Supporting Information

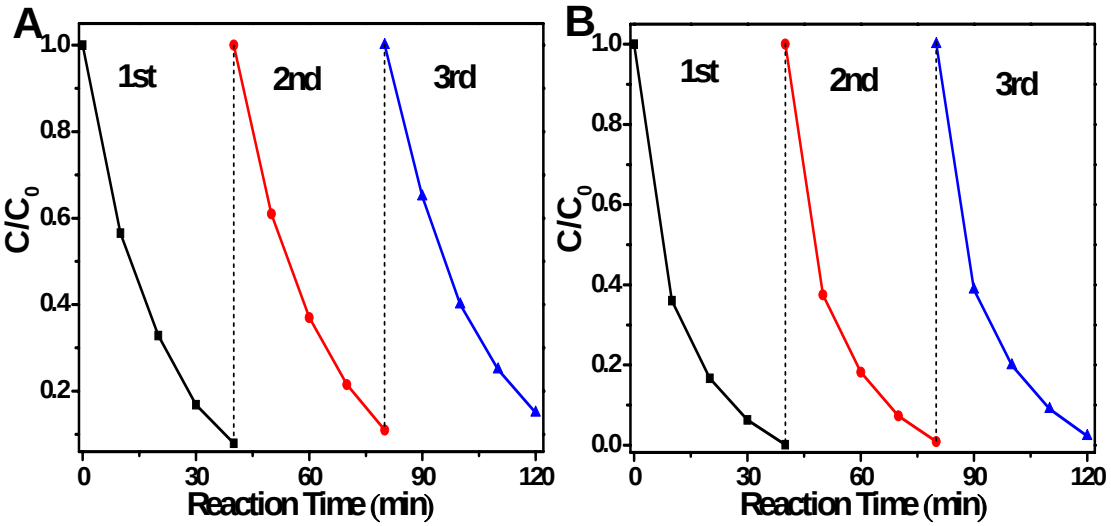

Figure S1. Recycling photocatalytic degradation of MB over ZnO nanorods (A) and 2% GR–ZnO nanorod nanocomposite (B) under UV light irradiation.

Note: It has been established that ZnO generally suffers from photocorrosion due to the oxidation of ZnO by its own photogenerated holes, especially in aqueous solution.[S1-S3] Dai et al.[S1] and Zhu et al.[S2, S3] have reported effective photocorrosion inhibition of ZnO *via* hybridization with carbon materials (*e.g.*, C_{60}, graphite-like carbon and carbon nanotube). Thus, it can be inferred that the close interfacial contact between ZnO nanorods and GR sheets might also inhibit the photocorrosion of ZnO nanorods. This inference is verified by less obvious loss of photoactivity during three successive recycling test for degradation of MB over 2% GR–ZnO nanorod nanocomposite than bare ZnO nanorods under UV light irradiation, as displayed in **Figure S1**. The results indicate that GR–ZnO nanorod nanocomposites are more photocatalytically stable than pure ZnO nanorods and can be used as reusable catalysts for photocatalytic degradation of dye in water.

References

(S1) K. Dai, G. Dawson, S. Yang, Z. Chen, L. Lu, *Chem. Eng. J.*, 2012, **191**, 571-578.
(S2) H. Fu, T. Xu, S. Zhu, Y. Zhu, *Environ. Sci. Technol.*, 2008, **42**, 8064-8069.
(S3) Zhang, L., Cheng, H., Zong, R., Zhu, Y., *J. Phys. Chem. C*, 2009, **113**, 2368-2374.