

Research article

Novel ZnWO₄/RGO nanocomposite as high performance photocatalyst

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Supporting Information

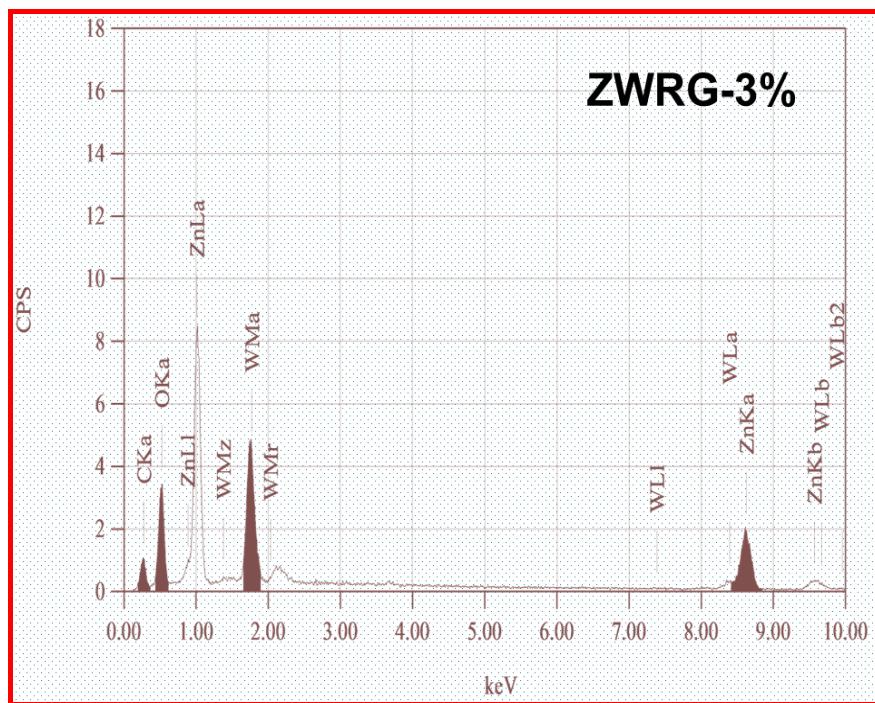


Figure S1. EDX spectra of ZWRG-3%.

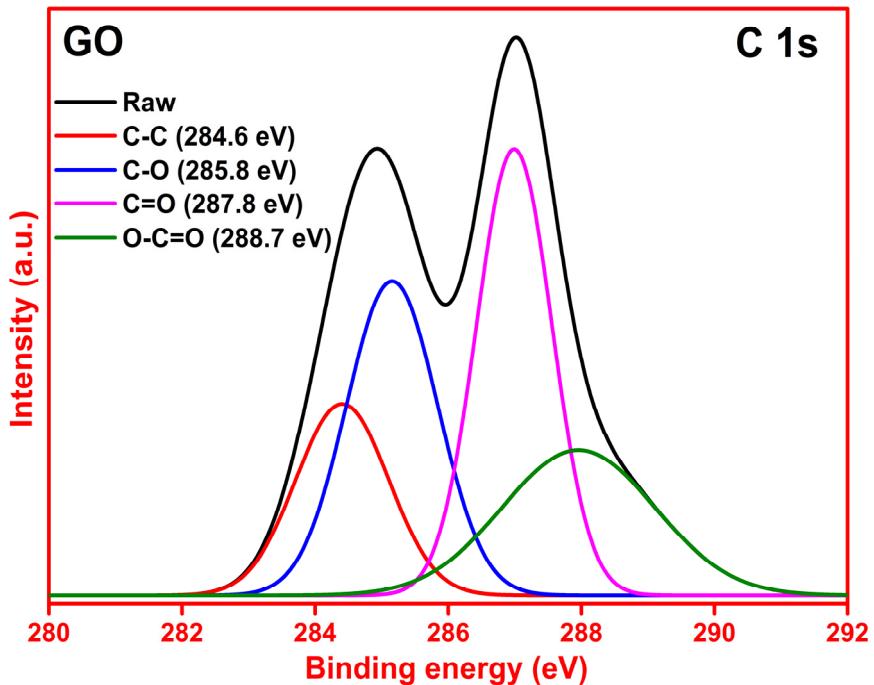


Figure S2. High resolution XPS spectra of C 1s in GO.

