Programme & The Book of Abstracts

Twentieth Annual Conference

YUCOMAT 2018

Herceg Novi, Montenegro, September 3–7, 2018

Organised by

SERBIA MRS

endorsed by

MRS ENDORSED MEETING

E-MRS

FEMS 30 FEDERATION OF EUROPEAN MATERIALS SOCIETIES 1987 – 2017 www.FEMS.org

TWENTIETH ANNUAL CONFERENCE

YUCOMAT 2018

Hunguest Hotel Sun Resort Herceg Novi, Montenegro,
September 3-7, 2018
http://www.mrs-serbia.org.rs

Programme
and
The Book of Abstracts

Organised by:
Materials Research Society of Serbia

Endorsed by:
Materials Research Society,
European Materials Research Society
and
Federation of European Material Societies

Title: THE TWENTIETH ANNUAL CONFERENCE
YUCOMAT 2018
Programme and The Book of Abstracts

Publisher: Materials Research Society of Serbia
Knez Mihailova 35/IV, P.O.Box 433, 11000 Belgrade, Serbia
Phone: +381 11 2185-437
http://www.mrs-serbia.org.rs

Editors: Prof. Dr. Dragan P. Uskoković and Prof. Dr. Velimir R. Radmilović

Technical editor: Sava Stoisavljević

Front cover: Modified Photo by Hons084; Wikimedia Commons (https://commons.wikimedia.org/wiki/File:Widoki_z_twierdzy_Forte_Mare_na_Herceg_Novi_03.jpg); CC BY-SA 4.0
Back cover: Modified Photo by Dani Lavi 0007; Wikimedia Commons (https://commons.wikimedia.org/wiki/File:Belgrade_at_night.jpg); CC BY-SA 4.0

Acknowledgments: This conference is celebrating 20 years of YUCOMAT

Printed in: Biro Konto
Sutorina bb, Igalo – Herceg Novi, Montenegro
Phones: +382-31-670123, 670025, E-mail: bkonto@t-com.me
Circulation: 220 copies. The end of printing: August 2018

O.S.II.9.

CTAB- and pluronic F-127-assisted microwave processing of ZnO particles with modified morphology and optical properties

Smilja Marković[1], Ivana Stojković-Simatović[2], Sanita Ahmetović[2], Ljiljana Veselinović[1], Stevan Stojadinović[3], Vladislav Rac[4], Srečo Škapin[5], Dragan Uskoković[1]
[1]Institute of Technical Sciences of SASA, Knez Mihailova 35/IV, 11000 Belgrade, Serbia; [2]University of Belgrade, Faculty of Physical Chemistry, Belgrade, Serbia; [3]University of Belgrade, Faculty of Physics, Belgrade, Serbia; [4]University of Belgrade, Faculty of Agriculture, Belgrade, Serbia; [5]Jožef Stefan Institute, Ljubljana, Slovenia

Zinc oxide-based materials have a great potential to be applied as photocatalysts in the processes of removal of organic and biological pollutants from drinking and wastewaters. A major drawback of ZnO as visible-light absorber is a band energy gap of 3.37 eV, which restricts the material to absorb UV light only. This drawback can be overcame by modifying the optical absorption properties of zinc oxide particles. Different approaches have been applied to modify the visible light photocatalytic activity of ZnO materials: (1) metal and nonmetal ion doping, (2) hydrogenation, (3) the incorporation of crystalline defects in the form of vacancies and interstitials, (4) the modification of particles morphology and surface topology, etc.
In this study we investigated the influence of different surfactants on the morphology, optical properties and functionality of ZnO particles. Two different surfactants were employed during microwave processing of ZnO particles, cetyltrimethylammonium bromide (CTAB) as cationic and Pluronic F-127 as non-ionic one. The crystal structure and phase purity of the ZnO particles were determined by X-ray diffraction and Raman spectroscopy. Effects of the surfactants on particles morphology and texture properties were observed with field emission scanning electron microscopy (FE–SEM) and nitrogen adsorption–desorption isotherm, respectively. The optical properties were studied using UV–Vis diffuse reflectance and photoluminescence (PL) spectroscopy. Functionality of ZnO particles was studied due to their photocatalytic and electrochemical activities. Photocatalytic activity was examined *via* decolorization of methylene blue under direct sunlight irradiation. Electrochemical behavior of the ZnO samples as anode material was evaluated by linear sweep voltammetry in Na_2SO_4 electrolyte; the oxygen evolution kinetics were determined and compared.

CIP- Каталогизација у публикацији
Народна библиотека Србије

66.017/.018(048)

MATERIALS Research Society of Serbia (Beograd). Conference (20 ; 2018 ; Herceg Novi)
Programme ; and The Book of Abstracts / Twentieth Annual Conference YUCOMAT 2018, Herceg Novi, September 3-7, 2018 ; organised by Materials Research Society of Serbia ; [editors Dragan P. Uskoković and Velimir R. Radmilović]. - Belgrade : Materials Research Society of Serbia, 2018 (Herceg Novi : Biro Konto). - XLIV, 159 str. : ilustr. ; 23 cm

Tiraž 220. - Bibliografija uz pojedine apstrakte. - Registar.

ISBN 978-86-919111-3-3

1. Materials Research Society of Serbia (Beograd)

a) Наука о материјалима - Апстракти

b) Технички материјали - Апстракти

COBISS.SR-ID 266944524