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

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Branko Matović
Aleksandra Dapčević
Vladimir V. Srdić

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Prof. Aleksandra Dapčević
Prof. Vladimir V. Srdić

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P-11

VISIBLE-LIGHT PHOTOCATALYTIC DEGRADATION OF MORDANT BLUE 9 BY $BiVO_4$ NANOPOWDER

Jelena Jovanović, Stefan T. Jelić, Jovana Ćirković, Aleksandar Radojković, Goran Branković, Zorica Branković

Institute for Multidisciplinary Research, University of Belgrade, Belgrade, Serbia

$CaMnO_3$-based ceramics doped with gadolinium has become a matter of great scientific interest, because of their physical, electronic and magnetic properties, and many intriguing phenomena, such as colossal magnetoresistance (CMR) involving potential applications in magnetic memory devices and sensors. Electronic properties of $CaMnO_3$ doped with different amount of gadolinium were investigated using combination of experimental and theoretical methods. Spectroscopic Ellipsometry has been used to study electronic properties and band gap variation as function of Gd doping (up to 20% Gd). Furthermore, for each of the structure candidates, a local optimization on the *ab initio* level using density-functional theory (DFT), hybrid (B3LYP) and the Hartree–Fock (HF) method was performed.

P-12

INVESTIGATING SORPTIVE ASPECTS OF $CoMoO_4$ NANOPOWDERS SYNTHESIZED BY SPRT METHOD

Milena Rosić[1], Maria Čebela[1], Dragana Jordanov[1], Nebojša Labus[2], Marija Vasić Jovev[3], Radomir Ljupković[3], Aleksandra Zarubica[3]

[1]*Laboratory for Material Science, Institute of Nuclear Sciences "Vinča", National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia*
[2]*Institute of Technical Sciences of SASA, Beograd, Serbia*
[3]*Department of Chemistry, Faculty of Science and Mathematics, University of Niš, Serbia*

Nanosized $CoMoO_4$ solid solution was successfully synthesized at room temperature using simple and fast Self Propagating Room Temperature procedure (SPRT). The structural, textural, morphological and surface characteristics of the nanosized $CoMoO_4$ were examined in detail by X-ray diffraction (XRD), Fourier transform infrared (FT-IR) spectra, Field emission scanning electron microscopy

(FESEM), and nitrogen sorption method. X-ray powder diffraction (XRPD) reflected the presence of two different phases that are in the same space group. The α-$CoMoO_4$ and the β-$CoMoO_4$ modification crystallizes in the monoclinic space group *C*2/*m*, No.12, but the β-phase clearly distinct from the α-phase due to the tetrahedral coordination of the Mo^{6+} ions. Adsorption tests were studied over $CoMoO_4$ nanopowders under different experimental conditions (material dosage, initial concentration of pollutant textile dye, etc). The obtained results showed acceptable sorption characteristics of the material.

1. D. Zagorac, J.C. Schön, M. Rosić, J. Zagorac, D. Jordanov, J. Luković, B. Matović, *Crystal Res. Technol.*, **52** [10] (2017) 1700069.

P-13

ION MIGRATION IN SPINEL STRUCTURE IN NICKEL AND ZINC FERRITE NANOPOWDERS SYNTHESISED BY CO-PRECIPITATION AND HYDROTHERMAL METHODS

Ivan Stijepović, Marija Milanović

University of Novi Sad, Faculty of Technology Novi Sad, Department of Materials Engineering, Novi Sad, Serbia

Nickel and zinc ferrite systems were synthesized as single phase materials, core/shell composites and mixed ferrite phase using co-precipitation and hydrothermal methods. Evolution of spinel structure and degree of inversion were followed by using XRD and Raman spectroscopy. Rietveld refinement was used to evaluate crystal structure parameters and phase composition. Deconvolution of Raman spectra was used in order to determine cation coordination and degree of inversion. It was established that both zinc and nickel ferrite showed mixed ferrite characteristics which is in contrast with their bulk structures. TEM micrographs confirmed formation of core/shell particles with distinct nickel ferrite core and zinc ferrite shell with the sizes of about 100 nm.