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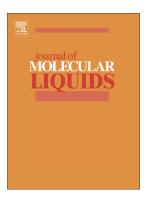
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ACCEPTED MANUSCRIPT

Nd₂O₃ nanostructures: Simple synthesis, characterization and its photocatalytic

degradation of methylene blue

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Abstract

Pure hexagonal Nd₂O₃ nanostructures have been synthesized via a simple precipitation way. For the

first time, nanostructured Nd₂O₃ 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 Nd₂O₃. To evaluate

the influence of various capping agents on the morphology, grain size and photocatalytic performance of

Nd₂O₃, 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 Nd₂O₃. In addition,

application of the synthesized Nd₂O₃ samples as photocatalyst by photodegradation of methylene blue

contaminant under ultraviolet illumination was investigated.

Keywords: Ceramic; Nd₂O₃; Nanostructures; Photocatalytic properties; Optical properties.

1. Introduction

...Rare earth metal oxides, particularly neodymium oxide (Nd₂O₃), have recently attracted enormous

interest for application in catalysts, UV absorbent, luminescent materials, protective coatings and

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