

Accepted Manuscript

Alteration of magnetic behavior and microstructural distortion of EuMnO_3 by partial substitution of Eu with monovalent Na

Anshuman Nandy, Tanusree Kar, Satya Ranjan Bhattacharyya, Dipankar Das,
Swapan Kumar Pradhan

PII: S0925-8388(17)31488-3

DOI: [10.1016/j.jallcom.2017.04.278](https://doi.org/10.1016/j.jallcom.2017.04.278)

Reference: JALCOM 41682

To appear in: *Journal of Alloys and Compounds*

Received Date: 27 September 2016

Revised Date: 3 March 2017

Accepted Date: 26 April 2017

Please cite this article as: A. Nandy, T. Kar, S.R. Bhattacharyya, D. Das, S.K. Pradhan, Alteration of magnetic behavior and microstructural distortion of EuMnO_3 by partial substitution of Eu with monovalent Na, *Journal of Alloys and Compounds* (2017), doi: 10.1016/j.jallcom.2017.04.278.

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.



Alteration of magnetic behavior and microstructural distortion of EuMnO_3 by partial substitution of Eu with monovalent Na

Anshuman Nandy^a, Tanusree Kar^b, Satya Ranjan Bhattacharyya^c, Dipankar Das^d,
Swapan Kumar Pradhan^{a,*}

^a*Materials Science Division, Dept. of Physics, The University of Burdwan, W.B, India*

^b*Indian Association for Cultivation of Science, Kolkata- 700032, W.B., India*

^c*Saha Institute of Nuclear Physics, 1/AF Bidhannagar, Kolkata-700064, W.B., India*

^d*UGC-DAE Consortium for Scientific Research, III/LB-8, Bidhannagar, Kolkata -700098, India*

**corresponding author e-mail: skp_bu@yahoo.com*

Abstract

Effect of monovalent sodium doping on inherent lattice distortion and magnetic properties of EuMnO_3 is reported in this work. Perovskite structured $\text{Eu}_{1-x}\text{Na}_x\text{MnO}_3$ ($x=0.0, 0.1, 0.2$) compounds are prepared by conventional sol-gel method. Inherent structural distortion of EuMnO_3 and its modification by Na doping is investigated by analyzing powder X-ray diffraction patterns of these compounds. Numerical values of different structural and microstructural parameters related to structural distortion are evaluated by Rietveld analysis of XRD patterns. Different distortions in MnO_6 octahedra are shown by 3D atomic models. The value of Goldschmidt tolerance factor is calculated as 0.8711 for the undoped compound and 0.8870 and 0.8856 for the 10mol% and 20mol% Na doped compounds respectively. Na doping stabilizes the orthorhombic perovskite structure and reduces both octahedral and Jahn-Teller

Download English Version:

<https://daneshyari.com/en/article/5459183>

Download Persian Version:

<https://daneshyari.com/article/5459183>

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