Supporting Information

g-C_3N_4/MgO Nanosheets: Light-independent, Metal-poisoning-free Catalysts for the Activation of Hydrogen Peroxide to Degrade Organics

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Experimental Section

Preparation of physical mixture of g-C_3N_4 and MgO

Transferred 0.5 g of g-C_3N_4 and 0.5 g of MgO into a mortar, grinding to mix evenly. The mixture of g-C_3N_4 and MgO was obtained.

Preparation of g-C_3N_4/TiO_2 composites

Similar to the previous study,[S1] 0.5 g of g-C_3N_4 was dispersed in 20 mL of ethanol by ultrasound irradiation for 20 minutes. Then, 0.5 g of TiO_2 nanoparticles (P25, Degussa) was added into the above mixture under stirring. After stirring for about 2h, the mixture was placed in a water bath at 50 °C until the ethanol was volatilized. The residue was dried in an oven at 80 °C for 12h, then transferred into a crucible (30 mL) with a lid, and covered with aluminum foil. After that, put the crucible into a muffle furnace, heating from room temperature to 450 °C with a heating rate of 10 °C/min and kept at 450 °C for 2 h. After cooling to room temperature, g-C_3N_4/TiO_2 composites were obtained.

Figures

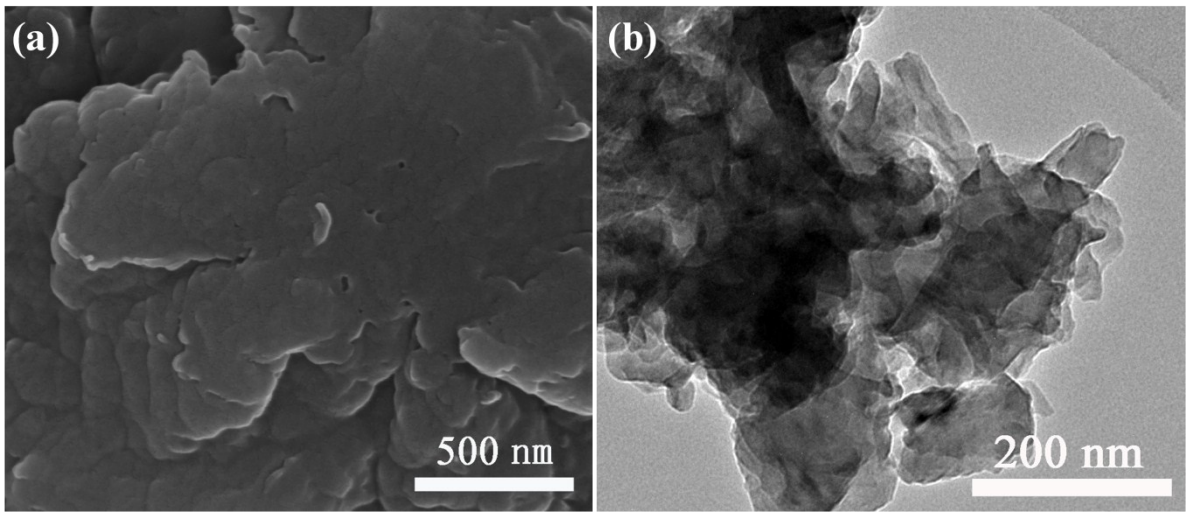

Figure S1. Morphology characterizations of individual g-C_3N_4 nanosheets. a)SEM and b) TEM images of g-C_3N_4 nanosheets. The nanosheets are smooth without rough structures.

