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Preparation of flower-like CuS/reduced graphene oxide(RGO) photocatalysts for enhanced photocatalytic activity

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Abstract

The flower-like CuS/RGO composites were synthesized via a facile one-pot solvothermal method, which displayed outstanding photocatalytic activity for Methylene blue(MB) degradation under Xenon lamp irradiation. The as-prepared samples were examined by X-ray diffraction (XRD), X-ray photoelectron spectroscopy (XPS), photoluminescence(PL) spectra, scanning electron microscopy (SEM), transmission scanning electron microscopy (TEM) and UV-vis optical absorption spectroscopy to determine the properties of the samples, respectively. The results illustrated that RGO had an important effect on the photocatalytic performance of CuS/RGO for dyes. The flower-like CuS/RGO composites exhibited better photocatalytic activity and excellent recyclability in degrading Methylene blue(MB) solution in comparison with pure CuS. The photocatalytic degradation efficiency of MB reached up to nearly 80% after 140 min irradiation, which was more than four times higher than that of CuS, indicating that CuS/RGO composites could have a great potential application in organic pollutants removal.

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