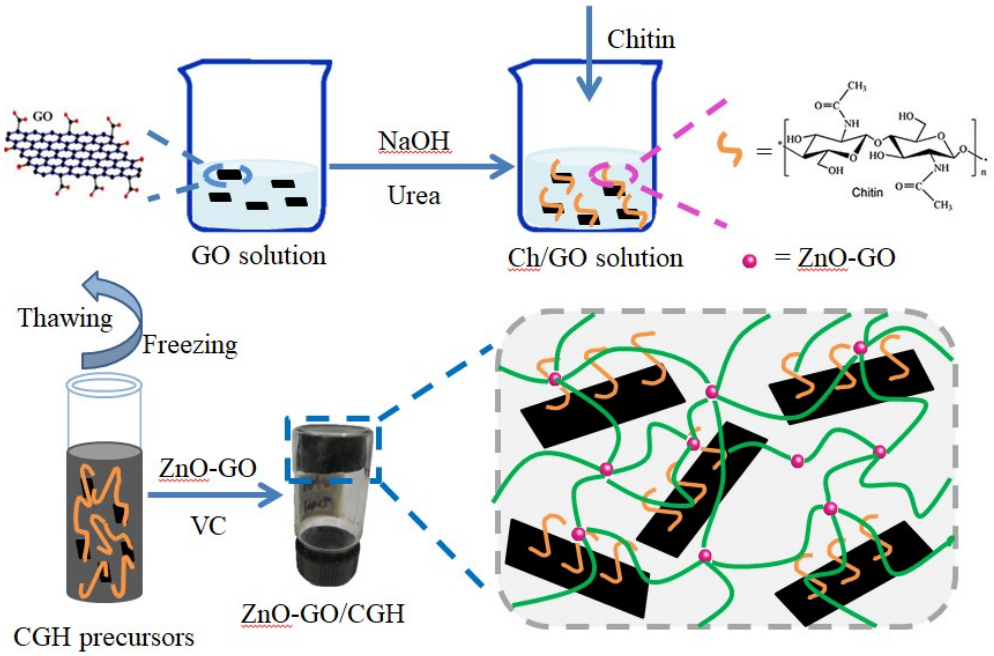

Scheme1. The synthesis route of ZnO-GO/CGH.

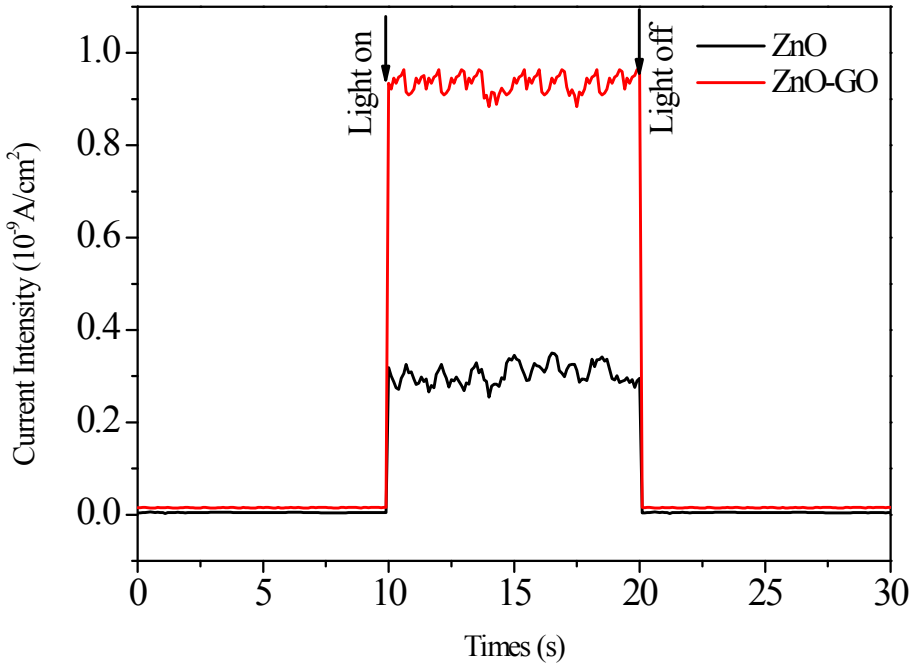

Figure S1. Photocurrent versus time (I-t) curves of the solar cell device based on ZnO and ZnO-GO composite in 0.5 M Na_2SO_4 aqueous solution under visible light irradiation with applied potential of -0.1 V vs Ag/AgCl.