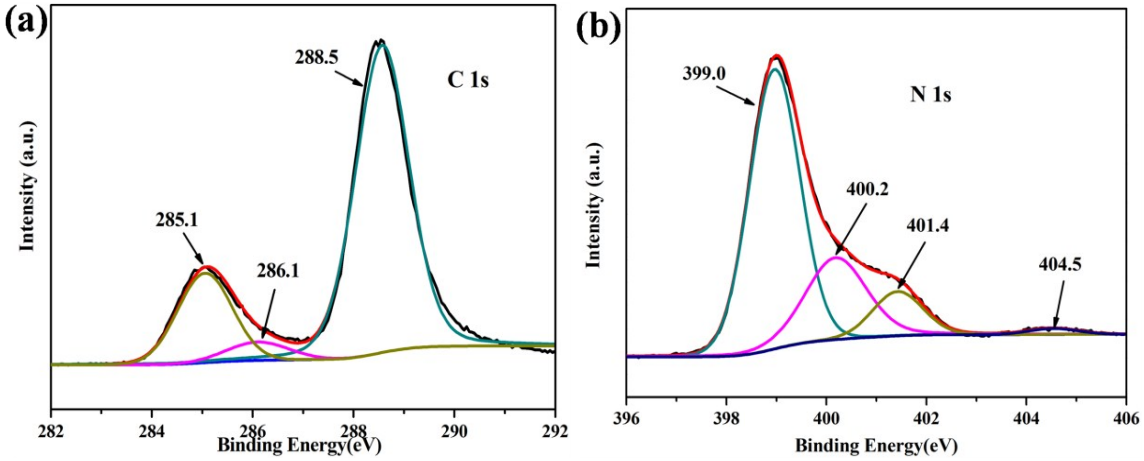

Figure S2. High-resolution XPS spectra of a) C 1s and b) N 1s of individual g-C_3N_4nanosheets.

