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The facile fabrication of novel visible-light-driven Z-scheme CuInS₂/Bi₂WO₆ heterojunction with intimate interface contact by in situ hydrothermal growth strategy for extraordinary photocatalytic performance

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Abstract: The pollution of pharmaceutical wastewater has attracted global attention. Photocatalysis is an attractive yet challenging method for the degradation of pharmaceutical residues. Fabricating efficient Z-scheme heterojunctions with intimate interface contact for enhancing the performance of photocatalysts is a challenge. Herein, novel visible-light-driven direct Z-scheme CuInS₂/Bi₂WO₆ heterojunctions with intimate interface contact were successfully synthesized by in situ hydrothermal growth of Bi₂WO₆ directly on the surface of CuInS₂ network-like microspheres, and the content of CuInS₂ was optimized. The photocatalytic activity of optimal Z-scheme 15% CuInS₂/Bi₂WO₆ for the degradation of tetracycline hydrochloride (TC•HCl) is more than three times that of bare CuInS₂ and 17% higher than that of Bi₂WO₆, which is attributed that the intimate interface contact can assure excellent interfacial charge transfer abilities. Moreover, Z-scheme CuInS₂/Bi₂WO₆ heterojunctions are highly stable with no inactivation in photocatalytic cycles. More importantly, real

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