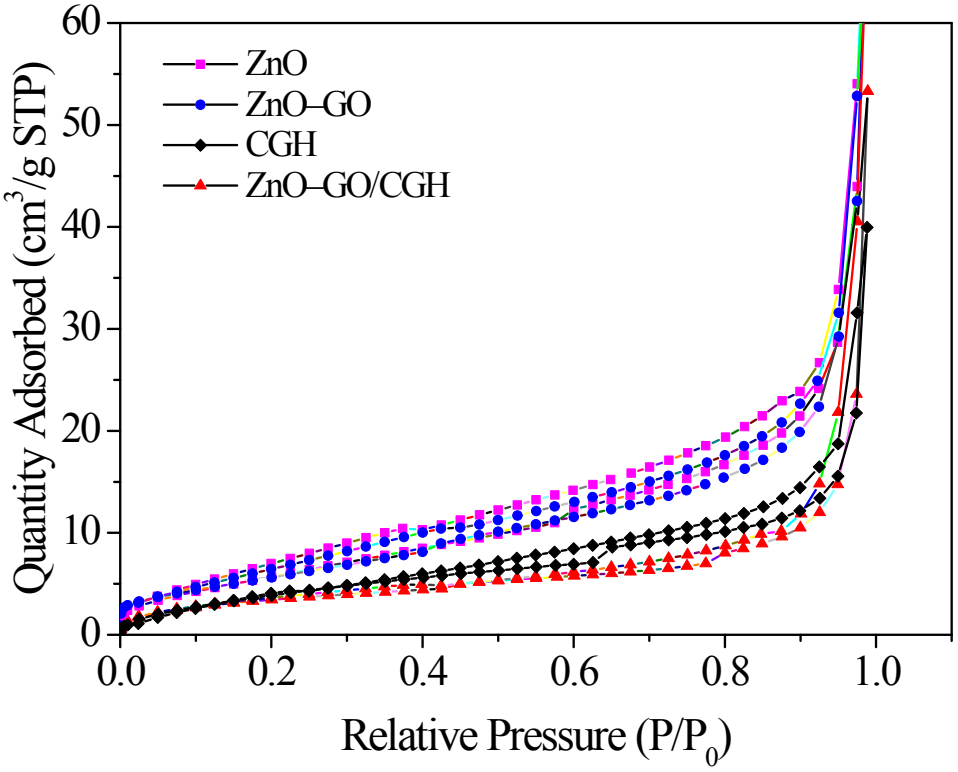

Figure S2. N_2 adsorption desorption curve and physical and chemical parameters of different adsorbent samples.

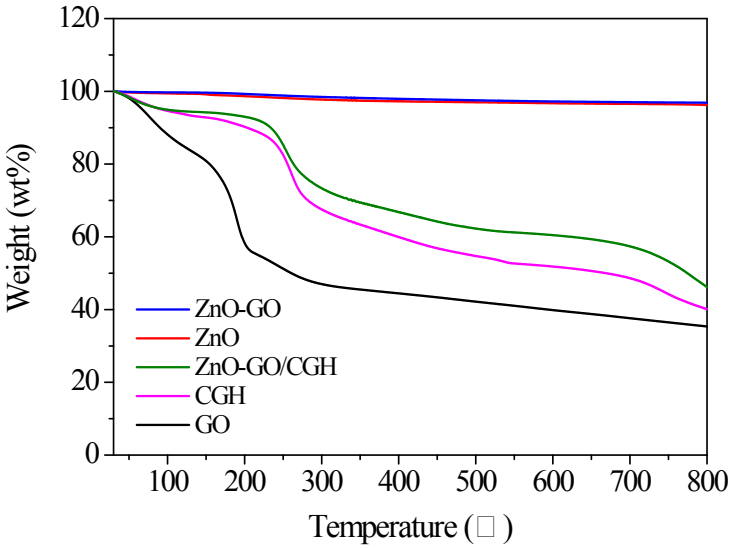

Figure S3.Thermal analysis (TGA) of GO, ZnO, ZnO–GO, CGH and ZnO–GO/CGH composites.

