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Construction of Nitrogen Doped Graphene Quantum Dots-$BiVO_4$/g-C_3N_4 Z-scheme Photocatalyst and Enhanced Photocatalytic Degradation of Antibiotics under Visible Light

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The singlet oxygen reactive specie evolved in the process of photocatalytic reaction was investigated with the electron spin resonance (ESR) technique using 2,2,6,6-tetramethyl-4-piperidone (4-oxo-TMP) as a singlet oxygen trapping agent. It can be observed from Figure S5, there is no ESR signals obtained on irradiation of 5%NGQDs-Bi/2CN in aqueous solution in the presence of both 4-oxo-TMP, which suggested that there was no singlet oxygen generation in the reaction process [1-2].

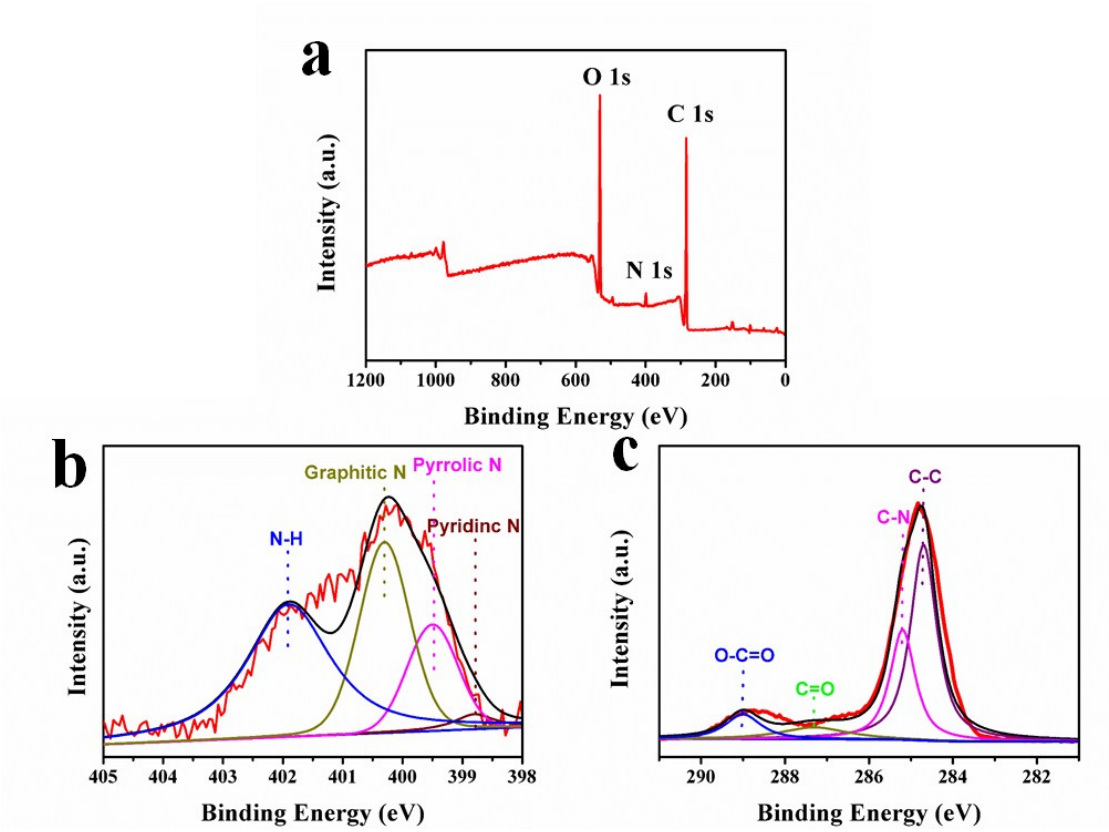

Figure S1. (a) XPS spectra of the as-prepared NGQDs: survey; (b) N 1s and (c) C 1s.

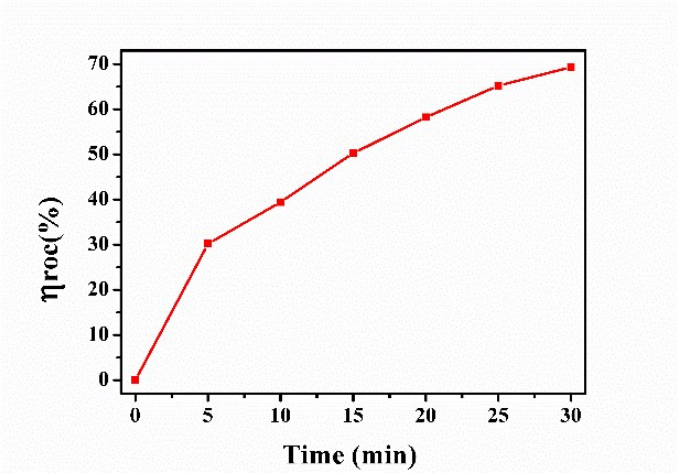

Fig. S2. The TOC removal rate of 5%NGQDs-Bi/2CN sample for degradation of TC under visible light.

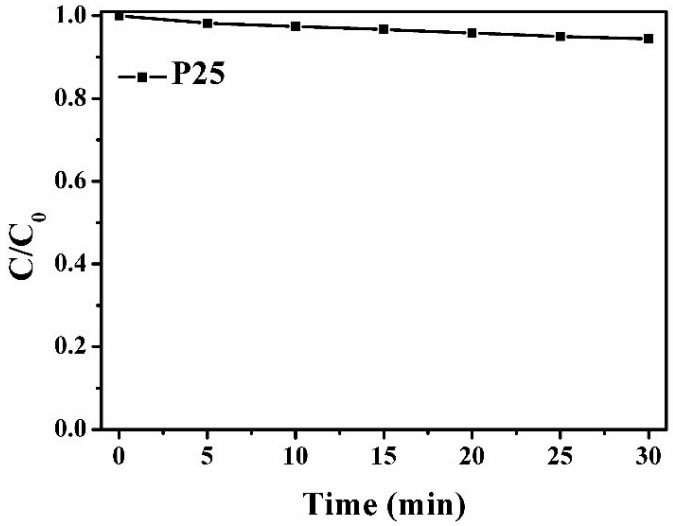

Figure S3. Photocatalytic degradation of TC with P25.

