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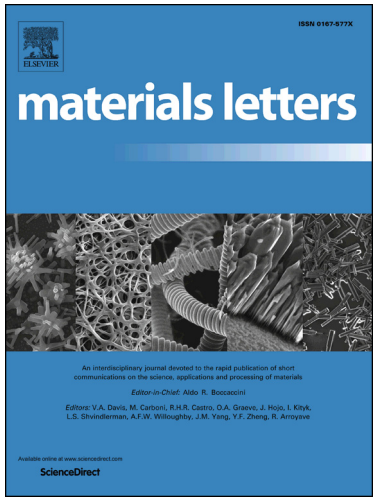

Facile fabrication of 1,3-diazaazulene derivative nanowires

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Facile fabrication of 1,3-diazaazulene derivative nanowires

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Abstract

Nanomaterials assembled from small functional organic molecules have intriguing application potentials in the field of optoelectronic devices. In this work, we report a facile method for the fabrication of nanowires with different sizes from the nonlinear optical organic molecule 2-(4'-aminophenyl)-6-nitro-1,3-diazaazulene (APNA) with typical D-π-A structure. In addition, the synthetic route of APNA was greatly simplified with satisfactory yield. The average diameters of APNA nanowires, 50, 70 and 120 nm, could be controlled through the amounts of APNA in the reprecipitation process, which was characterized by SEM. Moreover, the absorption properties of the nanowires were also investigated and compared. This work may facilitate the researches and applications of azulene and its derivatives.

Keywords: Microstructure; Optical materials and properties; 1,3-Diazaazulene; Nanowire; Self-assembly; Facile fabrication.

1. Introduction

Azulene, together with its derivatives, has offered intriguing potentials in the fields of optoelectronics and biochemistry owing to their unique structures and properties [1-3]. Some novel 1,3-diazaazulene derivatives have been reported, which show promising applications in liquid crystals [4] and nonlinear optic materials [5]. The special second-order nonlinear optical properties of 1,3-diazaazulene derivatives are attributed to the reasonably small dipole moment of ground state and

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