

## Visible-Light Induced Photocatalytic Degradation of Dye Molecules over ZnWO<sub>4</sub>-Bi<sub>2</sub>WO<sub>6</sub> Composite

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**Abstract :** The photocatalytic degradation of Methylene blue (MB) and Rhodamine B (RhB) in the presence of ZnWO<sub>4</sub>-Bi<sub>2</sub>WO<sub>6</sub> composite under visible light irradiation ( $\lambda \geq 400$  nm) were studied in this research. The structural and photophysical properties of ZnWO<sub>4</sub>-Bi<sub>2</sub>WO<sub>6</sub> composite on the photocatalytic degradation process were investigated. The as-prepared ZnWO<sub>4</sub>-Bi<sub>2</sub>WO<sub>6</sub> composite photocatalyst exhibits wide absorption in the visible-light region and display superior visible-light-driven photocatalytic activities in degradation of MB and RhB. The enhanced photocatalytic activity was attributed to electron-hole separation with the appropriate band potential and the physicochemical properties of ZnWO<sub>4</sub> and Bi<sub>2</sub>WO<sub>6</sub>. The main active species for the degradation of organic dyes were investigated to explain the enhancement of photocatalytic performance of ZnWO<sub>4</sub>-Bi<sub>2</sub>WO<sub>6</sub> composite. The possible photocatalytic degradation pathway of aqueous MB and RhB dyes and charge transfer of ZnWO<sub>4</sub>-Bi<sub>2</sub>WO<sub>6</sub> composite was proposed.

**Keywords :** composite, dyes, photocatalytic activity, ZnWO<sub>4</sub>-Bi<sub>2</sub>WO<sub>6</sub>

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