

Accepted Manuscript

Investigating the Electric and Magnetic Transport Properties of $\text{Na}_{0.5}\text{Bi}_{0.5}\text{TiO}_3$ – $\text{BaFe}_{12}\text{O}_{19}$ Nanocomposite System for Magnetoimpedance Sensor Application

Ranjit Pattanayak, Surya Prakash Ghosh, Subhajit Raut, Sourav Kuila, Simanchalo Panigrahi

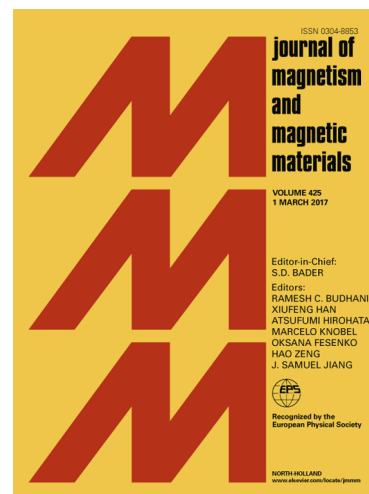
PII: S0304-8853(18)31282-4
DOI: <https://doi.org/10.1016/j.jmmm.2018.06.003>
Reference: MAGMA 64023

To appear in: *Journal of Magnetism and Magnetic Materials*

Received Date: 29 April 2018
Revised Date: 31 May 2018
Accepted Date: 3 June 2018

Please cite this article as: R. Pattanayak, S.P. Ghosh, S. Raut, S. Kuila, S. Panigrahi, Investigating the Electric and Magnetic Transport Properties of $\text{Na}_{0.5}\text{Bi}_{0.5}\text{TiO}_3$ – $\text{BaFe}_{12}\text{O}_{19}$ Nanocomposite System for Magnetoimpedance Sensor Application, *Journal of Magnetism and Magnetic Materials* (2018), doi: <https://doi.org/10.1016/j.jmmm.2018.06.003>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.



Investigating the Electric and Magnetic Transport Properties of $\text{Na}_{0.5}\text{Bi}_{0.5}\text{TiO}_3$ – $\text{BaFe}_{12}\text{O}_{19}$ Nanocomposite System for Magnetoimpedance Sensor Application

Ranjit Pattanayak^{1*}, Surya Prakash Ghosh¹, Subhajit Raut¹, Sourav Kuila¹, Simanchalo Panigrahi¹

¹Department of Physics and Astronomy, National Institute of Technology, Rourkela 769008, India

* ranjit.p20@gmail.com

Abstract:

Polycrystalline [90 wt% $\text{Na}_{0.5}\text{Bi}_{0.5}\text{TiO}_3$ (NBT) - 10 wt% $\text{BaFe}_{12}\text{O}_{19}$ (BaM)] nanocomposite system has been fabricated with the help of solid state reaction method. The Rietveld refinement of X-ray diffraction (XRD) pattern and Transmission electron microscopy (TEM) have been provided the information about the pure phase formation and grain size of desired composite system. Microstructural electric and magnetic transport properties have been carried by complex impedance spectroscopic technique. From electric transport properties it is interestingly observed that, the system has shown double positive temperature coefficient of resistance (PTCR) behaviour due to different transport mechanism of BaM-NBT and NBT-NBT interfaces in different temperature ranges. Magnetoimpedance study has been revealed the negative magnetoresistance [MR (%)] behaviour of both the interfaces. From magnetotransport properties of this nanocomposite system it is explored that BaM-NBT interfaces obey the small polaron tunnelling where NBT-NBT interfaces obey the overlapping large polaron tunneling mechanism for charge transportation.

Keywords: Composite, Impedance, Modulus, Magnetoimpedance

Download English Version:

<https://daneshyari.com/en/article/8152619>

Download Persian Version:

<https://daneshyari.com/article/8152619>

[Daneshyari.com](https://daneshyari.com)