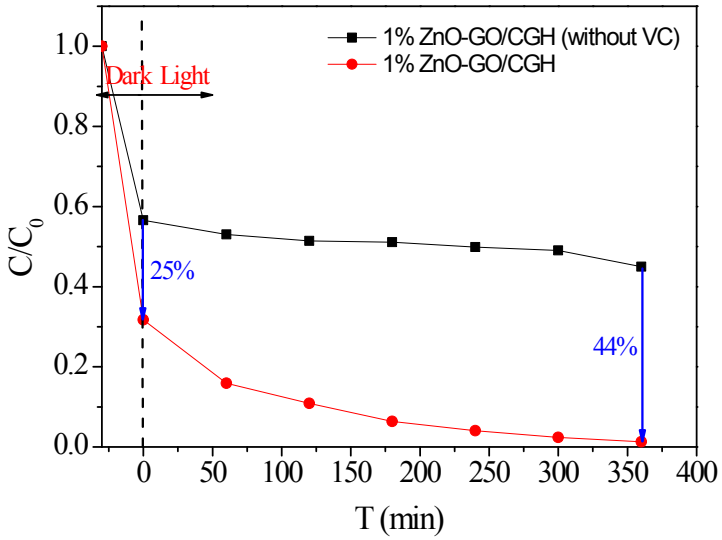

Figure S4. Effect of Vitamin C on photocatalytic performance of ZnO–GO/CGH composites.

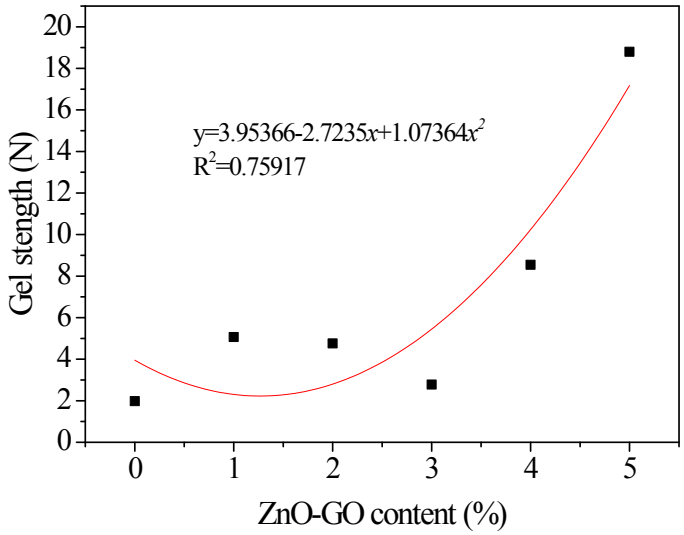

Figure S5. Maximum endurance of chitin graphene hydrogel doped with different ZnO–GO content.

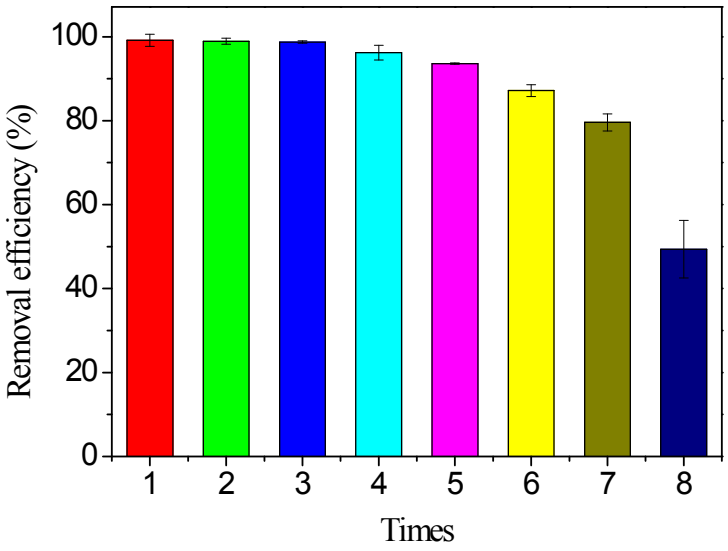

Figure S6. Cycling experiment for degradation of MB with 1% ZnO-GO/CGH (C_0, 30 mg L^{-1}; catalyst dosage, 1.0 g/L).

