

Supporting Information

Glucosamine-induced growth of highly distributed TiO₂ nanoparticles on graphene nanosheets as high-performance photocatalysts

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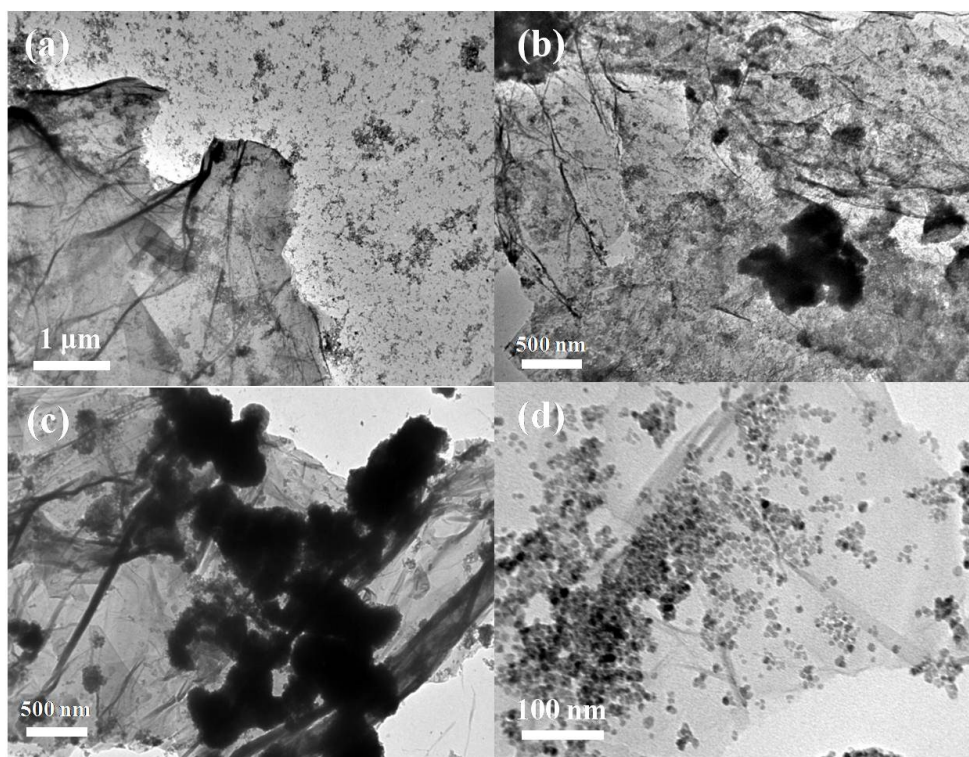


Fig. S1 TEM images of (a) without glucosamine, (b) glucose instead of glucosamine, (c) without TPAOH, and (d) equal molar of NaOH instead of TPAOH.

