Effect of drying temperature on structural, dielectric, optical and magnetic properties of sol-gel derived BiFeO$_3$ nanoparticles

M. Ranjbar, M.E. Ghazi*, M. Izadifard

Department of Physics, Shahrood University of Technology, Shahrood, Iran

(Received: 5/4/2017, in revised form: 19/8/2017)

Abstract: In this research the effect of drying temperature on structural, dielectric, optical and magnetic properties of sol-gel derived BiFeO$_3$ nanoparticles were investigated. The samples were prepared at different drying temperatures, 80, 100, 120 and 150 °C and calcined at 500 °C for 4 h. XRD analysis confirms the formation of distorted provskite BiFeO$_3$ structure with the R3c space group. The result also showed the best sample is the one dried at 120 °C with 96.7% purity. VSM analysis confirms that all the samples show ferromagnetism behavior.

Keyword: Bismuth ferrite; structural properties; dielectric properties; bandgap; magnetic properties.

*Corresponding author, Tel.: 09123731505, Fax: 02332395270, E-mail: mghazi@shahroodut.ac.ir