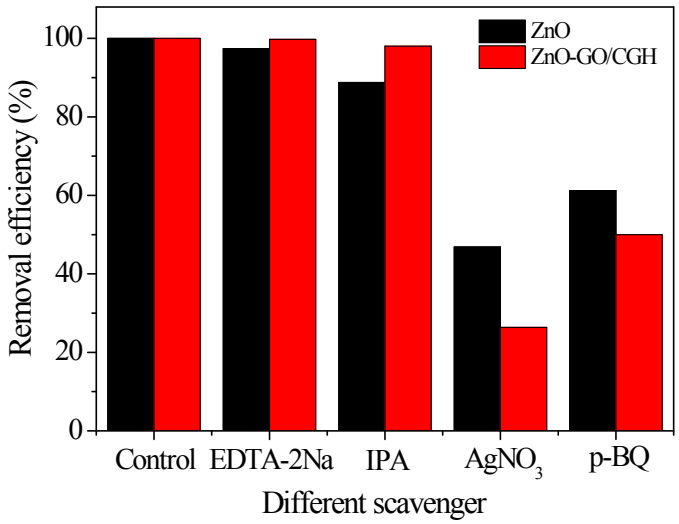

Figure S7. Change of MB photocatalytic degradation degree observed for 1% ZnO–GO /CGH under visible-light irradiation in the presence of various trapping agent

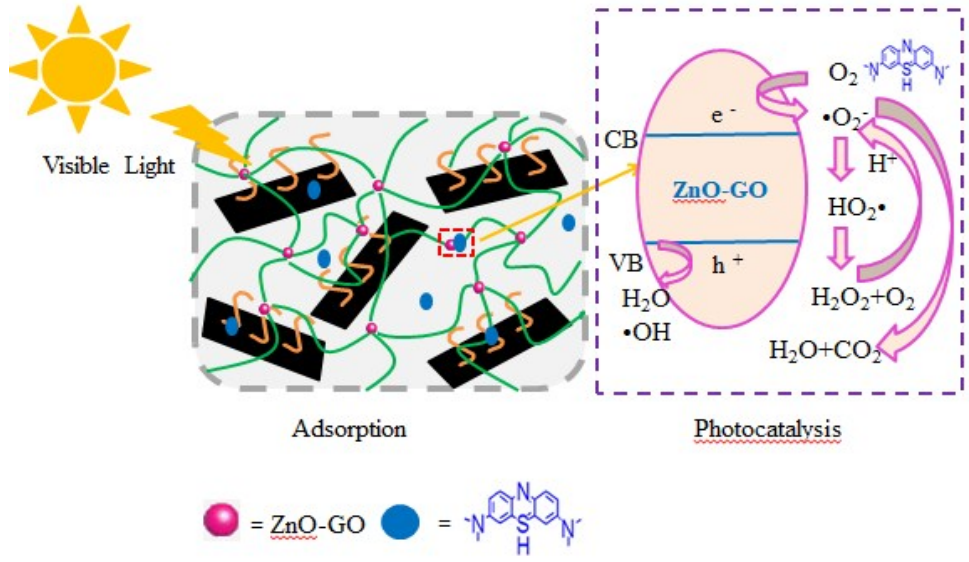

Figure S8. Schematic drawing illustrates the synergy of MB adsorption enrichment and photocatalytic degradation by ZnO–GO/CGH composite.

Table S1. Physical and chemical parameters of different adsorbent samples

Sample	S_{BET} (m^2/g)	Pore Volume (cm^3/g)	Pore Size (nm)
ZnO	28.08	5.716	1.052
ZnO-GO	32.41	6.039	1.504
CGH	9.952	2.628	1.034
ZnO-GO/CGH	18.76	5.065	1.283

Table S2. Kinetic parameters and correlation coefficients for the adsorption of MB on CGH.

Pseudo-first order model			Pseudo-second order model		
$K_1(min^{-1})$	$q_e(mg/g)$	R^2	K_2 ($g \cdot mg^{-1} \cdot min^{-1}$)	$q_e(mg/g)$	R^2
0.07588	22.40904	0.992	0.01015	22.90426	0.999