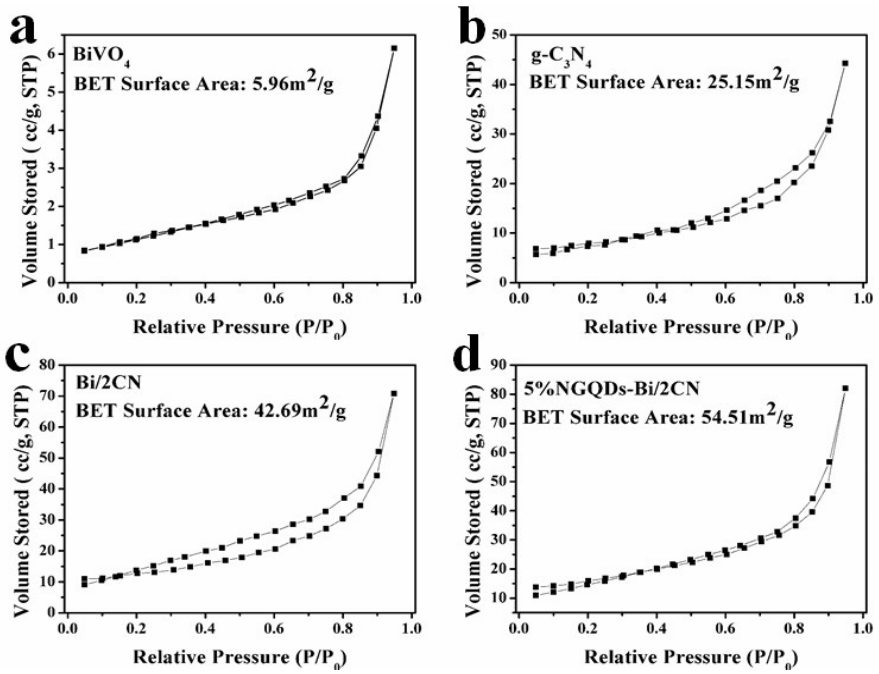

Figure S4. Nitrogen adsorption-desorption isotherm and BET surface areas of as-prepared samples.

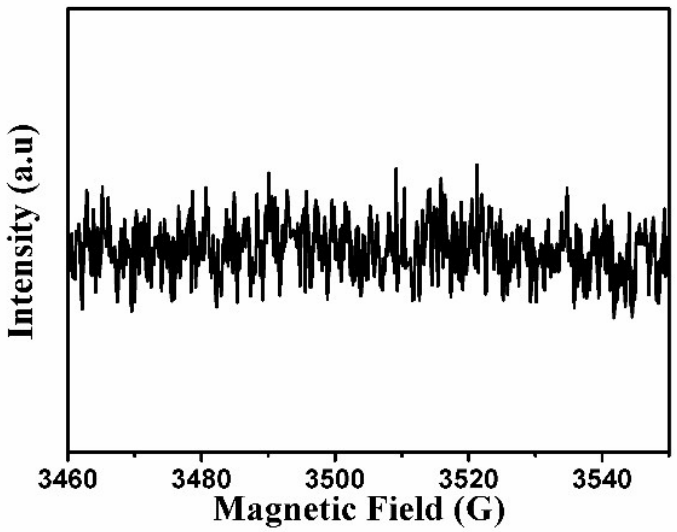

Figure S5. ESR spectra in aqueous dispersion of 5%NGQDs- Bi/2CN samples for singlet oxygen

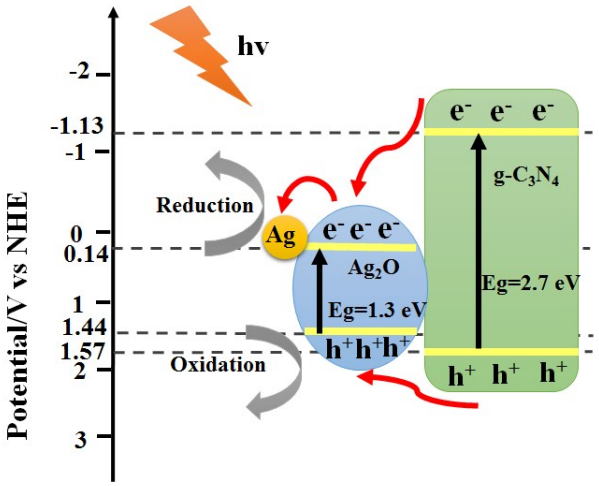

Figure S6. Schematic of the separation and transfer of photogenerated charges in the $Ag_2O/Ag/g\text{-}C_3N_4$ composites.

References:

[1] R. Konaka, E. Kasahara, W. C. Dunlap, Irradiation of titanium dioxide generates both singlet oxygen and superoxide anion, *Free Radical Biology and Medicine,* 1999, 27, 294-300.

[2] M. J. Zhou, J. Z. Li, Z. F. Ye, C. C. Ma, H. Q. Wang, P. W. Huo, W. D. Shi, Y. S. Yan, Transfer Charge and Energy of Ag@ CdSe QDs-rGO Core–Shell Plasmonic Photocatalyst for Enhanced Visible Light Photocatalytic Activity, *ACS applied materials & interfaces,* 2015, 7, 28231-28243.