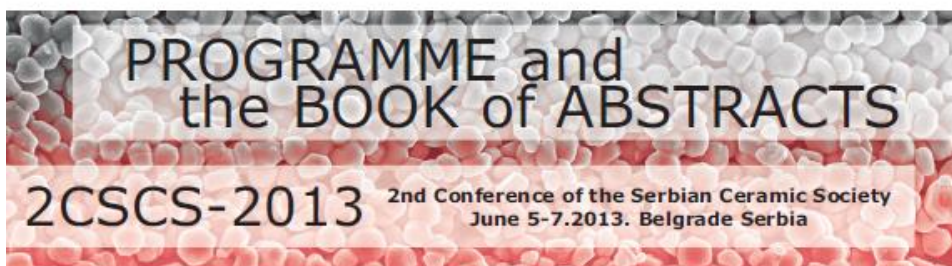


The Serbian Ceramic Society
The Academy of Engineering Sciences of Serbia
Institute for Multidisciplinary Research - University of Belgrade
Institute of Physics - University of Belgrade
Vinča Institute of Nuclear Sciences - University of Belgrade



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Snežana Bošković
Vladimir V. Srdić
Zorica Branković

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HYDROTHERMAL SYNTHESIS AND MAGNETIC STUDIES OF MULTIFERROIC BiFeO₃

Maria Čebela, Marija Prekajski, Jelena Pantić, Mia Omerašević,
Branko Matović

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Pure-phase BiFeO₃ powders were prepared by applying low-hydrothermal synthesis route. Bi(NO₃)₃·5H₂O and Fe(NO₃)₃·9H₂O were used as starting materials and 8 M KOH was utilized as mineralizer. 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. Morphology of synthesized BiFeO₃ powders were analyzed by using scanning electron microscopy (SEM) while the particle size and distribution was determined by small – angle X-ray scattering (SAXS). Obtained powders were also characterized by SQUID techniques, which showed that synthesized material is magnetic.

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THERMAL SENSOR FOR WATER WITH A RANGE CONSTANT VOLTAGE SUPPLY

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A thermal sensor for water was formed using two thick film segmented thermistors. The first thermistor was used to measure the incoming water temperature. The second thermistor was self-heated at a constant voltage and measured the water volume flow. The range constant voltage (RCV) power source changes the power supply in steps of 2-3 V for a change in 5° of input water temperature. Thick film segmented thermistors were produced by screen printing of thermistor paste composed of Cu_{0.2}Ni_{0.5}Zn_{1.0}Mn_{1.3}O₄ powder obtained by a combination of mechanical activation and thermal treatment, an organic vehicle and glass frit. The sensor system response to changes in the water volume flow rate were measured and analyzed in a static regime and also for different volume flow rates and temperatures of incoming water from the water supply mains.