Измењено: 2023-10-17 08:41:48

Investigation of nanostructured Ca0.9Er0.1MnO3 obtained by sucrose nitrate procedure

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Дигитални репозиторијум Рударско-геолошког факултета Универзитета у Београду

[ДР РГФ]

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http://dr.rgf.bg.ac.rs/s/repo/item/0008181

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Book title: Serbian Ceramic Society Conference - ADVANCED CERAMICS AND APPLICATION XI Program and the Book of Abstracts

Publisher:
Serbian Ceramic Society

Editors:
Dr. Nina Obradović
Dr. Lidija Mančić

Technical Editors:
Dr. Adriana Peleš Tadić
Dr. Jelena Živojinović

Printing:
Serbian Ceramic Society, Belgrade, 2023.

Edition:
120 copies

CIP - Каталогизација у публикацији
Народна библиотека Србије, Београд

666.3/.7(048)
66.017/.018(048)

SRPSKO keramičko društvo. Conference Advanced Ceramics and Application : New Frontiers in Multifunctional Material Science and Processing (11 ; 2023 ; Beograd)

Program ; and the Book of abstracts / Serbian Ceramic Society Conference Advanced Ceramics and Application XI New Frontiers in Multifunctional Material Science and Processing, Serbian Academy of Sciences and Art Serbia, Belgrade,18-20.September 2023. ; [editors Nina Obradović, Lidija Mančić]. - Belgrade : Serbian Ceramic Society, 2023 (Belgrade : Serbian Ceramic Society). - 90 str. : ilustr. ; 30 cm

Tiraž 120.

ISBN 978-86-905714-0-6

а) Керамика -- Апстракти б) Наука о материјалима -- Апстракти

COBISS.SR-ID 122849545

P23

Investigation of nanostructured $Ca_{0.9}Er_{0.1}MnO_3$ obtained by sucrose nitrate procedure

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Nano-crystalline $Ca_{0.9}Er_{0.1}MnO_3$ oxide with a perovskite structure was synthesized by the sucrose nitrate procedure (SNP), with the help of sucrose, which plays the role of fuel and complexant. Other chemicals used are calcium nitrate tetrahydrate $Ca(NO_3)_2{\times}4H_2O$, manganese nitrate hydrate $Mn(NO_3)_2{\times}H_2O$, erbium nitrate pentahydrate $Er(NO_3)_3{\times}5H_2O$. Metal nitrates and sucrose were mixed in stoichiometric ratios, in order to obtain a perovskite with a crystalline structure. The resulting $Ca_{0.9}Er_{0.1}MnO_3$ is calcined for 15 minutes in the temperature range from 800°C to 1000°C. Diffraction thermal analysis (DTA), X-ray diffraction analysis (XRD), Fourier transform infrared spectroscopy (FTIR), scanning electron microscopy (SEM) and inductively coupled plasma ICP were used to characterize the obtained powder.

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Experimental and numerical determination of the fracture strength of PA12 material on specimens produced by selective laser sintering

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This paper presents the influence of geometry on the determination of the stress intensity factor KI on specimens produced by the selective laser sintering technique.The analysis of the determination of the stress intensity factor includes experimental and numerical tests. For this purpose, two geometries of specimens were used. Flat specimens with crack loaded in tension and ring specimens loaded on the inner wall. To understand the influence of geometry, specimens and their identical models were tested with three different ratios between the width of the test specimens and the initial length of the crack. Both types of specimens used for this experiment were made from polyamide PA12 utilizing the SLS (selective laser sintering)