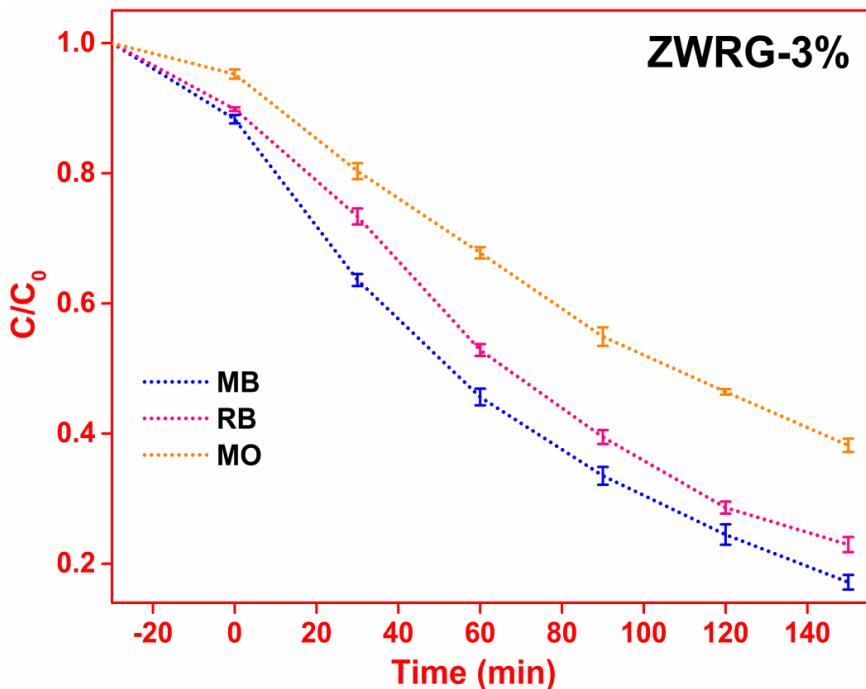


Figure S3. Photocatalytic degradation MB, RB and MO by ZWRG-3%.