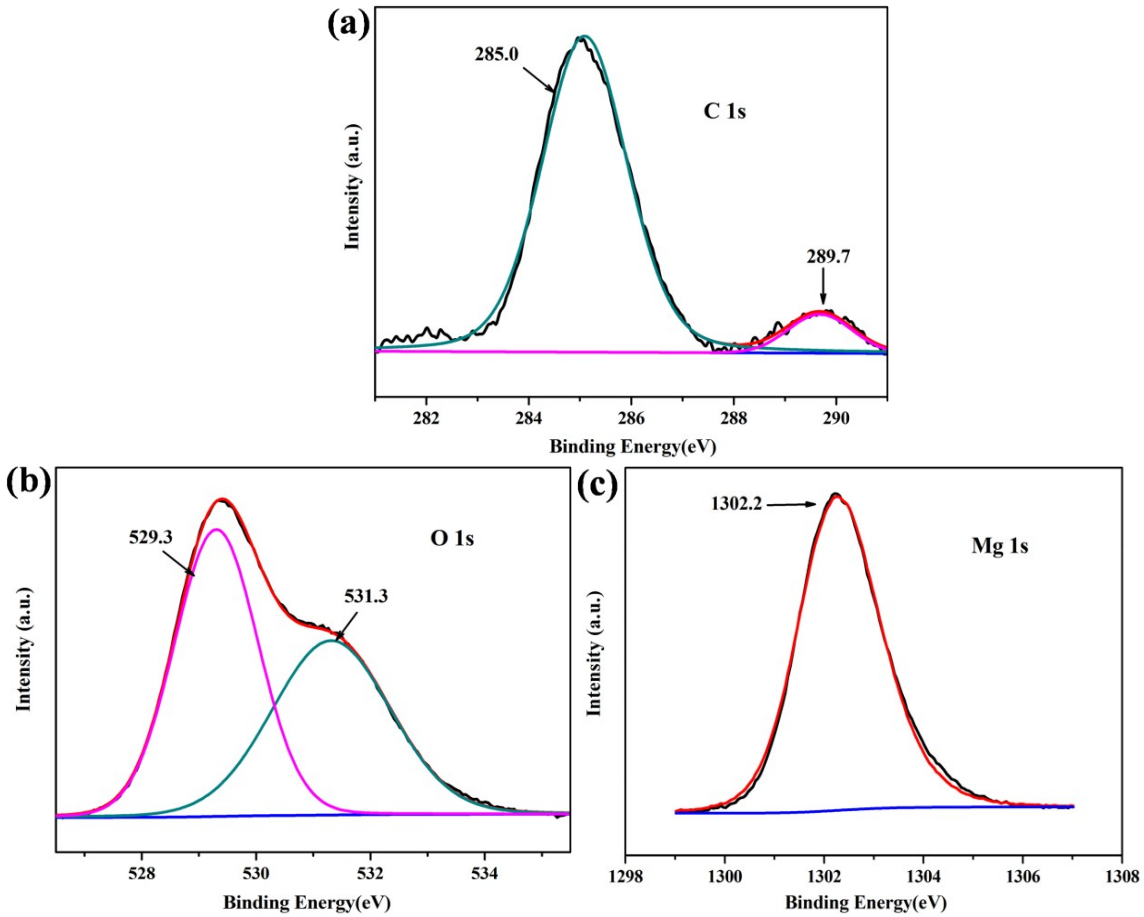

Figure S3. High-resolution XPS spectra of a) C 1s, b) O 1s and c) Mg 1s of individual MgO grains.

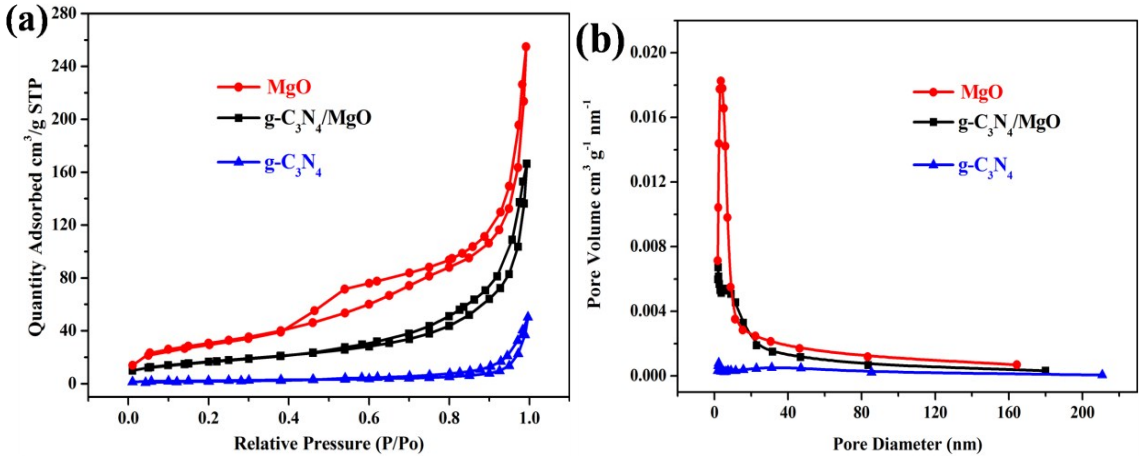

Figure S4. a) N_2 adsorption/desorption isotherms and b) pore-size distributions of individual g-C_3N_4, MgO and g-C_3N_4/MgO nanosheets.

