

The Serbian Society for Ceramic Materials
Institute for Multidisciplinary Research (IMSI), University of Belgrade
Institute of Physics, University of Belgrade
Center of Excellence for the Synthesis, Processing and Characterization of
Materials for use in Extreme Conditions "CEXTREME LAB" - Institute of
Nuclear Sciences "Vinča", University of Belgrade
Faculty of Mechanical Engineering, University of Belgrade
Center of Excellence for Green Technologies, Institute for Multidisciplinary
Research, University of Belgrade
Faculty of Technology and Metallurgy, University of Belgrade

PROGRAMME and the BOOK of ABSTRACTS

6CSCS-2022

6th Conference of
the Serbian Society for Ceramic Materials
June 28-29. 2022. Belgrade Serbia

Edited by:
Branko Matović
Aleksandra Dapčević
Vladimir V. Srdić

Programme and Book of Abstracts of The Sixth Conference of The Serbian Society for Ceramic Materilas **publishes abstracts from the field of ceramics, which are presented at international Conference.**

Editors-in-Chief

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Publisher

Institut za multidisciplinarna istraživanja
Kneza Višeslava 1, 11000 Belgrade, Serbia

For Publisher

Dr Dragica Stanković

Printing layout

Vladimir V. Srdić

Press

Faculty of Technology and Metalurgy, Research and Development Centre of Printing
Technology, Karnegieva 4, Belgrade, Serbia

The year off issue:

2022.

ISBN 987-86-80109-23-7

CIP - Каталогизacija у публикацији
Народна библиотека Србије, Београд

666.3/.7(048)
66.017/.018(048)

DRUŠTVO za keramičke materijale Srbije. Konferencija (6 ; 2022 ; Beograd)

Programme ; and the Book of Abstracts / 6th Conference of The Serbian Society for Ceramic Materials, 6CSCS-2022, June 28-29, 2022, Belgrade, Serbia ; [organizers] The Serbian Society for Ceramic Materials ... [et al.] ; edited by Branko Matović, Aleksandra Dapčević, Vladimir V. Srdić. - Belgrade : Institut za multidisciplinarna istraživanja, 2022 (Belgrade : Faculty of technology and metalurgy, Research and development centre of printing technology). - 91 str. : ilustr. ; 25 cm

Tiraž 120. - Str. 7: Welcome message / Branko Matovic. - Registar.

ISBN 978-86-80109-23-7

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

COBISS.SR-ID 69088009

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SPECIAL THANKS TO



Република Србија

Министарство просвете,
науке и технолошког развоја



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WELCOME MESSAGE

On behalf of the organizers and organizing committee of the 6th Conference of the Serbian Society for Ceramic Materials (6CSCS-2022), I would like to extend my warmest welcome to all of you for attending the 6CSCS-2022. The conference is hosted and organized by the Serbian Society for Ceramic Materials, and co-organized by Institute for Multidisciplinary Research - University of Belgrade, Institute of Physics - University of Belgrade, Center of excellence for the synthesis, processing and characterization of materials for use in extreme conditions “CEXTREME LAB”, Institute of Nuclear Sciences “Vinča” - University of Belgrade, Faculty of Mechanical Engineering - University of Belgrade, Center of excellence for green technologies, Institute for Multidisciplinary Research - University of Belgrade, and Faculty of Technology and Metallurgy - University of Belgrade.

The goal of the Conference is to provide a platform for academic exchange among participants from universities, institutes, companies around the region in the field of ceramics research as well as to explore new direction for future development. 6CSCS-2022 aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results about all aspects of ceramic materials. It also provides the premier inter-multi-trans-disciplinary forum for researchers, practitioners and educators to present and discuss the most recent innovations, trends, and concerns, practical challenges encountered and the solutions adopted in the field of ceramic materials. We have received 75 abstracts with researchers from 17 countries.

The Conference will feature two plenary lectures, 16 invited talks and 57 oral and poster presentations as well as exhibitions of some new ceramic materials and devices. 6CSCS-2022 includes Ceramic powders, characterization and processing, High temperature phenomena, sintering, microstructure design and mechanical properties, Electro and magnetic ceramics, Ceramic composites, membranes and multimaterials, Traditional ceramics and Computing in materials science. Exhibitions from company sponsors will be held at the Conference as well.

We are grateful for the support from the Ministry of Education, Science and Technological Development of the Republic of Serbia. We would also like to express our sincere thanks to the symposia organizers, session chairs, presenters, exhibitors and all the Conference attendees for their efforts and enthusiastic support in this exciting time in Belgrade. I look forward to meeting you and interacting with you at Conference.

6CSCS-2022 President

Branko Matović

temperature-independent resistivity in the range of 70–300 K. This could be a consequence of the presence of many structural defects such as mixed oxidation states of $\text{Sn}^{2+}/\text{Sn}^{4+}$, probably $\text{Sb}^{3+}/\text{Sb}^{5+}$ and significant amount of O^- species, as well as the presence of the low angle grain boundaries found in this sample. The BSSO8 ceramic sample could satisfy the huge demand for the linear resistors with moderate and high conductivity, due to its low and almost constant electrical resistivity in the wide temperature.

1. A.-M. Azad, L.L.W. Shyan, T.Y. Pang, C.H. Nee, *Ceram. Int.*, **26** (2000) 685.

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THE COMPARISON OF ELECTROCHEMICAL PROPERTIES OF ZnMn_2O_4 AND $\text{ZnCr}_{0.15}\text{Mn}_{1.85}\text{O}_4$ IN AN AQUEOUS SOLUTION OF ZnCl_2

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As commercial Li-ion batteries are chiefly composed of a toxic and flammable electrolyte, as well as that Li itself is also toxic and not economical for widespread use due to its rare metal nature, the aim of this work is to create an aqueous Zn-ion battery that contains the same cathode material as used in Li-ion batteries. The materials ZnMn_2O_4 and $\text{ZnCr}_{0.15}\text{Mn}_{1.85}\text{O}_4$ were synthesized through glycine nitrate combustion. The initial material ZnMn_2O_4 was doped with Cr^{3+} in order to diminish Jan-Teller distortion which prevents of Zn^{2+} ions to fully intercalate into their original sites of crystal lattice. The materials were characterized by X-ray powder diffraction (XRPD) and scanning electron microscopy (SEM), while the electrochemical properties were examined through cyclic voltammetry in aqueous solutions of ZnCl_2 . The capacities obtained for the cyclic voltammograms recorded at 10 mVs^{-1} and 50 mVs^{-1} showed that cathode capacities for ZnMn_2O_4 amounted to be 12.4 mAhg^{-1} for 10 mVs^{-1} , as well as 4.8 mAhg^{-1} for 50 mVs^{-1} . The $\text{ZnCr}_{0.15}\text{Mn}_{1.85}\text{O}_4$ demonstrated 45.3 mAhg^{-1} for 10 mVs^{-1} , as well as 12.6 mAhg^{-1} for 50 mVs^{-1} . The results obtained for the capacities of the original and doped material indicate that doping with Cr^{2+} partly diminishes the Jan Teller effect and facilitates the intercalation of Zn^{2+} ions.