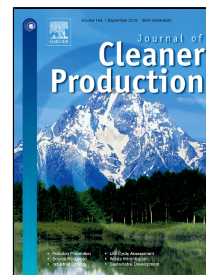


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Nd₂Sn₂O₇ nanostructures as highly efficient visible light photocatalyst: Green synthesis using pomegranate juice and characterization

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Abstract

Nanostructured Nd₂Sn₂O₇ as highly efficient visible light driven photocatalyst has been synthesized through a new, low-temperature and facile route utilizing pomegranate juice. It is first effort to exploit pomegranate juice as novel and renewable fuel as well as green capping agent to produce the nanostructured Nd₂Sn₂O₇. The as-fabricated nanostructured Nd₂Sn₂O₇ has been characterized with the aid of TEM, DR-UV-vis, XRD, EDS and FESEM. The findings demonstrated that optimization of preparation temperature as key factor could be advantageous and effective for control over shape, purity and grain size of Nd₂Sn₂O₇. The photocatalytic efficiency of the nanostructured Nd₂Sn₂O₇ produced with pomegranate juice at 500 °C has been examined through degrading eosin Y, eriochrome black T and methyl violet pollutants under visible illumination.

Keywords: Nd₂Sn₂O₇; Nanostructures; Optical property; Photocatalytic performance.

1. Introduction

Preparation of lanthanide stannate (Ln₂Sn₂O₇) is of substantial interest and focus with respect to their effective uses in the several fields [1-8]. Various approaches for fabrication of lanthanide stannate structures have been offered [9-13]. The offered approaches have been not cheap or not environment friendly due to the utilization of

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