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Construction of novel Z-scheme Ag/FeTiO₃/Ag/BiFeO₃ photocatalyst with enhanced visible-light-driven photocatalytic performance for degradation of norfloxacin

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Abstract

A novel Z-scheme Ag/FeTiO₃/Ag/BiFeO₃ with excellent visible-light-driven photocatalytic performance was constructed using sol-gel method followed by a photo-reduction process, and applied in the photocatalytic degradation of norfloxacin (NFX) in solution under visible light irradiation. The photocatalytic activities of Ag/FeTiO₃/Ag/BiFeO₃ and FeTiO₃/BiFeO₃ nanocomposites were compared. The effects of wt.% content of Ag, the mass ratio (FeTiO₃:BiFeO₃), and light irradiation time on the photocatalytic activities were assessed. The mechanism on Z-scheme Ag/FeTiO₃/Ag/BiFeO₃ photocatalytic degradation was also proposed. The results show that Ag/FeTiO₃/Ag/BiFeO₃ has higher photocatalytic activity than FeTiO₃/BiFeO₃, and the loading of Ag improves the photocatalytic activity of catalysts. The photocatalytic degradation extent reaches 96.5% within 150 min, when using Ag/FeTiO₃/Ag/BiFeO₃ at 2.0

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