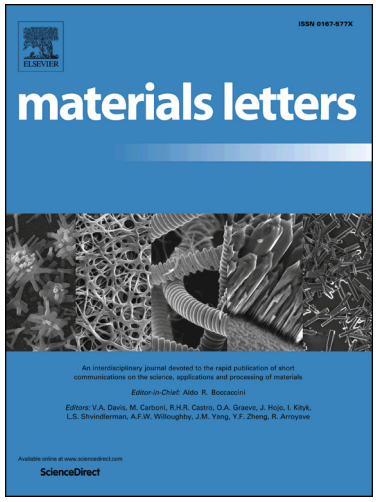

Fabrication of hollow Bi_2MoO_6 nanorods with efficient photocatalytic performance

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Fabrication of hollow Bi_2MoO_6 nanorods with efficient photocatalytic performance

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ABSTRACT

Herein, the well-defined hollow Bi_2MoO_6 nanorods are facile prepared by a template-assisted hydrothermal reaction. The Ag_2CrO_4 nanorods are used as the growth template to support the Bi_2MoO_6 nanoparticle-based shell. Simultaneously, the Ag_2CrO_4 is reduced to Ag which can be etched by HNO_3, producing the hollow Bi_2MoO_6 nanorods. Attributed to the hollow interior and nanoparticle-built structure, the hollow Bi_2MoO_6 nanorods exhibit large surface area and enhanced visible-light harvesting, resulting in excellent photocatalytic property.

Key Words: Crystal growth; Bi_2MoO_6; hollow nanorod; Nanocrystalline materials; Photocatalytic

1. Introduction

Bismuth molybdate (Bi_2MoO_6) has attracted numerous attentions ascribed to its instinct physical and chemical features such as ion conducting, gas sensing, dielectric and catalytic properties. As one of the most important aurivillius oxides, Bi_2MoO_6 exhibits layered structure with the perovskite-like slab of MoO_6 sandwiched between $(Bi_2O_2)^{2+}$ layers and suitable band gap (~2.6 eV), demonstrating the superior photocatalytic characters. However, the high recombination rate of photogenerated electrons and holes hinders the efficient photocatalytic performance. To optimize the photocatalytic activity, various morphologies of Bi_2MoO_6 such as nanosheets [1], nanotubes [2], nanobelt [3], hierarchical microspheres [4] and hierarchical nanosheet-built framework [5] have been controlled fabricated. As typically, constructing desired morphologies with good crystallinity is important for studying its electrical, magnetic and photocatalytic performance [6-9]. Attributed to the quantum confinement effect and specific atomic scale, the one-dimensional nanorods are considered as promising candidate for catalytic, energy storage and

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