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# Mil-100(Fe) nanoparticles supported on urchin like Bi<sub>2</sub>S<sub>3</sub> structure for improving photocatalytic degradation of rhodamine-B dye under visible light irradiation

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## Abstract

Metal organic framework (MOFs) have been attracted a great attention as a new type photocatalysts due to their unique properties. In this work, the new hybrid photocatalyst based on fabrication hybrid structures between MIL-100(Fe) and Bi<sub>2</sub>S<sub>3</sub> (MIL-100(Fe)@Bi<sub>2</sub>S<sub>3</sub>) were synthesized via simple hydrothermal method. The photocatalytic degradation of Rhodamine B (RhB) over the as-prepared samples showed that the hybrid photocatalyst samples had higher photocatalytic performance compared to the individual components (MIL-100(Fe) and Bi<sub>2</sub>S<sub>3</sub>). The higher photocatalytic performance of the hybrid photocatalysts was proved by electrochemical and photoelectrochemical analysis such as electrochemical impedance spectroscopy (EIS) and also photocurrent measurement. In addition, the possible photocatalytic mechanism based on the optical, photoelectrochemical and quenching tests was proposed.

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