



**Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION VI
New Frontiers in Multifunctional Material Science and Processing**

**Serbian Ceramic Society
Institute of Technical Sciences of SASA
Institute for Testing of Materials
Institute of Chemistry Technology and Metallurgy
Institute for Technology of Nuclear and Other Raw Mineral Materials**

PROGRAM AND THE BOOK OF ABSTRACTS

**Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 18-20. September 2017.**

**Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION VI
New Frontiers in Multifunctional Material Science and Processing**

**Serbian Ceramic Society
Institute of Technical Science of SASA
Institute for Testing of Materials
Institute of Chemistry Technology and Metallurgy
Institute for Technology of Nuclear and Other Raw Mineral Materials**

PROGRAM AND THE BOOK OF ABSTRACTS

**Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 18-20. September 2017**

Book title: Serbian Ceramic Society Conference - ADVANCED CERAMICS AND APPLICATION VI Program and the Book of Abstracts

Publisher:

Serbian Ceramic Society

Editors:

Prof.dr Vojislav Mitić

Dr Lidija Mančić

Dr Nina Obradović

Technical Editors:

Dr Lidija Mančić

Dr Nina Obradović

Ivana Dinić

Printing:

Serbian Ceramic Society

Edition:

200 copies

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

666.3/.7(048)

66.017/.018(048)

SRPSKO keramičko društvo. Conference Advanced Ceramics and Application : New Frontiers in Multifunctional Material Science and Processing (6 ; 2017 ; Beograd)

Program ; and the Book of Abstracts / Serbian Ceramic Society Conference Advanced Ceramics and Application VI : New Frontiers in Multifunctional Material Science and Processing, Serbia, Belgrade, 18-20. September 2017. ; [organized by] Serbian Ceramic Society ... [et al.] ; [editors Vojislav Mitić, Lidija Mančić, Nina Obradović]. - Belgrade : Serbian Ceramic Society, 2017 (Belgrade : Serbian Ceramic Society). - 86 str. : ilustr. ; 30 cm

Tiraž 200.

ISBN 978-86-915627-5-5

a) Керамика - Апстракти b) Наука о материјалима - Апстракти c)
Наноматеријали - Апстракти
COBISS.SR-ID 244577036

Dear Colleagues,

We have great pleasure to welcome you to the Advanced Ceramic and Application Conference VI organized by the Serbian Ceramic Society in cooperation with the Institute for Testing of Materials, Institute of Technical Sciences of SASA, Institute of Chemistry Technology and Metallurgy and Institute for Technology of Nuclear and Other Raw Mineral Materials.

Advanced Ceramics today include many old-known ceramic materials produced through newly available processing techniques as well as broad range of the innovative compounds and composites, particularly with plastics and metals. Such developed new materials with improved performances already bring a new quality in the everyday life. The chosen Conference topics cover contributions from a fundamental theoretical research in advanced ceramics, computer-aided design and modeling of a new ceramics products, manufacturing of nanoceramic devices, developing of multifunctional ceramic processing routes, etc. Traditionally, ACA Conferences gather leading researchers, engineers, specialist, professors and PhD students trying to emphasize the key achievements which will enable the wide spread use of the advanced ceramics products in High-Tech industry, renewable energy utilization, environmental efficiency, security, space technology, cultural heritage, prosthesis, etc.

Serbian Ceramic Society has been initiated in 1995/1996 and fully registered in 1997 as Yugoslav Ceramic Society, being strongly supported by American Ceramic Society. Since 2009, it has continued as Serbian Ceramic Society in accordance to the Serbian law procedure. Serbian Ceramic Society is almost the only one Ceramic Society in the South-East Europe, with members from more than 20 Institutes and Universities, active in 16 sessions, by program and the frames which are defined by the American Ceramic Society activities.

For the first time Advanced Ceramic and Application Conference hosting delegations from Republics of Ghana, Nigeria, Niger and Cameroon with the idea to connect, share and provide positive influence to the scientific and industrial communities all around world.



Prof. Dr Vojislav Mitić
President of the Serbian Ceramic Society
World Academy Ceramics Member
European Academy of Sciences&Arts Member



Prof. Dr Olivera Milošević,
President of the General Assembly of the
Serbian Ceramic Society
Academy of Engineering Sciences of Serbia Member

Conference Topics

- Basic Science & Sintering of Ceramics
- Nano, Bio- & Opto Ceramic
- Electro & Multifunctional Ceramics
- Magnetic, Catalytic & Composite Materials
- Renewable Energy, Heritage & Archeology
- Industrial Talks

Conference Co-chairmen:

Prof. Dr. Vojislav Mitić SRB
Prof. Dr. Olivera Milošević SRB
Prof. Dr. Marcel Van de Voorde EU
Prof. Dr. Rainer Gadow GER

Conference Programme Chairs:

Dr. Lidija Mančić SRB
Dr. Nina Obradović SRB

Scientific Committee

Academician Zoran Đurić SRB
Academician Ninoslav Stojadinović SRB
Academician Zoran Popović SRB
Academician Pantelija Nikolić SRB
Academician Miroslav Gašić SRB
Academician Laszlo Forro CHE
Academician Dragoljub Mirjanić BiH(RS)
Prof. Dr. Vojislav Mitić SRB
Prof. Dr. Marcel Van de Voorde EEZ
Prof. Dr. David Johnson GBR
Prof. Dr. Slavcho Rakovsky BGR
Prof. Dr. Jurgen G. Heinrich DEU
Prof. Dr. Masohiro Yoshimura JPN
Dr. Mrityunjay "Jay" Singh USA
Prof. Dr. Rainer Gadow DEU
Dr. Richard Todd GBR
Dr. Moritz von Witzleben DEU
Dr. Jon Binner, UK
Dr. Fiqiri Hodaj FRA
Prof. Dr. Hans Fecht DEU
Dr. Dušan Jovanović SRB
Prof. Dr. Olivera Milošević SRB
Prof. Dr. Vladimir Pavlović SRB
Dr. Nina Obradović SRB
Dr. Lidija Mančić SRB
Prof. Dr. Steven Tidrow USA
Dr. Wilhelm Siemen DEU
Dr. Jonjaua Ranogajec SRB
Dr. Snežana Pašalić SRB
Prof. Dr. Zoran Nikolić SRB
Dr. Zagorka Radojević SRB
Dr. Nebojša Romčević SRB
Dr. Zorica Lazarević SRB