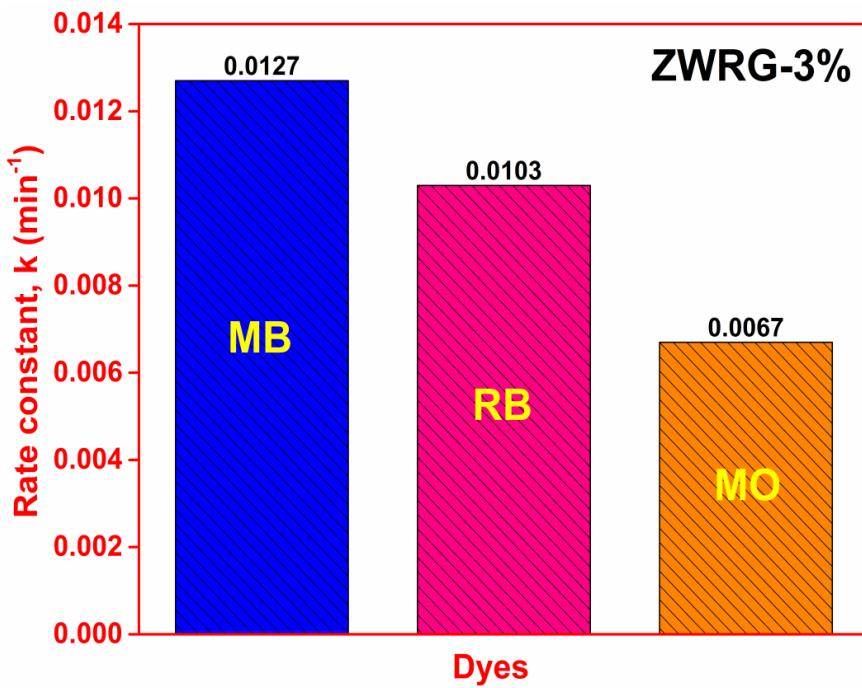


Figure S4. First order rate constants for degradation of MB, RB and MO by ZWRG-3%.

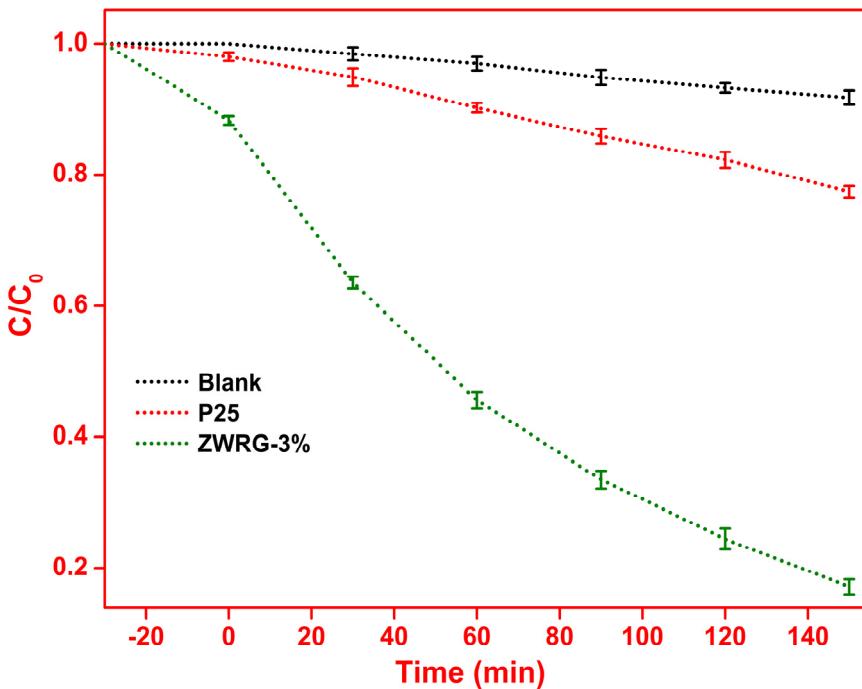


Figure S5. Comparison of photocatalytic degradation efficiency between ZWRG-3% and P25.

Table S1. Comparison of photocatalytic efficiency of ZWRG-3% nanocomposite with other photocatalysts.

