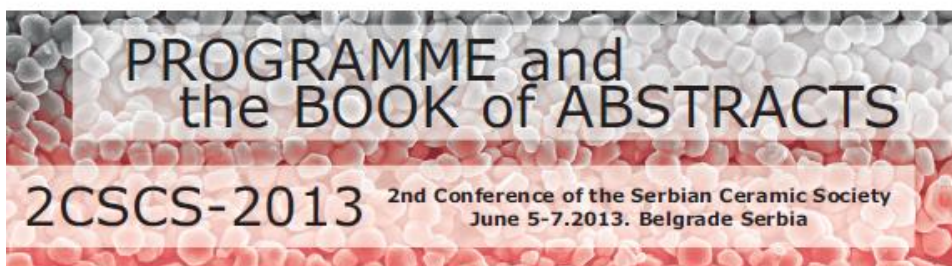


The Serbian Ceramic Society
The Academy of Engineering Sciences of Serbia
Institute for Multidisciplinary Research - University of Belgrade
Institute of Physics - University of Belgrade
Vinča Institute of Nuclear Sciences - University of Belgrade



Edited by:
Snežana Bošković
Vladimir V. Srdić
Zorica Branković

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

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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

FUTURA, Novi Sad, Serbia

CIP – Каталогизација у публикацији
Народна библиотека Србије, Београд

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

SERBIAN Ceramic Society. Conference (2nd ; 2013 ; Beograd)

Program ; and the Book of Abstracts / 2nd Conference of the Serbian Ceramic Society, 2CSCS-2013, June 5-7, 2013, Belgrade, Serbia ; [organizers] The Serbian Ceramic Society ... [et al.] ; edited by Snežana Bošković, Vladimir Srdić, Zorica Branković. - Belgrade : Institute Multidisciplinary Research, 2013 (Novi Sad : Futura). - 102 str. ; 24 cm.

Tiraž 120. – Registar.

ISBN 978-86-80109-18-3

1. Bošković, Snežana [urednik] 2. Serbian Ceramic Society (Beograd)
- a) Керамика - Апстракти b) Наука о материјалима – Апстракти
- c) Наноматеријали - Апстракти

COBISS.SR-ID 198593292

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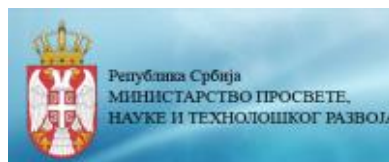
2nd Conference of The Serbian Ceramic Society

**June 5-7, 2013
Belgrade, Serbia
2CSCS-2013**

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**Ministarstvo prosvete, nauke i
tehnološkog razvoja Republike Srbije**
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Real S
Ulica Kralja Petra I bb,
22320 Indija, Srbija
Direktor: Miodrag Stević,
office@real-s.net



Bomex Refractory
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Direktor: Gorica Avramović, dipl.inž.,
gorica.avramovic@bomex.co.rs



NT-MDT Co.
Post Box 158 Building 317-A, Zelenograd,
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Phone: +7 (499) 735-7777
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Mikrolux d.o.o.
Ljudevita Gaja 35
HR 10290 Zaprešić, Hrvatska
mob: +385 91 59 63 596
tel.-fax: +385 1 33 98 905
mail: mikrolux@email.t-com.hr
mikrolux.d.o.o@zg.t-com.hr



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process. The obtained powders were heat treated at 800 °C for 4 h to remove retained organic substances. Afterwards, the powders were uniaxially pressed into pellets and sintered at 1550 °C for 4 h to produce mullite solid solutions. The obtained compositions with up to 15 wt.% of Fe₂O₃ were investigated. XRD analysis confirmed that the powders were amorphous while sintered samples depicted single mullite phase. Also, the lattice parameters of mullite increase with increasing Fe content due to replacement of Al³⁺ - by larger Fe³⁺ -ions in crystal structure. TGA/DSC analysis showed a decrease of crystallization temperature of Fe-doped mullite. Density of sintered samples have increased with enhanced Fe content. Microstructure and composition of powder particles as well as sintered pellets were examined by SEM and EDAX. SEM images indicate that powder particles are highly agglomerated while the grains of sintered pellets have a rod-like shape.

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NANOSTRUCTURED Fe₂O₃/TiO₂ THICK FILMS

O.S. Aleksic¹, Z.Z. Djuric², M.V. Nikolic¹, N. Tasic¹, M. Vukovic¹,
Z. Marinkovic-Stanojevic¹, N. Nikolic¹, P.M. Nikolic²

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

²*Institute of Technical Sciences of SASA, Belgrade, Serbia*

Thick films of nanostructured pure TiO₂, α-Fe₂O₃, Fe₂O₃/TiO₂ (ratio 2:3 and 3:2) and a hetero-junction in the form of a TiO₂ layer over a Fe₂O₃ layer have been fabricated by screen printing technology on a glass substrate. The pastes used for film preparation were obtained by adding an organic vehicle to the oxide powders together with a small percentage of binding glass frit. Samples were dried up to 100°C and sintered at 650°C/60 minutes. Structural, morphological and optical studies have been carried out using XRD, SEM, EDS analysis and UV/Vis spectroscopy. Fe₂O₃/TiO₂ thick films had a homogenous nanostructure and no new compounds were formed. Indirect band gaps were determined from the measured transmission spectra.