

MATERIALS RESEARCH SOCIETY OF SERBIA
INSTITUTE OF TECHNICAL SCIENCES OF SASA

Programme and the Book of Abstracts

**SEVENTEENTH YOUNG RESEARCHERS' CONFERENCE
MATERIALS SCIENCE AND ENGINEERING**

Belgrade, December 5–7, 2018

Materials Research Society of Serbia

<http://www.mrs-serbia.org.rs/index.php/young-researchers-conference>

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&
Institute of Technical Sciences of SASA**

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Aim of the Conference

Main aim of the conference is to enable young researchers (post-graduate, master or doctoral student, or a PhD holder younger than 35) working in the field of materials science and engineering, to meet their colleagues and exchange experiences about their research.

Topics

Biomaterials
Environmental science
Materials for high-technology applications
Nanostructured materials
New synthesis and processing methods
Theoretical modelling of materials

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Results of the Conference

Beside printed «Program and the Book of Abstracts», which is disseminated to all conference participants, selected and awarded peer-reviewed papers will be published in journal “Tehnika – Novi Materijali”. The best presented papers, suggested by Session Chairpersons and selected by Awards Committee, will be proclaimed at the Closing Ceremony. Part of the award is free-of-charge conference fee at YUCOMAT 2019.

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11-1

Influence of Ho doping on magnetic properties of bismuth ferrite nanopowders

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Bismuth ferrite (BiFeO₃) is one of the most studied multiferroic systems mainly because of BiFeO₃ material possesses both antiferromagnetic and ferroelectric properties observed at room temperature, which opens great possibilities for industrial and technological application. The influence of Ho doping on the crystal structure and magnetic properties of bismuth ferrite (BFO) nanopowders was investigated. BiFeO₃ and Bi_{1-x}Ho_xFeO₃ ultrafine nanopowders were synthesized by the hydrothermal method. Here we use simple, low-cost and energy-saving hydrothermal method, which has advantages over the conventional methods. The diffraction pattern was recorded at room temperature and atmospheric pressure in the absence of any re-heating of the sample. A fitting refinement procedure using the Rietveld method was performed which showed the incorporation of Ho³⁺ ions in the BiFeO₃ crystal lattice, where they substitute Bi³⁺ ions. All the samples belong to R3c space group. Magnetic behavior of synthesized materials was investigated by SQUID magnetometer in wide temperature interval (2-800 K). Temperature dependence of magnetization shows antiferromagnetic transition at T_N ~ 630 K and below this temperature weak ferromagnetism is observed, which becomes enhanced with the Ho-doping.