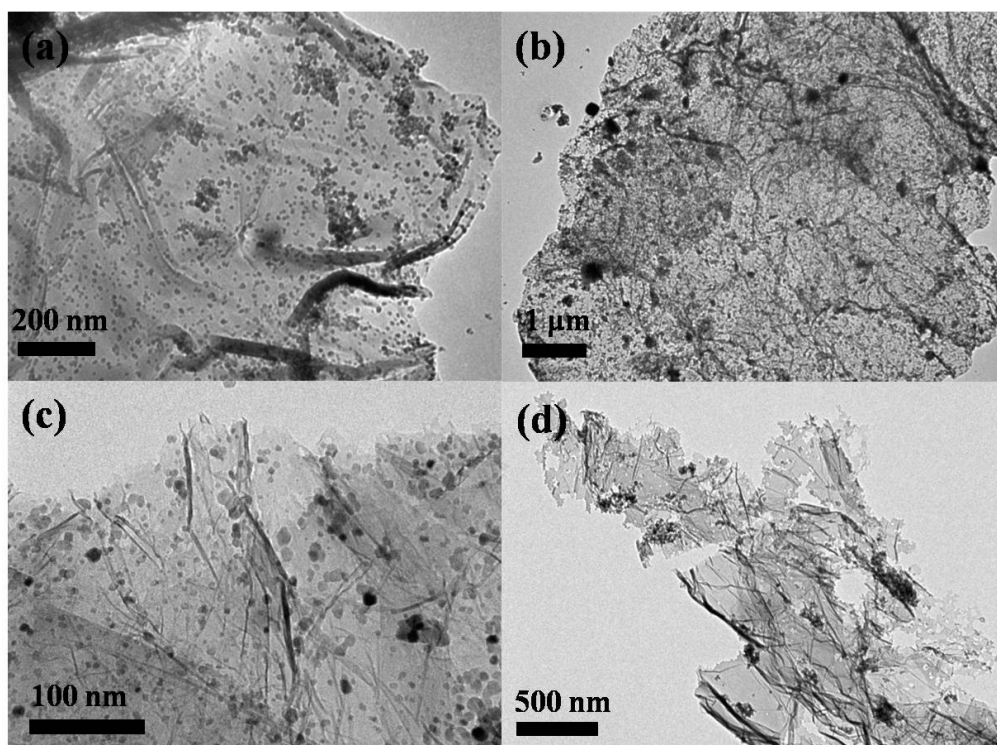


Fig. S2 TEM images of (a) TiO₂@graphene-400, (b) TiO₂@graphene-500, (c)TiO₂@graphene-600, and (d) TiO₂@graphene-800.

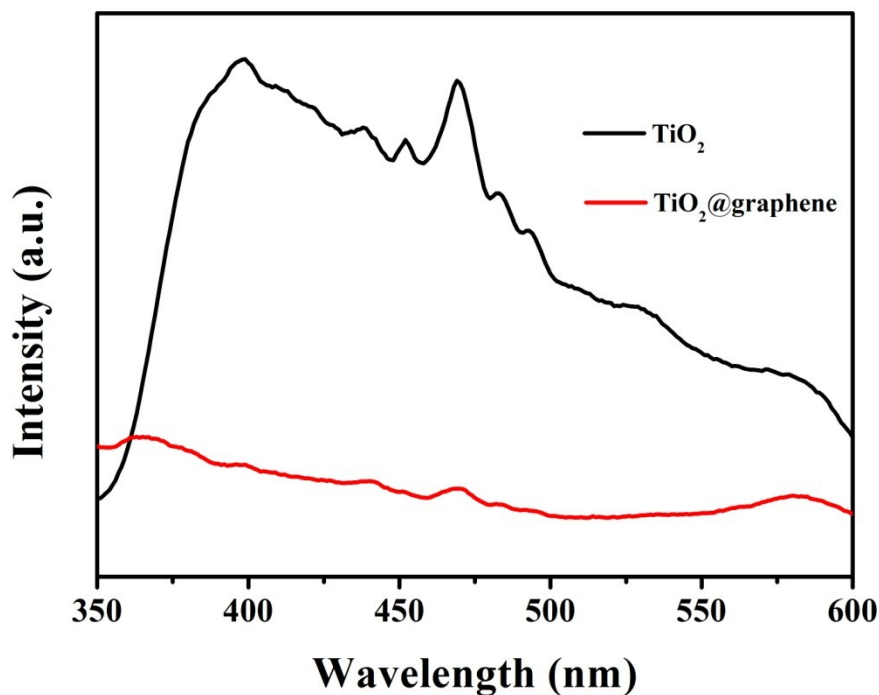


Fig. S3 Photoluminescence spectra of TiO₂@graphene-700 and TiO₂ products.

Fig. S3 shows Photoluminescence (PL) spectra of TiO₂@graphene-700 and TiO₂ products. Compared with the pure TiO₂ nanoparticles, once graphene is induced the composite, the peak intensity of the PL spectrum drastically decreases. Since PL emission results from the recombination of free carriers, the decrease of the intensity indicates that the recombination of photo induced electrons and holes has been suppressed in our TiO₂@graphene product. The result is in agreement with the previous reports.^{1,2}

1. C. Y. Hu, F. Chen, T. W. Lu, C. J. Lian, S. Z. Zheng, Q. H. Hu, S. W. Duo, R. B. Zhang. Water-phase strategy for synthesis of TiO₂-graphene composites with tunable structure for high performance photocatalysts. *Appl. Surf. Sci.* 2014, 317, 648-656.
2. N. Ma, Y. W. Qiu, Y. C. Zhang, H. Y. Liu, Y. N. Yang, J. W. Wang, X. Y Li, C. Cui. Reduced graphene oxide enwrapped pinecone-like Ag₃PO₄/TiO₂ composites with enhanced photocatalytic activity and stability under visible light. *J. Alloys .Compounds.* 2015, 648, 818-825.