



Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION XI
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 2023.

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

Publisher:

Serbian Ceramic Society

Editors:

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Dr. Lidija Mančić

Technical Editors:

Dr. Adriana Peleš Tadić

Dr. Jelena Živojinović

Printing:

Serbian Ceramic Society, Belgrade, 2023.

Edition:

120 copies

CIP - Каталогизacija 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 (11 ; 2023 ; Beograd)

Program ; and the Book of abstracts / Serbian Ceramic Society Conference Advanced Ceramics and Application XI New Frontiers in Multifunctional Material Science and Processing, Serbian Academy of Sciences and Art Serbia, Belgrade, 18-20. September 2023. ; [editors Nina Obradović, Lidija Mančić]. - Belgrade : Serbian Ceramic Society, 2023 (Belgrade : Serbian Ceramic Society). - 90 str. : ilustr. ; 30 cm

Tiraž 120.

ISBN 978-86-905714-0-6

a) Керамика -- Апстракти б) Наука о материјалима -- Апстракти

COBISS.SR-ID 122849545



Dear colleagues and friends,

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

It is nice to host you here in Belgrade in person. We are very proud that we succeeded in bringing the scientific community together again and fostering the networking and social interactions around an interesting program on emerging advanced ceramic topics. The chosen topics cover contributions from fundamental theoretical research in advanced ceramics, computer-aided design and modeling of new ceramics products, manufacturing of nano-ceramic devices, developing of multifunctional ceramic processing routes, etc.

Traditionally, ACA Conferences gather leading researchers, engineers, specialists, professors and PhD students trying to emphasize the key achievements which will enable the widespread use of the advanced ceramics products in the High-Tech industry, renewable energy utilization, environmental efficiency, security, space technology, cultural heritage, etc.

Serbian Ceramic Society was 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 the Serbian Ceramic Society in accordance with Serbian law procedure. Serbian Ceramic Society is almost the only one Ceramic Society in South-East Europe, with members from more than 20 Institutes and Universities, active in 9 sessions..

Dr. Nina Obradović
President of the Serbian Ceramic Society

Dr. Suzana Filipović
President of the General Assembly of the Serbian Ceramic Society

Conference Topics

- Basic Ceramic Science & Sintering
- Nano-, Opto- & Bio-ceramics
- Modeling & Simulation
- Glass and Electro Ceramics
- Electrochemistry & Catalysis
- Refractory, Cements & Clays
- Renewable Energy & Composites
- Amorphous & Magnetic Ceramics
- Heritage, Art & Design

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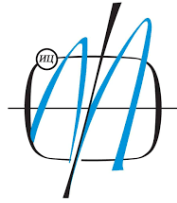
Sponsors:

Analysis - Lab equipment,

Turistička organizacija Beograda, Inovacioni centar Mašinskog fakulteta,

Institut za ispitivanje materijala,

Institut za tehnologiju nuklearnih i drugih mineralnih sirovina



Acknowledgements:

Ministry of Science, Innovations and Technological Development RS
Serbian Academy of Sciences and Arts
Institute of Technical Sciences of SASA, Institute of Physics BU
Hotel Palace, Shenemil



Република Србија

МИНИСТАРСТВО НАУКЕ,
ТЕХНОЛОШКОГ РАЗВОЈА И
ИНОВАЦИЈА



air at 850 °C / 10 min in the hybrid conveyor furnace. The planar electrodes were printed on the sintered NTC thermistor layer using the PdAg thick film paste. The electric properties of sintered thick film thermistor were also measured in the climatic test chamber. The obtained results were used for development of novel self-heating thermistor applications.

P18

Corrosion behavior of Ni-P-based amorphous and nanocrystalline alloys

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Powder alloys consisted of amorphous ultrafine powders have many favorable functional characteristics, and therefore find application in composite materials production, catalysis, ferrofluids, magnetic recording media and powder metallurgy. Amorphous alloys, as kinetically and thermodynamically metastable materials, are prone to structural transformations at elevated temperatures or pressures, or during prolonged application under mild conditions. Corrosion properties of such materials, being influenced by the microstructure, significantly affect their suitability for practical application.

Ni-P-based powder materials with different chemical composition and microstructure were prepared using chemical reduction method. For the as-prepared and thermally treated materials, detailed microstructure and morphology analyses were performed. By using electrochemical methods, corrosion properties of the as-prepared and thermally treated materials were studied in different environments, including neutral, acidic and alkaline media of different concentrations. Relatively good corrosion resistance of the studied Ni-P-based materials was observed. It is indicated that the microstructure and chemical composition of the studied materials affect the mechanism of formation and composition of the oxide/hydroxide layer nearby the electrode surface, thus influencing the corrosion behavior of the material.

P19

The effect of different particle sizes of bentonite from the Bogovina deposit on the Briggs-Rauscher oscillatory reaction

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The Briggs-Rauscher oscillatory reaction, which represents the oxidation of malonic acid in the presence of hydrogen peroxide and potassium iodate catalyzed by manganese ion in an acidic environment, proved to be extremely sensitive for testing insoluble materials, such as bronzes and clays. It was shown that origin of bentonite has high impact on the length of the

oscillation time. In this work, the influence of different sizes of bentonite particles from the Bogovina deposit on the Briggs-Rauscher oscillatory reaction in the conditions of a closed reactor was investigated. Five particle sizes of bentonite, ($< 25 \mu\text{m}$, $< 50 \mu\text{m}$, $< 75 \mu\text{m}$, $< 150 \mu\text{m}$ and $< 300 \mu\text{m}$) having identical mass of 0.15 g, were tested. The addition of different particle sizes of Bogovina clay does not significantly influence the basic BR oscillogram.

Acknowledgment: This work was supported by the Ministry of Science, Technological Development and Innovation of the Republic of Serbia (Contract numbers: 451-03-47/2023-01/200146 and 451-03-47/2023-01/200026).

P20

Synthesis and characterization of luminescent Pr^{3+} -doped hydroxyapatite nanopowder as a potential biomaterial for bioimaging applications

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Praseodymium doped calcium hydroxyapatite (PrHAP) nanopowder was synthesized by the co-precipitation method and characterized by X-Ray Diffraction, Fourier Transform Infrared, and Fluorescence Spectroscopy. Characterization studies from XRD and FTIR spectra showed that obtained crystals are monophase hydroxyapatites and that the sample particles are of nano size. A fluorescence study has shown that PrHAP particles have fluorescent emission under UV- Visible excitation. These results may open new avenues for developing bioactive materials for bone regeneration and fluorescent probes for bio-imaging applications

P21

Vertically aligned TiO_2 nanorod array as an electron transport layer in perovskite photodiode

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The development of metal oxide-based electron transport layers in perovskite solar cells (PSCs) is being intensively researched to achieve highly efficient PSCs. They offer the advantage of higher charge carrier mobility and stability compared to typical organic materials. To reduce the recombination of charge carriers, methylammonium lead bromide (MAPbBr_3) perovskite was coupled with vertically aligned TiO_2 nanorods (NRs) as an