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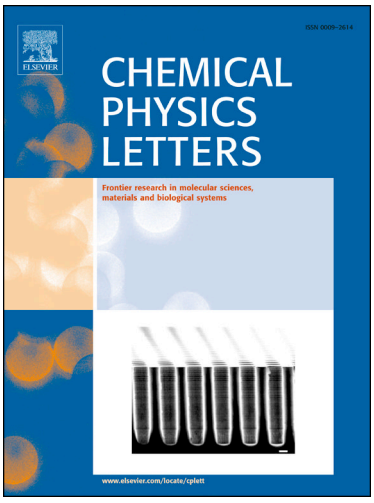

Research paper

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Defects control in the synthesis of low-dimensional zinc oxide

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Abstract

Zinc oxide (ZnO) has recently gained interest in the semiconductor field. Controlling defects can lead to band-gap engineering and this concept was explored for the synthesis of ZnO with various types of defects. In this study, we describe a method to synthesize quasi one-dimensional ZnO using gold nanoparticles as a template, using which we successfully controlled defect types like oxygen vacancies, oxygen interstitials, and zinc interstitials. Because the rate determination was the generation of Zn, it will be possible to synthesize ZnO with only zinc interstitials by independent supply of CO and O_2.

Introduction

Zinc oxide (ZnO) is an important and commonplace material that has historically been used as an additive in rubber materials, drugs, and abrasives. Recently, ZnO has

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