The Improvement of Coralline-Like ZnGa$_2$O$_4$ by Cocatalysts for the Photocatalytic Degradation of Rhodamine B

*Jia Yang, * Xiaorui Sun, * Wanxi Yang, Meixia Zhu, Jianwei Shi*

Chongqing Key Laboratory of Inorganic Special Functional Materials, College of Chemistry
and Chemical Engineering, Yangtze Normal University, Fuling, Chongqing 408100，P. R. China

* Email: yangjiayznu@163.com; Tel: +86-18716372096.

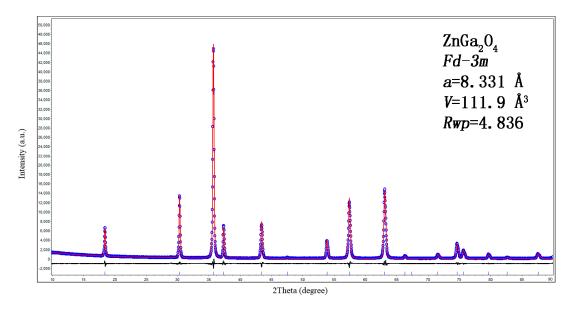* Email: sunxiaoruiyznu@163.com; Tel: +86-18883876787.

Fig. S1 Le Bail refinements for ZnGa₂O₄ powder XRD patterns. The obtained cell parameters are also included. Blue circles and red lines are experimental and simulated patterns, respectively. Small blue bars below the patterns are the positions for expected reflections.
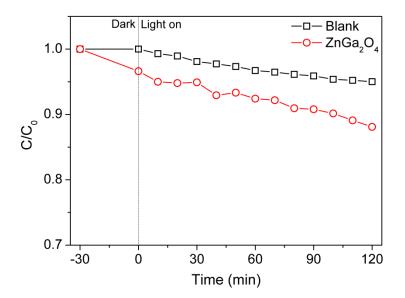

Fig.S2 The photocatalytic degradation RhB of ZnGa₂O₄ compared to blank. Photocatalytic conditions: 0.1000 g ZnGa₂O₄ sample, 300 mL 13.3 ppm RhB solution, 300 W Hg-lamp.
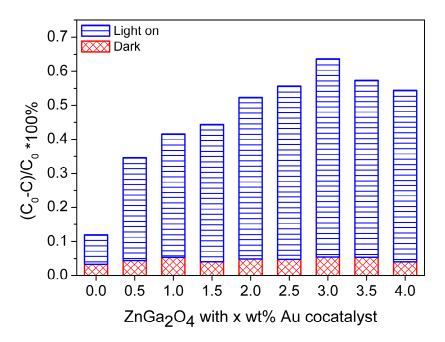
Fig. S3 The conversion efficiency of RhB over the ZnGa$_2$O$_4$ sample with different amounts of Au-cocatalyst under ultraviolet light irradiation. Photocatalytic conditions: 0.1000 g photocatalyst, 300 mL 13.3 ppm RhB solution, 300 W Hg-lamp.
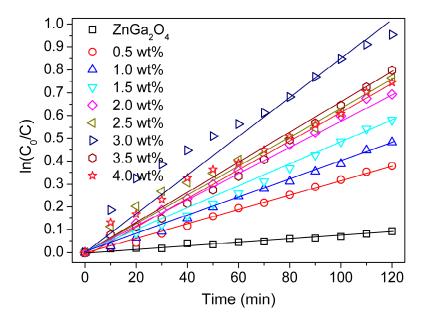

Fig. S4 First-order kinetic constants for the photodecomposition of RhB over the ZnGa$_2$O$_4$ sample with different amounts of Au-cocatalyst under ultraviolet light irradiation. Photocatalytic conditions: 0.1000 g photocatalyst, 300 mL 13.3 ppm RhB solution, 300 W Hg-lamp.
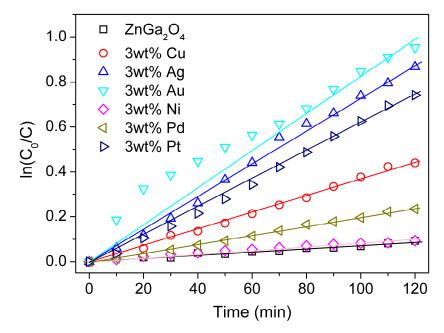
Fig. S5 First-order kinetic constants for the photodecomposition of RhB over the $ZnGa_2O_4$ sample with 3 wt% cocatalyst under ultraviolet light irradiation. Photocatalytic conditions: 0.1000 g photocatalyst, 300 mL 13.3 ppm RhB solution, 300 W Hg-lamp.
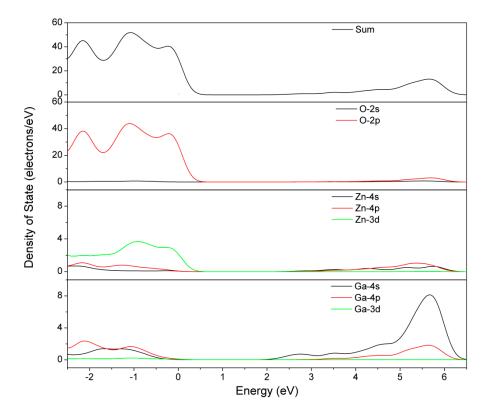

Fig. S6 The electronic structure of $ZnGa_2O_4$ was calculated by a plane-wave-based density function theory.