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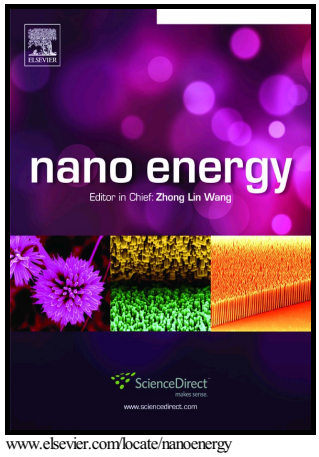

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Facile Synthesis of Bimodal Porous Graphitic Carbon Nitride Nanosheets as Efficient Photocatalysts for Hydrogen Evolution

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Abstract

A novel, facile, and cost-effective approach has been developed for the preparation of hierarchically bimodal porous graphitic carbon nitride nanosheets (BP-g-C_3N_4) by KOH activation and thermal oxidation simultaneously. The BP-g-C_3N_4 demonstrates a high surface area of 219 m^2 g^{-1}, high porosity and hierarchically bimodal porous structure, which enhances the electron transport ability and photoreaction activity, enlarges the band gap, and prolongs the lifetime of the photoexcited charge carriers. Consequently, the BP-g-C_3N_4 exhibits a highly improved photocatalytic activity of 1900 μmol h^{-1} g^{-1} (8.6 times higher than that of bulk g-C_3N_4) towards hydrogen evolution and excellent cycling stability.