15TH ECerS CONFERENCE FOR YOUNG SCIENTISTS IN CERAMICS

CYSC
2023

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FOR YOUNG SCIENTISTS IN CERAMICS

BOOK OF ABSTRACTS

October 11-14, 2023
Faculty of Technology Novi Sad
Novi Sad, Serbia

15th ECerS CONFERENCE for YOUNG SCIENTISTS in CERAMICS

PROGRAMME
and
BOOK OF ABSTRACTS

October 11-14, 2023
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Programme and Book of Abstracts of The ECerS 15th Conference for Young Scientists in Ceramics (CYSC-2023) publishes abstracts from the field of ceramics, which are presented at traditional international Conference for Young Scientists in Ceramics.

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Preface

Dear colleagues and guests we are delighted to welcome you all to Novi Sad, Serbia and the 15th ECerS Conference for Young Scientists in Ceramics. This biannual event is once again jointly organized by the Faculty of Technology Novi Sad, University of Novi Sad and the Young Ceramists Network (YCN) of the European Ceramic Society (ECerS).

The ECerS Conference for Young Scientists in Ceramics is celebrating its 25th anniversary since it started back in 1998 as a national event and now it gathers scientists from all over the world. During all these 25 years the conference has been growing constantly and we are proud to say that it became one of the trademark events in the field of ceramics in Europe.

During the four days of the Conference we will have an opportunity to hear 104 oral presentations given by young scientists together with 12 invited talks and 5 plenary lectures of the more experienced scientists and experts from 29 countries. In addition, we will host a satellite event "Workshop on atomistic calculations in materials science", thoughtfully designed to introduce fundamental computational methods that are accessible to beginners in this field. Thus, we continue to be the venue for the vivid exchange of ideas and knowledge intertwined with fruitful discussions about the one topic that gathers us all - ceramic materials and all its subfields. Young scientists especially have the opportunity to meet with their peers and senior colleagues to promote their work and make new connections that can benefit them throughout their carrier. We have to emphasize that the feedback from our past conferences, which we get from former participants and guests, is more than positive and gives us ever new energy to endure in our mission of bringing young people involved in ceramics closer together. This is why we are confident that you will enjoy your stay in Novi Sad and be able to broaden your knowledge since topics covered by the conference include various aspects of the ceramics including processing, characterisation and application of advanced and traditional ceramics but also cutting edge results in advance manufacturing, high entropy oxides, computer modelling and physics of the ceramic materials and structures.

Our deepest gratitude goes to our sponsors and co-organizers since we would not be able to organize this conference without them. Once again, the JECS Trust Fund of the European Ceramic Society has recognized the significance of the CYSC and became our greatest financial benefactor. Also, we are thankful to the Serbian Ministry of science and technological development which once again endorsed the conference financially. At the end, we would like to thank to all the people in the local organizing committee and colleagues from YCN who participated in the preparations of the Conference.

Editors

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MAGNESIUM SUBSTITUTION WITH NICKEL AND ITS INFLUENCE ON THE SENSING PROPERTIES OF $MgFe_2O_4$

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Mixed spinel ferrites $Mg_xNi_{1-x}Fe_2O_4$ were synthesized via sol-gel combustion synthesis with citric acid as fuel, followed by calcination at 700 °C for 3 hours. Obtained powders were characterized via X-ray diffraction analysis (XRD), X-ray photoelectron (XPS), FTIR and Raman spectroscopy and FESEM microscopy. Elemental composition was examined via energy dispersive spectroscopy (EDS). Humidity sensing properties were tested by measuring AC impedance in a climactic chamber at 25 °C and in the relative humidity range of 40–90%. Temperature sensing properties were tested by measuring DC resistance at 40% RH in the temperature range 40–90 °C.

Synthesized powders were proven to be pure spinel $Fd\bar{3}m$ phase with spherical, slightly agglomerated particles. Substitution of Mg with Ni results in structural changes such as a change in inversion parameter and particle agglomeration, which influences sensing properties of the material. Results show that the sensing properties of magnesium ferrite, which is already a well-established NTC sensor, can be improved by incorporating 10% of nickel in the spinel lattice structure. $Mg_{0.9}Ni_{0.1}Fe_2O_4$ exhibited higher temperature sensitivity and higher sensitivity towards humidity compared to $MgFe_2O_4$, while further substitution of Mg with Ni resulted in the decline of sensing properties, increase in particle size and agglomeration degree.