



Serbian Ceramic Society Conference
ADVANCED CERAMICS AND APPLICATION X
New Frontiers in Multifunctional Material Science and Processing

Serbian Ceramic Society
Institute of Technical Sciences of SASA
Institute for Testing of Materials
Institute of Chemistry Technology and Metallurgy
Institute for Technology of Nuclear and Other Raw Mineral Materials

PROGRAM AND THE BOOK OF ABSTRACTS

Serbian Academy of Sciences and Arts, Knez Mihailova 35
Serbia, Belgrade, 26-27. September 2022.

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INV20

Improving the electrochemical performance of spray pyrolytic rare-earth cobaltite-based perovskite

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Recently there is an effort to reach highly reversible and stable materials for energy storage processes. Novel materials used in electrochemistry-based energy storage as a suitable supports for noble ones, has been predominant in the past few years. Supercapacitors, as a bridge between batteries and traditional capacitors, have attracted significant attention as new promising energy storage devices. Hybrid nanomaterials based on manganese, cobalt, and lanthanum oxides of different morphology and phase compositions were prepared using a facile single-step ultrasonic spray pyrolysis (USP) process. Transition metal oxides are considered as an ideal electrode materials for electrochemical redox transitions-based pseudocapacitors, because they can provide a variety of oxidation states for rather fast and efficient redox transitions. Strontium-doped lanthanum cobaltites ($\text{La}_{1-x}\text{Sr}_x\text{CoO}_{3-\delta}$, LSCO) have shown promising catalytic performance for ORR in alkaline media. The aim of this investigation was to bring detailed insights of supercapacitive potentials of pure LSCO and LSCO hydrothermally doped by RuO_2 . Also, to separate influences of constituting oxides to this issue, in order to reveal the redox electrochemistry behind perovskite structures as supports for supercapacitive applications. As well as to synthesize and investigate hybrid nanomaterials based on the Mn/Co/La oxides of ordered structure generated by USP as electrocatalyst for ORR.

INV21

Stochastic calibration methods applied to brittle materials

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Stochastic methods based on Gaussian processes allow to build not only a surrogate model but also to build an approximation accuracy map. This is particularly important when the goal is to calibrate a model that has multiple parameters, for example due to anisotropy in elasticity or a complicated description of plasticity and / or failure. In such a case, each point in the multidimensional parameter space should be chosen very carefully so as not to unnecessarily generate iterations with time-consuming calculations, and at the same time systematically