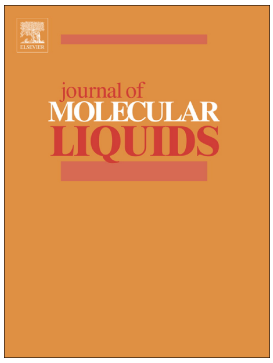

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Nd_2O_3 nanostructures: Simple synthesis, characterization and its photocatalytic degradation of methylene blue

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Abstract

Pure hexagonal Nd_2O_3 nanostructures have been synthesized via a simple precipitation way. For the first time, nanostructured Nd_2O_3 was produced with utilizing triethylenetetramine as a new precipitant and neodymium nitrate as a neodymium source. The analyses of XRD, FESEM, FT-IR, TEM, EDX, BET and DR-UV-vis were applied to characterize the as-prepared nanostructured Nd_2O_3. To evaluate the influence of various capping agents on the morphology, grain size and photocatalytic performance of Nd_2O_3, several experiments were performed. The results demonstrated that the kind of capping agent has substantial impact on the shape, grain size and photocatalytic performance of Nd_2O_3. In addition, application of the synthesized Nd_2O_3 samples as photocatalyst by photodegradation of methylene blue contaminant under ultraviolet illumination was investigated.

Keywords: Ceramic; Nd_2O_3; Nanostructures; Photocatalytic properties; Optical properties.

1. Introduction

…Rare earth metal oxides, particularly neodymium oxide (Nd_2O_3), have recently attracted enormous interest for application in catalysts, UV absorbent, luminescent materials, protective coatings and