The Serbian Society for Ceramic Materials

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

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4CSCS-2017

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Branko Matović
Zorica Branković
Dušan Bućevac
Vladimir V. Srdić

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ZnO NANOPOWDERS OBTAINED BY THERMOLYSIS OF ZINC BENZENEDICARBOXYLATE COMPLEXES WITH 2,2'-DIPYRIDYLAMINE

Jelena Zdravković[1], Lidija Radovanović[1], Bojana Simović[2], Dejan Poleti[3], Jelena Rogan[3], Željko Radovanović[1], Katarina Mihajlovski[3]

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Coordination chemistry provides the know-how for the synthesis of the precursor compounds with variable composition and structures, while the thermal induced changes may control the crystalline structure, phase composition, morphology, size, texture, and other properties of their pyrolytic products [1]. In terms of coordination chemistry and thermal analysis, our research has been focused on the synthesis of mixed ligand complexes [2] that can be used as precursors for obtaining diverse (compositional and structural) oxides, depending on their thermoreactivity.

The main goal of this approach was the reduction of the temperature at which the oxides are formed (up to 600–700 °C) comparative to the standard ceramic methods. The effect of the different atmospheres (dynamic air or N_2) on the thermal decomposition of Zn benzenedicarboxylate complexes with 2,2'-dipyridylamine was investigated. The formation of ZnO nanopowders was identified using XRPD and FESEM techniques. The influence of the adopted architecture of ternary metal complexes used as templates for ZnO nanopowders was discussed. The thermal decomposition kinetics of precursors was studied under non-isothermal conditions. In addition, the antibacterial activity of obtained ZnO nanopowders was also analyzed.

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