BOOK of ABSTRACTS



2nd International Conference on Advanced Production and Processing 20th-22nd October 2022 Novi Sad, Serbia

Title:

Book of Abstracts of the 2nd International Conference on Advanced Production and Processing publishes abstracts from the following fields: Innovative Food Science and Bioprocesses, Nutraceuticals and Pharmaceuticals, Sustainable Development, Chemical and Environmental Engineering, Materials Design and Applications, Petroleum Refining and Production.

Publisher:

University of Novi Sad, Faculty of Technology Novi Sad, Bulevar cara Lazara 1, 21000 Novi Sad, Serbia

For publisher: prof. Biljana Pajin, PhD, Dean

Editorial board:

Jovana Petrović, Ivana Nikolić, Milica Hadnađev Kostić, Snežana Škaljac, Milana Pribić, Bojan Miljević, Branimir Pavlić, Olga Govedarica

Editor-in-Chief: Prof. Zita Šereš, PhD

Design and Printing Layout: Saša Vulić

> CIP - Каталогизација у публикацији Библиотеке Матице српске, Нови Сад

658.5(048.3)

INTERNATIONAL Conference on Advanced Production and Processing (2 ; 2022 ; Novi Sad) Book of abstracts [Elektronski izvor] / 2nd International Conference on Advanced Production and Processing, 20th-22nd October 2022, Novi Sad ; [editor-in-chief Zita Šereš]. - Novi Sad : Faculty of Technology, 2022

Način pristupa (URL): https://www.tf.uns.ac.rs/download/icap-2022/book-of-abstracts.pdf. - Opis zasnovan na stanju na dan 14. 10. 2022. - Nasl. s naslovnog ekrana.

ISBN 978-86-6253-160-5

а) Технологија - Производња - Апстракти

COBISS.SR-ID 77341961

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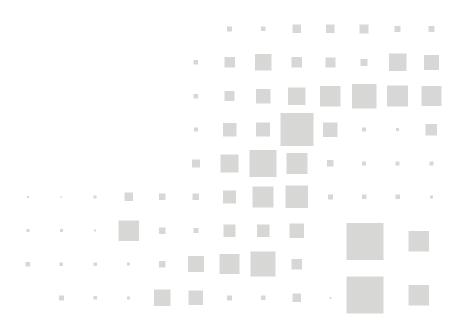


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GREEN BIOSYNTHESIS OF ZnO NANOPARTICLES USING AGRO-WASTE AND THEIR ANTIBACTERIAL AND ANTIOXIDANT ACTIVITY

<u>Zorka Vasiljevic</u>¹, Jovana Vunduk², Milena Dojcinovic¹, Dragana Bartolic¹, Milos Ognjanovic³, Nenad Tadic⁴, Goran Miskovic⁵, Maria Vesna Nikolic¹

¹University of Belgrade, Institute for Multidisciplinary Research, Kneza Viseslava 1, Belgrade, Serbia, zorkav@imsi.rs
²The Institute of General and Physical Chemistry, Studentski trg 12/V, Belgrade, Serbia,
³University of Belgrade, VINČA Institute of Nuclear Sciences - National Institute of the Republic of Serbia, Mike Petrovića Alasa 12-14, Belgrade, Serbia
⁴Faculty of Physics, University of Belgrade, Studentski trg 12, Belgrade, Serbia
⁵Silicon Austria Labs, High Tech Campus Villach Europastraße 12, A-9524 Villach, Austria

Metal oxide nanomaterials have gained a lot of attention during last decades due to their potential applications in wastewater treatment, energy storage, sensors, food packaging, etc. To date, these materials have been synthesized by different chemical and physical techniques. However many of them employ environmentally unfriendly solvents and toxic chemical compounds. To tackle this problem, use of renewable biomass such as plants and fungi as reducing or stabilizing agents in green synthesis has been considered as more sustainable option compared to toxic chemical compounds. These biological substances also behave as capping agent, which control the size and the shape of the nanoparticles. In this work, ZnO nanoparticles (NPs) have been prepared via simple, low cost and ecofriendly method using citrus fruit peel and extracts, Agaricus bisporus powder and extract as biological reducing agents. Zinc nitrate and zinc acetate were used as source of zinc ions. Structural and optical properties were investigated by X-ray diffraction analysis (XRD), Zeta potential, Fourier Transform Infrared (FTIR) spectroscopy, UV-visible (UV-vis) spectroscopy and Photoluminescence spectroscopy (PL). Morphological features were characterized by Field Emission Scanning Electron microscopy (FESEM) and High Resolution Transmission Electron Microscopy (HRTEM). Antibacterial and antioxidant activity was tested and evaluated.

Keywords: ZnO, Green synthesis, Citrus extract, Agaricus bisporus, Antibacterial

Acknowledgements: The authors would like to express their gratitude to the Ministry for Education, Science and Technology Development under the contract 451-03-68/2022-14/200053.