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HASIL PENILAIAN SEJAWAT SEBIDANG ATAU *PEER REVIEW*
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Judul Jurnal Ilmiah (Artikel) : Effect of annealing temperature on optical properties and photocatalytic properties of TiO₂:N 8% thin film for rhodamine B degradation

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Status Pengusul : **Penulis pertama**/ Penulis ke 3 / **Penulis Korespondensi** **

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- b. Nomor ISSN : 2053-1591
- c. Vol, No., Bln Thn : Vol 5 No 8, Juli 2018 Hal 1-10
- d. Penerbit : IOP Publishing Ltd.
- e. DOI artikel (jika ada) : <https://doi.org/10.1088/2053-1591/aad15d>
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Total = (100%)			38,20
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Semarang, 15 Mei 2023

Reviewer 1

Prof. Dr. Agus Subagio, S.Si., M.Si.
NIP. 19710813 1995121001
Unit Kerja: FSM Universitas Diponegoro
Bidang Ilmu: Fisika

Reviewer 2

Dr. Eng. Eko Hidayanto
NIP. 197301031998021001
Unit Kerja: FSM Universitas Diponegoro
Bidang Ilmu: Fisika

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2. Ruang lingkup dan kedalaman pembahasan:

Pada artikel ini dibahas mengenai potensi titanium dioksida (TiO₂) didoping nitrogen (N) sebanyak 8% sebagai fotokatalis untuk degradasi polutan organik dalam limbah air. Metode sol-gel dengan deposisi spray coating digunakan untuk membuat film tipis TiO₂:N 8%. Efisiensi degradasi yang dihasilkan cukup baik pada film tipis TiO₂:N 8%. Paper ini juga dilengkapi dengan referensi pada bagian pembahasan untuk menguatkan diskusi.

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Metode yang digunakan untuk sintesis TiO₂:N cukup standar menggunakan spray coating method. Referensi yang digunakan juga cukup baik.

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Prof. Dr. Agus Subagio, S.Si., M.Si.
NIP. 19710813 1995121001

Unit Kerja : Fisika

Bidang Ilmu: Fakultas Sains dan Matematika

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2. Ruang lingkup dan kedalaman pembahasan:

Artikel ini membahas mengenai potensi titanium dioksida (TiO₂) didoping nitrogen (N) sebanyak 8% sebagai fotokatalis untuk degradasi polutan organik dalam limbah air. Metode sol-gel dengan deposisi spray coating digunakan untuk membuat film tipis TiO₂:N 8%. Karakterisasi sifat optik dan aktivitas fotokatalis TiO₂:N 8% diuji menggunakan spektrofotometer UV-Vis. Hasil menunjukkan efisiensi degradasi yang lebih baik pada film tipis TiO₂:N 8% yang dibahas secara mendalam dan mudah dipahami.

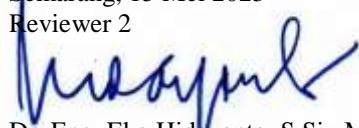
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Banerjee, D. , Das, S.K. , Thakare, S.V. (2017) *Journal of Radioanalytical and Nuclear Chemistry*

Effect of divalent metal dopant on the structural and optical

Abstract

Titanium dioxide (TiO₂) is a widely studied photocatalyst for the degradation of organic pollutants from wastewater. This semiconductor is more potential than other semiconductors because of its stability, non-toxic, low cost, and commercial availability. A thin film of TiO₂:N 8% was deposited on a glass

substrate using a sol-gel method with a spray coating deposition at a temperature of 450 °C. Precursors used in the synthesis of TiO₂:N 8% are titanium (IV) isopropoxide (TTiP), 2-propanol, acetic acid, methanol, and urea as the source of nitrogen doping. Thin film TiO₂:N 8% of subsequent deposition results at annealing at temperatures 400 °C, 500 °C, and 600 °C. Optical properties of TiO₂:N 8% were tested using a UV-vis spectrophotometer at 200-500 nm wavelength range. The photocatalytic properties of TiO₂:N 8% thin films were tested by degradation of a solution of Rhodamine B (RhB) 10 mg/L using sunlight and UV light for 3 h.

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Without Annealing, Annealing 400 °C, Annealing 500 °C, Annealing 600 °C has a value of 3.28 eV; 3.26 eV; 3.08 eV; and 2.95 eV, respectively. The material TiO₂:N 8% without annealing has a grain shape having a diameter of 0.5 μm to 22 μm, while for TiO₂:N 8% annealing 400 °C has the same grain shape without annealing. The composition of nitrogen atoms in the TiO₂:N sample of 8% by 0.2%. The efficiency of degradation shows the properties of TiO₂:N 8% photocatalyst with annealing for the better. The degradation process using 400 °C annealing temperature yields a thin film TiO₂:N 8% with better properties under UV C lamp of 89.22% in 180 min. Annealing temperature increase yields TiO₂:N 8% thin film with improved photocatalyst properties in sunlight with an annealing temperature of 600 °C at 79.30% in 180 min. © 2018 IOP Publishing Ltd.

properties of TiO₂ quantum dots
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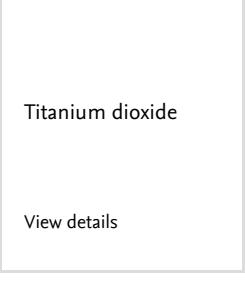
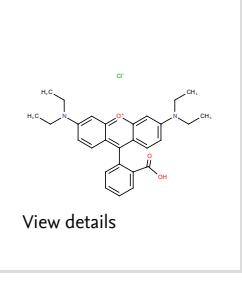
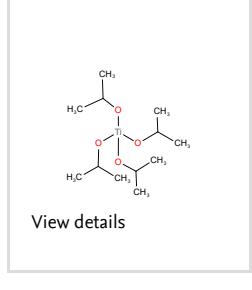
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Author keywords

