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## Regular Article

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## Facile synthesis of Fe<sub>2</sub>O<sub>3</sub> nanoparticles anchored on Bi<sub>2</sub>MoO<sub>6</sub> microflowers with improved visible light photocatalytic activity

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**Abstract:** Constructing novel semiconductor heterojunctions is emerging as one of the efficient methods to develop excellent photocatalysts. Herein, we report the design and synthesis of Bi<sub>2</sub>MoO<sub>6</sub> microflowers decorated by Fe<sub>2</sub>O<sub>3</sub> nanoparticles as an efficient visible-light-driven photocatalyst *via* a simple solvothermal precipitation-calcination method. The as-prepared Fe<sub>2</sub>O<sub>3</sub>/Bi<sub>2</sub>MoO<sub>6</sub> heterojunctions were systematically characterized by using several techniques. The photocatalytic properties of these heterojunctions were estimated by degrading rhodamine B (RhB) and *para*-chlorophenol (4-CP) under visible light ( $\lambda > 400$  nm). They showed much higher photocatalytic activity than pure Fe<sub>2</sub>O<sub>3</sub> or Bi<sub>2</sub>MoO<sub>6</sub>. The heterojunction with Fe/Bi molar ratio of 0.2 presented the highest activity. The RhB degradation rate constant was about 4.8 times or 3.8 times higher than that of Bi<sub>2</sub>MoO<sub>6</sub> or a mechanical mixture of Fe<sub>2</sub>O<sub>3</sub> and Bi<sub>2</sub>MoO<sub>6</sub>. The remarkable enhanced photocatalytic activity

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