Faculty of Technology
University of Novi Sad

Conference for Young Scientists in Ceramics

10th Students' Meeting
and
3rd ESR COST MP0904 Workshop

Book of Abstracts

Conference for Young Scientists in Ceramics

SM 2013

COST SIMUFER

Novi Sad, Serbia, November 6-9, 2013

CONFERENCE for YOUNG SCIENTISTS in CERAMICS

The Tenth Students' Meeting, SM-2013
The Third ESR Workshop, COST MP0904

PROGRAMME
and
BOOK OF ABSTRACTS

November 6-9, 2013
Novi Sad, Serbia

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M11

CHARACTERIZATION OF $BiFeO_3$ NANOPOWDER OBTAINED BY HYDROTHERMAL SYNTHESIS

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The influence of processing parameters on phase formation and particle size of hydrothermally synthesized $BiFeO_3$ powders was investigated. $BiFeO_3$ powder was synthesized by dissolving bismuth nitrate and iron nitrate in KOH solution. Single-phase perovskite $BiFeO_3$ has been formed at a temperature of 200 °C in a 6 h reaction period. The phase composition of the samples was studied by micro-Raman spectroscopy (RS) and was compared with X-ray powder diffraction (XRD) results. It revealed that synthesized material crystallize in space group *R*3*c* with cell parameters $a = b =$ 5.5780(10) Å and c = 13,863(3) Å. The particle size and distribution was determined by small-angle X-ray scattering (SAXS). The powders behavior was characterized by TG/DTA. The magnetic behavior of synthesized material is done by means of SQUID device and using a vibrating sample magnetometer (VSM).

M12

MULTIFERROIC PFN MATERIALS ENERGY CONVERSION CHARACTERIZATION

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Multiferroic materials energy conversion characterization is concerned with multifunctional properties of materials, a topic that is fascinating from the scientific point of view and important for the modern technology. We are present a detailed report of the relationships between magnetic field intensity and output characteristics of fabricated one phase $PbFe_{1/2}Nb_{1/2}O_3$, for magnetic field driven energy transducers. $PbFe_{1/2}Nb_{1/2}O_3$ (PFN) pervskite multiferroic materials exhibit magnetic and ferroelectric ordering and coupling between them in a single phase at room temperature. In the PFN ceramics, ions of iron (Fe), niobium (Nb) are substituted randomly at the octahedral B positions in pervskite ABO_3 structure, whereas lead (Pb) goes into the A position. Iron has a naturally magnetic moment, consequently, the angles between the connecting lines between B cation and oxygen are equal to 180 degree, providing optimum conditions for magnetic ordering due to the indirect exchange interaction. So that, the coupling between magnetization and polarization is achieved due to ferrum ions addition, that rise sufficiently sensitivity to magnetic field not decreasing the dielectric losses.