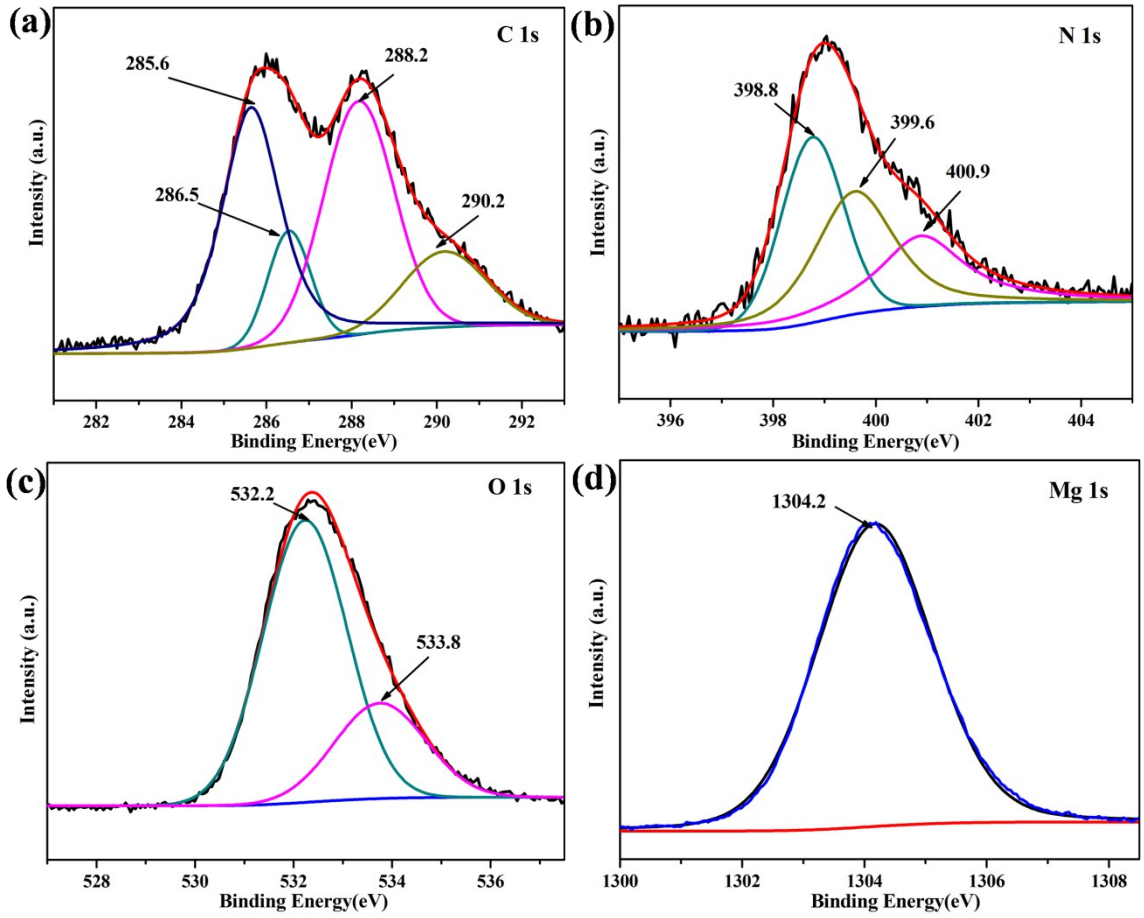

Figure S5. High-resolution XPS spectra of a) C 1s, b) N 1s c) O 1s and d) Mg 1s of g-C_3N_4/MgO after treating in 100 mL of aqueous solution containing 0.3 mL of 30% H_2O_2.

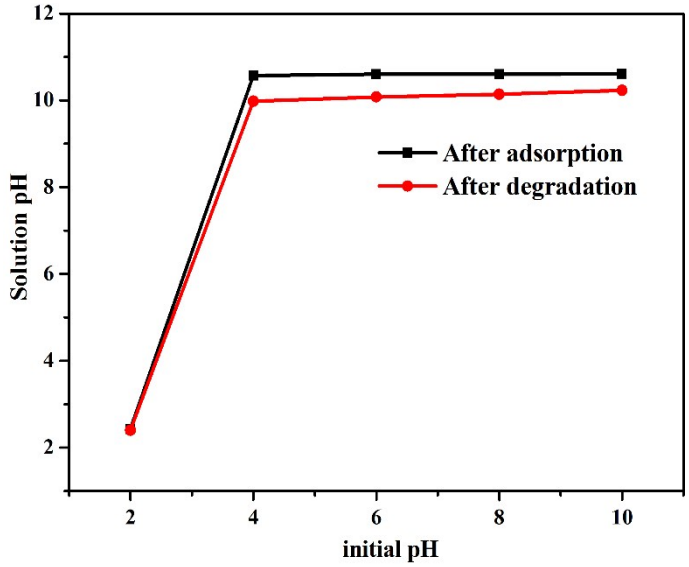

Figure S6. Changes of the solution pH after adsorption and degradation.

