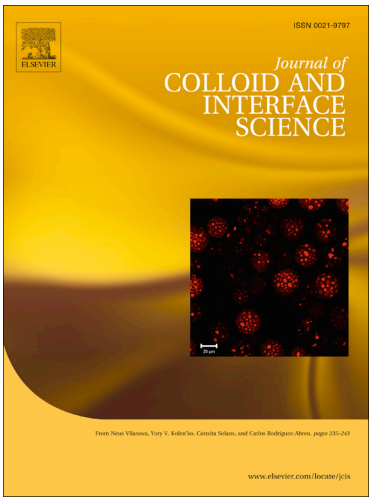

Regular Article

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One-Pot Synthesis of Bismuth Silicate Heterostructures with Tunable Morphology and Excellent Visible Light Photodegradation Performances

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Abstract

Construction of a heterostructure to prolong the life of electron-hole pairs is a very important approach to endow it with excellent photodegradation performances. Particularly, one-pot synthesis of heterostructures with the same component but different crystal structures to form a proper band gap is still challenging. Herein, bismuth silicate (BSO) heterostructures are synthesized using a one-pot hydrothermal approach without adding any other inorganic components. The crystal phase, morphology, surface state, and photochemical properties of the BSO materials are precisely tuned to fabricate two kinds of bismuth silicate heterostructures: rod-like $Bi_2SiO_5/Bi_{12}SiO_{20}$ and flower-like $Bi_2SiO_5/Bi_4Si_3O_{12}$ heterostructures. Thanks to the two heterostructures and clean surface, the optimized BSO material exhibits a highly active photocatalytic performance with a remarkable cycling