

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

A microscopic image of ceramic particles, showing a transition from white to red. The particles are spherical and densely packed. The top half is white, and the bottom half is red, with a horizontal boundary line.

PROGRAMME and the BOOK of ABSTRACTS

5CSCS-2019

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

Edited by:
Branko Matović
Zorica Branković
Aleksandra Dapčević
Vladimir V. Srdić

Programme and Book of Abstracts of The Fifth Conference of The Serbian Society for Ceramic Materilas **publishes abstracts from the field of ceramics, which are presented at international Conference.**

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Dr. Branko Matović

Dr. Zorica Branković

Prof. Aleksandra Dapčević

Prof. Vladimir V. Srdić

Publisher

Institute for Multidisciplinary Research, University of Belgrade

Kneza Višeslava 1, 11000 Belgrade, Serbia

For Publisher

Prof. Dr Sonja Veljović Jovanović

Printing layout

Vladimir V. Srdić

Press

Faculty of Technology and Metallurgy, Research and Development Centre of Printing Technology, Karnegijeva 4, Belgrade, Serbia

Published: 2019

Circulation: 150 copies

CIP - Каталогизacija у публикацији - Народна библиотека Србије, Београд

666.3/.7(048)

66.017/.018(048)

DRUŠTVO za keramičke materijale Srbije. Konferencija (5 ; 2019 ; Beograd)

Programme ; and the Book of Abstracts / 5th Conference of The Serbian Society for Ceramic Materials, 5CSCS-2019, June 11-13, 2019, Belgrade, Serbia ; [organizers]

The Serbian Society for Ceramic Materials ... [et al.] ; edited by Branko Matović ...

[et al.]. - Belgrade : Institute for Multidisciplinary Research, University, 2019

(Beograd : Faculty of Technology and Metallurgy, Research and Development Centre of Printing Technology). - 139 str. : ilustr. ; 24 cm

Tiraž 150. - Str. 6: Welcome message / Branko Matovic. - Registar.

ISBN 978-86-80109-22-0

a) Керамика - Апстракти

b) Наука о материјалима - Апстракти

c) Наноматеријали - Апстракти

COBISS.SR-ID 276897292

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SPECIAL THANKS TO



Република Србија
МИНИСТАРСТВО ПРОСВЕТЕ,
НАУКЕ И ТЕХНОЛОШКОГ РАЗВОЈА



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NANOINDENTATION STUDY OF Cu DOPED NaCo₂O₄ CERAMICS

Sanja Perać¹, Slavica M. Savić², Sanja Kojić³, Zorica Branković¹,
Goran Branković¹

¹*Institute for Multidisciplinary Research, University of Belgrade,
Belgrade, Serbia*

²*BioSense Institute, Nano and Microelectronics Group, University of Novi Sad,
Novi Sad, Serbia*

³*Faculty of Technical Sciences, Department of Power, Electronics and
Telecommunication, University of Novi Sad, Novi Sad, Serbia*

Thermoelectric materials, such as layered cobalt oxides, have been the subject of many theoretical and experimental investigations in past decade as potential candidates for application in energy conversion. In this work, polycrystalline samples of NaCo_{2-x}Cu_xO₄ (x = 0, 0.01, 0.03, 0.05) were synthesized from the powder precursors obtained by the citric acid complex method (CAC) and mechanochemically assisted solid state reaction method (MASSR). The obtained powders were uniaxially pressed into disc-shaped pellets and subsequently sintered at 880 °C in inert argon atmosphere. Indentation experiments were carried out to investigate mechanical properties. The hardness (H) and the Young's modulus of elasticity (Y) were determined using Agilent Nanoindenter G200. The surface approach velocity of the indenter (Berkovich pyramid) and Poisson ratio were set to 10 nm/s and 0.25, respectively. It was found that the highest Y (65.2 GPa) and H (1.41 GPa) were obtained for the CAC sample containing 1mol% of Cu. These results indicated a significant improvement of mechanical properties even in the case of the sample with the lowest dopant concentration.