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

PROGRAMME and the BOOK of ABSTRACTS

5CSCS-2019

5th Conference of the Serbian Society for Ceramic Materials
June 11-13.2019. Belgrade Serbia

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Branko Matović
Zorica Branković
Aleksandra Dapčević
Vladimir V. Srdić

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theoretical value along with pronounced inter and intragranullar cracks strongly influenced material's electric properties.

Polymeric precursor method, starting from yttrium and manganese citrate solutions, was used for the chemical synthesis. By optimization of sintering conditions of obtained polyphase powders, pure antiferromagnetic h-YMO ceramic materials were prepared, having densities higher than 95%. By comparing the ceramic materials prepared by means of two different methods, we could conclude that in case of $YMnO_3$ chemical synthesis resulted in the preparation of material with better phase composition, microstructural, magnetic and ferroelectric properties.

O-2

COATING OF CERIUM OXIDE NANOPARTICLES WITH DIFFERENT CARBOHYDRATES

Ivana Milenković[1], Ksenija Radotić[1], Branko Matović[2], Marija Prekajski[2], Ljiljana Živković[3], Dragica Jakovljević[4], Gordana Gojgić-Cvijović[4], Vladimir Beškoski[5]

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Cerium oxide nanoparticles ($nCeO_2$) are biomaterials with numerous applications in biomedicine, fuel additives and electronics. Since their low stability in aqueous media limited their practical application, the aim of this study was to improve the suspension stability of $nCeO_2$ by coating the particles. Glucose, monosaccharide, and levan and pullulan, microbial polysaccharides, were used as coating material. The coating was attempted under different synthesis conditions, by adding the carbohydrates during (direct coating) or after (subsequent coating) the synthesis of $nCeO_2$. X-Ray diffraction analysis, Fourier transform infrared spectroscopy (FT-IR), scanning electron microscopy (SEM) and transmission electron microscopy (TEM) were used for characterization of nanoparticles' powders. Measuring of hydrodynamic size, zeta potential and turbidity was used for

the estimation of nanoparticles' suspension stability in aqueous media. The success of subsequent coating with carbohydrates and the differences between coated $nCeO_2$ have been proven with FT-IR spectra. Turbidity measurement showed the best stability of levan- and glucose-coated $nCeO_2$ suspensions. It can be concluded that coating with carbohydrates improved the stability of the $nCeO_2$ suspension by decreasing the size of aggregated particles. The obtained results open new horizons for further ecotoxicity investigation and $nCeO_2$ application.

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O-3

RELEVANT PROPERTIES OF GREEN SELF-COMPACTING CONCRETE

Milan Vasić[1], Sanja Martinović[2], Milica Vlahović[2], Tatjana Volkov-Husović[3], Aleksandar Savić[4]

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The production of durable concrete with a high content of supplementing cementitious materials and recycled aggregate presents a step towards sustainability in the concrete industry. The paper presents the findings of the study, conducted on four series of concrete with self-compacting properties, which embodied recycled concrete aggregate, as a substitution for natural sand and gravel. Besides, this concrete possessed high content of fly ash, therefore qualifying as ecological (green) one. Particle packing method was used in the design of this concrete. Fresh properties included: density, slump flow, V-funnel, L-box and temperature, while compressive and tensile strengths were evaluated in the hardened state. Although certain difficulties in the application were recognized concerning the fast loss of workability in the fresh state, all of the tested mixtures exceeded the requirements of hardened structural concrete.

Keywords: self-compacting concrete, sustainability, physical and mechanical properties

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