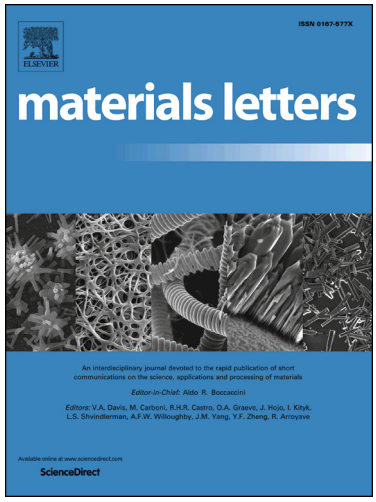

ZIF-67-derived Co_3O_4 micro/nano composite structures for efficient photocatalytic degradation

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ZIF-67-derived Co_3O_4 micro/nano composite structures for efficient photocatalytic degradation

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Abstract: Flowerlike ZIF-67 micro/nano composite structures were developed by the evolution of ZIF-67 rhombododecahedrons ZIF-67(r) via facile ion-assistant solvothermal treatment. The morphology evolution of ZIF-67 with time-on-stream was studied. The flowerlike Co_3O_4 micro/nano composite were formed under calcination at relatively low temperature. The flowerlike Co_3O_4 micro/nano composite structures showed good catalytic properties for photocatalytic degradation of RhB (83.2%), higher than that of Co_3O_4(p) (69.7%) and Co_3O_4(r) (75.7%) after 90 min irradiation.

Keywords: Porous materials; Nanoparticles; Metal-organic frameworks; ZIF-67; Cobalt oxide; Photodegradation

1. Introduction

Zeolite imidazolate frameworks (ZIFs) are promising metal-organic frameworks (MOFs) with uniform pore size, well-defined morphology and excellent chemical stability [1-5]. ZIFs have been widely utilized in various application areas such as gas storage/separation [6], catalysis [7], and electrochemistry [8]. Cobalt oxide (Co_3O_4) attracted considerable attention due