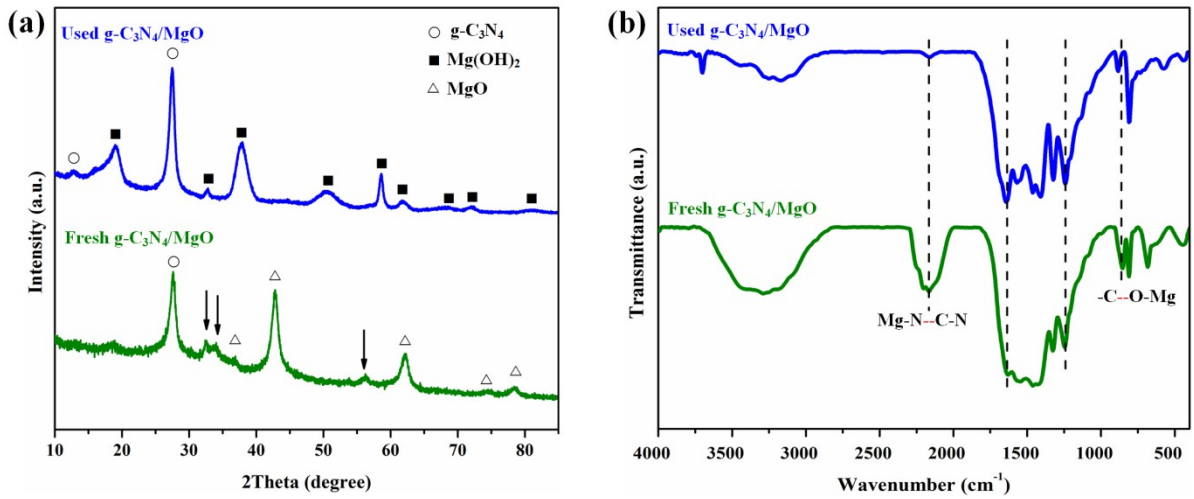

Figure S7. a) XRD patterns and b) FTIR spectra of fresh and used g-C_3N_4/MgO nanosheets.

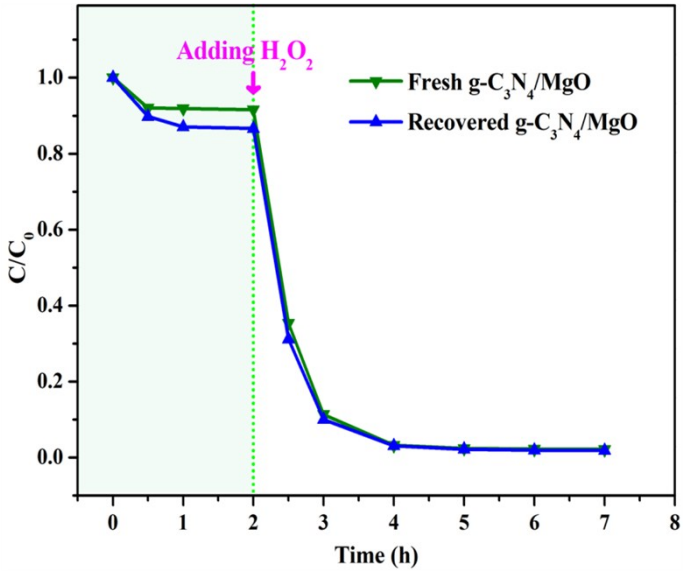

Figure S8. Comparison of the catalytic performances of fresh g-C_3N_4/MgO and recovered g-C_3N_4/MgO for MO degradation.

Table S1. BET surface areas and pore diameters of g-C_3N_4, MgO and g-C_3N_4/MgO nanosheets

sample	BET Surface Area (m^2/g)	average pore diameter (nm)
g-C_3N_4	8.1	38.3
MgO	110.1	14.3
g-C_3N_4/MgO	58.9	17.5

[S1] Zang, Y.; Li, L.; Xu, Y.; Zuo, Y.; Li, G. *J. Mater. Chem. A* **2014,** 2, 15774-15780.