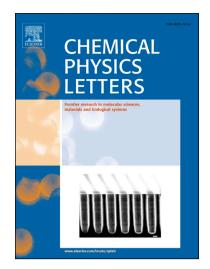
Accepted Manuscript

Research paper

Magnetoelastic properties of terbium substituted cobalt ferrite

Shekhar D. Bhame, P.A.Joy

PII:S0009-2614(17)30767-4DOI:http://dx.doi.org/10.1016/j.cplett.2017.08.006Reference:CPLETT 35016To appear in:Chemical Physics LettersReceived Date:15 May 2017Accepted Date:4 August 2017



Please cite this article as: S.D. Bhame, P.A.Joy, Magnetoelastic properties of terbium substituted cobalt ferrite, *Chemical Physics Letters* (2017), doi: http://dx.doi.org/10.1016/j.cplett.2017.08.006

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.

ACCEPTED MANUSCRIPT

Magnetoelastic properties of terbium substituted cobalt ferrite Shekhar D. Bhame¹* and P.A.Joy² <u>shekhar.bhame@sitpune.edu.in</u>

 Symbiosis Institute of Technology, Symbiosis International University, Lavale, Pune, 412115, India.

 Physical and Materials Chemistry Division, National Chemical Laboratory, Pune 411008, India.

Abstract:

The magnetic properties of terbium substituted cobalt ferrites $CoFe_{2-x}Tb_xO_4$ (x = 0, 0.05, 0.1, 0.15 and 0.2) prepared by conventional solid state method are studied. The coercivity showed marked increase up to x = 0.1 and saturation magnetization decreased with increasing terbium content. Magnetostriction measurements did not show much decrease in the maximum value of strain but significant increase in the slope of magnetostriction was observed for x = 0.15 with moderate magnetostriction of around 144 ppm. The observed magnetic and magnetostrictive properties can be explained on the basis of structural and microstructural changes arising because of terbium substitution.

Keyword: Magnetostriction, Ferrite, Rare earth

1. Introduction

Spinel ferrites have been used for long time for various high frequency applications such as in transformers and in telecommunications [1-2]. Cobalt ferrite $\text{Co}^{II}\text{Fe}_2^{III}\text{O}_4$, is an inverse spinel where in the trivalent Fe ions preferentially occupy both the tetrahedral and octahedral sites whereas the divalent Cobalt ions occupy the octahedral site. It possesses high magnetocrystalline anisotropy and high magnetostrictive strains [3]. It has showed remarkably promising magnetostrictive strains which make it a suitable material for stress sensing

Download English Version:

https://daneshyari.com/en/article/5377576

Download Persian Version:

https://daneshyari.com/article/5377576

Daneshyari.com