Prof. Dr. Ljubica Pavlović SRB
Prof. Dr. Nebojša Mitrović SRB
Prof. Dr. Ljubiša Kocić SRB
Dr. Aleksandra Milutinović–Nikolić SRB
Dr. Predrag Banković SRB
Dr. Zorica Mojović SRB
Dr. Dušan Milivojević SRB
Dr. Miomir Korać SRB
Prof. Dr. Branislav Vlahović SRB
Dr. Radomir Žikić SRB
Prof. Dr. Stevo Najman SRB
Dr. Biljana Djordjević SRB
Dr. Anja Terzić SRB

Organizing Committee

Prof. Dr. Vojislav Mitić SRB
Dr. Nina Obradović SRB
Dr. Lidija Mančić SRB
Prof. Dr. Vladimir Pavlović SRB
Dr. Dušan Jovanović SRB
Dr. Zorica Lazarević SRB
Prof. Dr. Ljubica Pavlović SRB
Dr. Vesna Paunović SRB
Dr. Darko Kosanović SRB
Dr. Anja Terzić SRB
Dr. Suzana Filipović SRB
Dr. Vladimir Blagojević SRB
Prof. Zvonko Petković SRB
Ivana Dinić SRB
Zoran Gajić SRB
Jelena Živojinović SRB

Sponsors & Endorsements:

Analysis - Lab equipment, Belgrade (Serbia), Direktna Banka a.d. Kragujevac, Exchange office „Hulk“, LMB Soft, Niš (Serbia), SCAN doo. Preddvor (Slovenia), Voda Vrnjci (Serbia), Regular Authority of Electronic Media (Serbia), Turisticka organizacija Beograd, Štamparija "Format" and GRAND doo (Serbia).

Acknowledgements:

The Conference Organizers are grateful to the Ministry of Education and Science of the Republic of Serbia for financial support, as well as to the Serbian Academy of Sciences and Arts, European Academy of Sciences and Arts, American Ceramics Society, Institute of Technical Sciences of SASA, Archeological Institute of SASA, Institute of Physics UB, Vinča Institute of Nuclear Sciences - Laboratory of Physics (010), Electrical Engineering Institute Nikola Tesla and High School-Academy for Arts and Conservation, Serbian Orthodox Church.

OR-BMS1

Zinc oxide-based materials with enhanced sunlight-driven photo- and photo-electro-catalytic activity

Smilja Marković¹, Vladimir Rajić², Ivana Stojković-Simatović², Dragan Uskoković¹

¹*Institute of Technical Sciences of SASA, Belgrade, Serbia*

²*Faculty of Physical Chemistry, University of Belgrade, Serbia*

Current trend in photocatalysis is to develop efficient semiconductors which can be activated by absorbing sunlight. Which wavelength of sunlight will be absorbed depends on the semiconductor band gap; semiconductors with a wide band gap (> 3 eV) can absorb only UV light (5% of sunlight), while those with a narrow band gap (< 3 eV) can be activated by visible light (45% of sunlight).

Zinc oxide (ZnO) is promising semiconductor with band gap of 3.37 eV. Various approaches have been applied to modify its optical properties, for example: incorporation of different metal and nonmetal ions or defects into the crystal structure, particles' surface sensitization or hydrogenation. In this study, we examined the influence of different defects present in ZnO particles on their photo- and photo-electro-catalytic properties. Processing of ZnO particles were carried out in order to introduce: (1) lattice defects, through microwave procedure, (2) surface defects, through mechanical activation, and (3) surface defects, through composite with polyethylene oxide. Synthesized particles were characterized by XRD, FE-SEM, laser diffraction particle size analyzer, Raman, UV-Vis diffuse reflectance and photoluminescence spectroscopy. The results of achieved photo- and photo-electro-catalytic tests indicate that both, structural and surface, defects enhanced sunlight-driven activity of ZnO particles.

OR-BMS2

Synthesis, characterization & bacterial activity of ZnO and Histidine incorporated ZnO

Shraddha Mahakal¹, Surekha Satpute², Kiran Adhi¹, Shabana Shaikh³

^{1,3}*Center for Advanced Studies in Material Science & Condensed Matter Physics Department of Physics, Savitribai Phule Pune University, Pune 411007 India*

²*Department of Microbiology, Savitribai Phule Pune University, Pune 411007 India*

Chemical route was adopted to synthesize both ZnO and amino acid (Histidine) incorporated ZnO. For synthesizing ZnO, which is used as reference, a solution (0.25M) Zn (NO₃)₂ was prepared in distilled water. NH₄OH was added drop wise till a white precipitate is observed. This solution was stirred continuously at 100°C for 1 hr. The precipitate was then centrifuged & washed several times using distilled water, which was subsequently dried. The same procedure was carried out in the presence of Histidine for the synthesis of Histidine incorporated ZnO. Four different concentrations of Histidine were used, ranging from 0.1 mg/ml to 1mg/ml during the synthesis of Histidine incorporated ZnO.