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 for Green Technologies, Institute for Multidisciplinary Research, University of Belgrade
Faculty of Technology and Metallurgy, University of Belgrade
Faculty of Technology, University of Novi Sad

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Zorica Branković
Aleksandra Dapčević
Vladimir V. Srdić

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PROGRAMME AND THE BOOK OF ABSTRACTS

5th Conference of The Serbian Society for Ceramic Materials

June 11-13, 2019
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5CSCS-2019

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PREPARATION OF Co_3O_4 NANO- AND MICROPARTICLES BY SOLID STATE THERMOLYSIS OF COBALT(II) COMPLEX

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Development of nanomaterials such as transition metal oxides with spinel structure has been intensively examined because of their applications in catalysis, energy storage, magnetic data storage and sensors [1]. Synthesis of these materials has been realized by various approaches, such as hydrothermal synthesis, solid state reactions and microwave synthesis [1]. In previous years, thermolysis of transition metal complexes as precursors provides a new technique in preparing useful nanomaterials due to the possibility to control their particle size and morphology [2].

The nano- and microparticles of Co_3O_4 have been prepared by direct calcination of ternary Co(II) complex, $[Co_3(bipym)_3(H_3mell)_2]\cdot 18H_2O$, where bipym is 2,2'-bipyrimidine and H_3mell^{3-} is anion of 1,2,3,4,5,6-benzenehexacarboxylic (mellitic) acid at 450 and 1000 °C in air atmosphere. The powder X-ray diffraction (XRDP) and scanning electron microscopy (SEM) were used to investigate structure and morphology of the obtained materials. The results indicated the formation of pure Co_3O_4 phase, whose particles size depends on the calcination temperature.

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