

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

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

Edited by:  
**Branko Matović**  
**Aleksandra Dapčević**  
**Vladimir V. Srdić**

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efficient treatment at lower doses compared to untreated SW. Accordingly, the seashell waste powder may substitute limestone and lime in treating various metal-bearing wastewaters, especially in regions where it is available in large quantities.

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## THE USE OF MANGANESE(II)–PYROMELLITATE COMPLEX PRECURSOR FOR THE SYNTHESIS OF NANOSIZED MANGANESE OXIDES

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The increasing interest for nanosized mixed metal oxides such as spinels and spinel-based materials in last decades has been motivated by their wide applications in photocatalysis, magnetism or solar cells [1]. So far, those materials have been obtained by conventional ceramic routes that involved high temperature treatments of precursors like mixed nitrates, carbonates or hydroxides [1]. An approach based on thermal degradation of metal-organic coordination compounds has been found as a promising for the preparation of fine-dispersed spinel and spinel-based oxides, mostly because of the control over stoichiometry as well as the possibility to obtain the materials with the homogeneous distribution of metal ions [1].

As a continuation of our research relating to the design and synthesis of metal-organic coordination compounds with the aim of obtaining possibly new functional materials [2], herein we present the synthesis and characterization of new Mn(II)–dipyridylamine coordination compound with tetraanion of 1,2,4,5-benzenetetracarboxylic (pyromellitic) acid. The complex was used as a single-source precursor for the preparation of nanosized Mn<sub>2</sub>O<sub>3</sub>/Mn<sub>3</sub>O<sub>4</sub>, Mn<sub>2</sub>O<sub>3</sub> and Mn<sub>3</sub>O<sub>4</sub> by direct thermolysis in air atmosphere at 450, 965 and 1200 °C, respectively. The main goal of this research was to investigate the influence of decomposition temperature of the precursor on stoichiometry of the resulting nanocrystalline spinel-based manganese oxides. The structural, morphological and spectroscopic properties of these ceramic materials were also investigated.

1. H. Lu, D.S. Wright, S.D. Pike, *Chemi. Commun.*, **56** (2020) 854.
2. L. Radovanović, J. Zdravković, B. Simović, Ž. Radovanović, K. Mihajlovski, M. Dramićanin, J. Rogan, *J. Serbian Chem. Soc.*, **85** (2020) 1475.

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