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Author keywords

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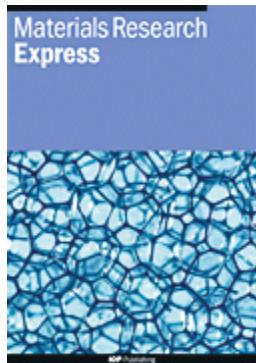
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Xiqun Jiang) in 2004 from Nanjing University. He then obtained his PhD in 2009 from the University of British Columbia (Supervisor: Prof. Hongbin Li). After a one-year postdoc at the same place, he started his independent career at the Department of Physics, Nanjing University as a full professor in 2010. His work was recognized by several awards including the 2014 IUPAP Young Scientist Prize in Biological Physics, the 2018 Young Innovator Award in Nanobiotechnology by Nano Research, and the 2019 Young Scientist Award from the Biomedical Polymer Materials Division of the Chinese Society for Biomaterials.



Judy Wu, University of Kansas, USA

Dr Judy Wu is a Distinguished Professor of Physics at the University of Kansas. She received her PhD from the University of Houston. She is an experimental condensed matter physicist and is specialized in fabrication, characterization and device applications of thin films and nanostructures. Her current research focuses on understanding the interfaces in ultrathin metal-insulator-metal tunnel junctions including Josephson tunnel junctions, magnetic tunnel junctions, memristors for quantum and neuromorphic computing, and in graphene-based heterostructures nanohybrids quantum sensors including photodetectors, strain/bio/gas/chemical sensors.

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Paper

Facile green syntheses of palladium nanoparticles using fruit and aloe vera juices, and their surface-enhanced Raman scattering (SERS) activities

Md Rakibuddin and Haekyoung Kim*

School of Materials Science and Engineering, Yeungnam University, Gyeongsan, Republic of Korea;

* Corresponding author: hkkim@ynu.ac.kr; Tel.: +82-53-810-2536

Abstract

Biogenic reduction of metal precursors to corresponding metal nanoparticle (NP) is growing interest among scientists. In the present study, we explore the use of common cheap apple, orange, and aloe vera juices for the synthesis of industrially important stable palladium (Pd) NPs in a rapid room-temperature method without using any external surfactants or capping agents. The formation of Pd NPs is confirmed by powder X-ray diffraction (PXRD), X-ray photoelectron spectroscopy, and ultraviolet-visible spectroscopy. Transmission electron microscopic images clearly show that the spherical Pd NPs have a uniform size distribution in the ranges of 2-25 nm depending on the type of juice. The Pd NPs obtained using apple (Pd-Aj) and orange juices (Pd-Oj) are more uniform and smaller in size than those obtained using aloe vera juice (Pd-Av). The sugars and polyols (with OH-groups) of the juices act as stabilizers of the Pd NPs as confirmed by thermogravimetric and Fourier transform infra-red analyses. Furthermore, the as-synthesized Pd NPs exhibit size-dependent SERS activities and are suitable for lower-level detection (10^{-6} M) of environmentally harmful methylene blue dye in water.

Keywords

Green synthesis; Fruit juice; biogenic reduction; Pd nanoparticles; SERS activity

1. Introduction

Nanomaterials have received tremendous amounts of attention in science and technology over the past three decades owing to their unique and novel physico-chemical properties that are different from those of their bulk counterparts [1]. Over the years, various chemical methods have been developed

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3 **Study of Thermo luminescence Performance Under UV excitation of**
4 **Aluminates Based Phosphor**
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7 **Anupam Selot^{*1}, Mahendra Aynas², Sanjay Bhatt³** ●
8

9 ¹*Department of Physics, Sadhu Vaswani College, Bhopal-462030, India*
10

11 ² *Department of Physics C.S.A. Govt P. G. College, Sehore -466001, India*
12

13 ³ *Department of Physics, Geetanjali Govt .Girls College, Bhopal -462020, India*
14

15 *Corresponding author: e-mail: anupam_selot@rediffmail.com
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20 Abstract – Characterization and wide study of thermoluminescence and photoluminescence
21 response of a $Y_3Al_5O_{12}$ phosphor with Mn^{2+} has been reported here. Different concentration of
22 Mn^{2+} activated $Y_3Al_5O_{12}$ phosphor prepared by the combustion method at 500°C. Crystal
23 structure of prepared phosphor were investigated by XRD and FTIR the optical properties
24 investigated by UV-VIS spectroscopy. The photoluminescence excitation and emission spectra
25 band exist at 388nm. The thermoluminescence sensitivity observed when a wide range of UV
26 excitation at 5,10,15,20 and 25 minutes and after 15 minutes saturation occurred. Further
27 detailed TL parameters kinetic order, activation energy and frequency factor calculated by the
28 de convoluted curve. Therefore various study factors shows that Mn doped phosphor is suitable
29 and compatible for the solid state lighting devices and may be dosimeter purpose.
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Keywords : Thermo luminescence, phosphor XRD.

Introduction

The discussion on a commercially important phosphor namely Mn^{2+} doped aluminate was presented on the basis of its luminescent, optical and structural properties. It was observed that the properties of this phosphor are suitable for futuristic applications in solid state lighting