

11TH CONFERENCE FOR YOUNG SCIENTISTS IN CERAMICS



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Satellite event:
ESR COST IC1208 Workshop

BOOK OF ABSTRACTS

October 21-24, 2105
Faculty of Technology
Novi Sad, Serbia

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PROGRAMME and BOOK OF ABSTRACTS

**October 21-24, 2015
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Prof. Dr. Vladimir V. Srdić

Prof. Dr. José M. Oton

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SYNTHESIS, OPTICAL AND MAGNETIC PROPERTIES STUDIES OF MULTYFERROIC BiFeO₃

M. Čebela¹, R. Hercigonja², S. Ilić¹, M. Mirković¹, J. Pantić¹,
J. Luković¹, B. Matović¹

¹*"Vinca" Institute of Nuclear Sciences, Materials Science Laboratory,
University of Belgrade, Serbia*

²*Faculty of Physical Chemistry, University of Belgrade, Serbia*

Nanosized bismuth ferrite powder has a potential application in the production of lead free piezoelectric materials for actuators as well as magnetoelectric sensors. The simple, low-costing and energy-saving hydrothermal method has advantages over the conventional methods. BiFeO₃ powders were made using Bi(NO₃)₃·5H₂O and Fe(NO₃)₃·9H₂O as starting material and 8 M KOH as mineralizer. The particle size and morphology were analyzed using scanning electron microscopy (SEM). The phase composition of obtained samples was determined by X-ray diffraction (XRD) analysis. It revealed that synthesized material crystallize in space group R3c with cell parameters $a = b = 5.5780(10)$ Å and $c = 13,863(3)$ Å. IR and Raman spectroscopy have been performed on the synthesized bismuth ferrite (BFO) powders in order to confirm the formation of pure and well-crystallized BFO nanocrystallites. ⁵⁷Fe Mössbauer spectroscopy was performed in order to provide information on Fe cation arrangement in the BiFeO₃ phase. The magnetic and optical properties of properties of BFO samples were characterized by SQUID magnetometry, and ultraviolet–visible spectroscopy. Temperature dependence of magnetization shows antiferromagnetic-paramagnetic phase transition at $T_N = 220$ K, while below this temperature weak ferromagnetic ordering is detected.

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ZnO BASED FILMS WITH SENSING PROPERTIES

C. Vlăduț, S. Mihaiu, M. Niculescu, J. Calderon-Moreno, I. Atkinson, P. Chesler,
M. Gartner, M. Zaharescu

*"Ilie Murgulescu" Institute of Physical Chemistry, Romanian Academy,
Bucharest, Romania*

ZnO and Zn-Sn-O films are playing an increasingly role in many applications as transparent electrode of solar cell, flat panel devices, infrared (IR) reflectors, organic light emitting diode (OLED), thin film transistor-liquid crystal display (TFT-LCD) and gas sensors. Sol-gel processes give the ability to produce ZnO and Zn-Sn-O films in a simple, low cost and highly controlled way. It is well known that the reagents, solvent,