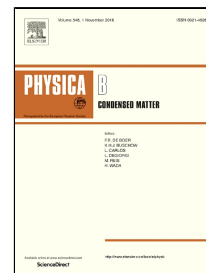


Accepted Manuscript

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PII: S0921-4526(18)30603-3

DOI: 10.1016/j.physb.2018.09.030

Reference: PHYSB 311070

To appear in: *Physica B: Physics of Condensed Matter*

Received Date: 14 July 2018

Accepted Date: 18 September 2018

Please cite this article as: Muhammad Asif, Mubashar Nadeem, Muhammad Imran, Sajjad Ahmad, Sara Musaddiq, Waseem Abbas, Zaheer Abbas Gilani, Muhammad Kashif Sharif, Muhammad Farooq Warsi, Muhammad Azhar Khan, Structural, magnetic and dielectric properties of Ni-Co doped BiFeO₃ multiferroics synthesized via micro-emulsion route, *Physica B: Physics of Condensed Matter* (2018), doi: 10.1016/j.physb.2018.09.030

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Structural, magnetic and dielectric properties of Ni-Co doped BiFeO₃ multiferroics synthesized via micro-emulsion route

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Abstract

BiFe_{1-x}Ni_xCo_xO₃ multiferroics (x = 0.00, 0.05, 0.1, 0.15 and 0.2) were fabricated by micro-emulsion process. Differential scanning calorimeter (DSC) plot exhibited broad exothermic peaks at 264.33 °C and 320.8 °C. X-ray diffraction (XRD) patterns indicated the rhombohedral phase with the R3c phase group. The crystallite size ranges from 48 to 11 nm. Bulk and X-ray densities were optimized by increasing cobalt and nickel concentration. Magnetic parameters such as retentivity (M_r), saturation magnetization (M_s) and coercivity (H_c) were studied for different compositions of BiFe_{1-x}Ni_xCo_xO₃. BiFe_{0.6}Ni_{0.4}Co_{0.4}O₃ behaves as ferromagnetic material having maximum saturation magnetization (10.6 emu/g) and maximum M_r (5.2 emu/g). Enhanced magnetic properties were attributed to the difference in magnetic moment of doping

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