| Photocatalysts | Lamp Source | Dye Concentration | Degradation Percentage | References |
|--------------------------------------------------------------------------------|-----------------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------------|--------------|
| 10 mg of ZWRG-3%, | Visible Light (250 W Hg lamp, $\lambda = 400$ nm) | MB (100 mL, 10 mg/L) RB (100 mL, 10 mg/L) MO (100 mL, 10 mg/L) | 82.85% for 150 minutes 77.06% for 150 minutes 61.81% for 150 minutes | Present Work |
| 0.15 g 70 wt% g-C ₃ N ₄ /Bi ₂ WO ₆ | Visible Light (500 W Xe lamp, $\lambda = 420$ nm) | MO (50 mL, 10 mg/L) | MO could be decomposed after 180 minutes | [1] |
| 50 mg of RC/TiO ₂ /ZnO nanocomposites | Ultraviolet irradiation (PHILIPS, 365 nm) | RhB (100 mL, 2×10^{-5} M) | 97% for 200 minutes | [2] |
| 200 mg of NiW4SG | UV light (125 W high pressure mercury lamp, wavelength range of 295–390 nm) | MB, (350 ml, 20 ppm) | 92.5% for 400 minutes | [3] |
| 1.5 g/L of ZnO-RGO-CNT composite | UV light (500W high pressure Hg lamp, $\lambda = 365$ nm) | MB (100 mL, 5 mg/L) | 96% for 260 minutes | [4] |
| 100 mg of 4% Eu ³⁺ -doped ZnWO ₄ | Four 4 W UV lamps ($\lambda = 254$ nm) | RB (100 mL, 1.0×10^{-5} mol/L) | RhB could be decomposed less than 100 minutes | [5] |
| 10 mg of graphene/TNTs nanocomposites | UV irradiation, (300 W Mercury lamp) | MO, (40 mL, 20 mg/L) | Nearly 100% after 3.5 hours | [6] |
| 80 mg of N-TiO ₂ /NG | Visible light (300 W Xenon lamp, $\lambda = 420$ nm) | MB (100 mL, 10 mg/L) | 87.9% after 180 minutes | [7] |
| 50 mg of g-C ₃ N ₄ -ZnWO ₄ | Visible light (300 W metal-halide lamp, $\lambda = 420$ nm) | MB (100 mL, 10 mg/L) | 86% for 150 minutes | [8] |
| 2 g/L of Bi ₂ O ₃ -RGO composite | Visible light irradiation (400 W metal halogen Lamp, $\lambda > 400$ nm) | MB (80 mL, 5 mg/L) MO (80 mL, 5 mg/L) | 96% for 240 minutes 93% for 240 minutes | [9] |
| 0.25 g of WO ₃ -TiO ₂ composite | Simulated sunlight illumination using a 300 W Xe lamp | MO (250 mL, 20 mg/L) | 79% for 120 minutes | [10] |

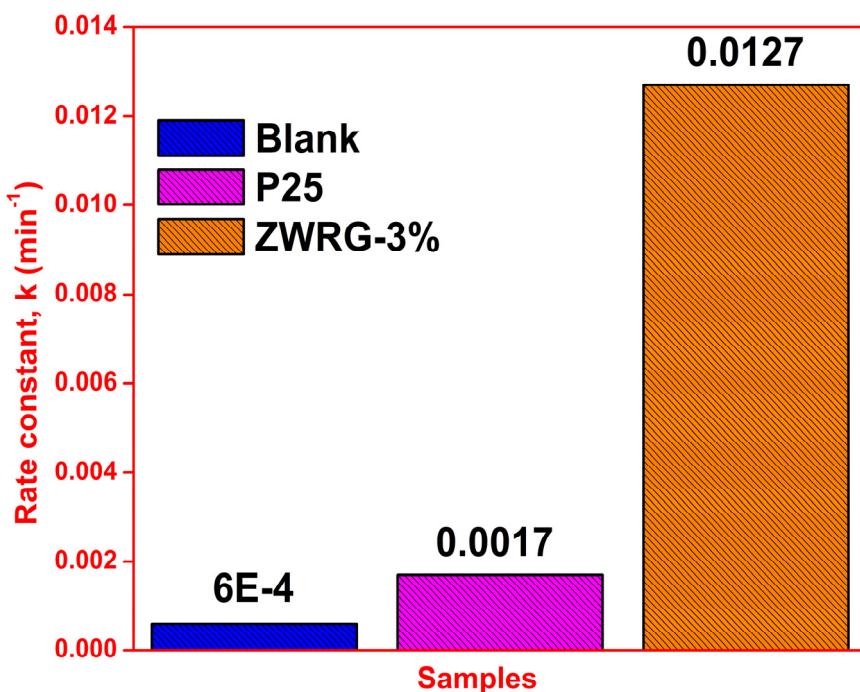


Figure S6. Comparison of first order rate constants between ZWRG-3% and P25.

References

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