

Accepted Manuscript

Research articles

Structural and magnetic properties of $\text{ZnFe}_{2-x}\text{In}_x\text{O}_4$ nanoparticles synthesized by solution combustion method

M. Hasheminasari, S.M. Masoudpanah, S.M. Mirkazemi, F. Bayat

PII: S0304-8853(17)31214-3

DOI: <http://dx.doi.org/10.1016/j.jmmm.2017.07.001>

Reference: MAGMA 62931

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

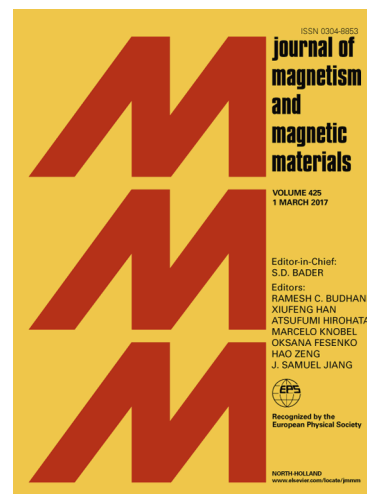
Received Date: 18 April 2017

Revised Date: 30 June 2017

Accepted Date: 1 July 2017

Please cite this article as: M. Hasheminasari, S.M. Masoudpanah, S.M. Mirkazemi, F. Bayat, Structural and magnetic properties of $\text{ZnFe}_{2-x}\text{In}_x\text{O}_4$ nanoparticles synthesized by solution combustion method, *Journal of Magnetism and Magnetic Materials* (2017), doi: <http://dx.doi.org/10.1016/j.jmmm.2017.07.001>

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.



Structural and magnetic properties of $\text{ZnFe}_{2-x}\text{In}_x\text{O}_4$ nanoparticles synthesized by solution combustion method

M. Hasheminasari^{*}, S. M. Masoudpanah, S. M. Mirkazemi, F. Bayat

School of Metallurgy & Materials Engineering, Iran University of Science and Technology (IUST), Narmak, Tehran, Iran

Abstract

$\text{ZnFe}_{2-x}\text{In}_x\text{O}_4$ ($x=0, 0.05, 0.1$ and 0.15) nanoparticles have been prepared by solution combustion synthesis method. The effects of In^{3+} substitution on the cation distribution between tetrahedral and octahedral sites in the spinel structure, and on the magnetic properties were investigated by X-ray diffraction, Raman spectroscopy, Mössbauer spectroscopy and vibrating sample magnetometer methods. The results showed that the indium preferentially occupied the tetrahedral sites and pushed Fe^{3+} cations to the octahedral sites. The magnetic measurements revealed that the saturation magnetization decreased from 11.8 to 2.2 emu/g, because of the reduction in total moments with the In^{3+} substitution and redistribution of cations between the tetrahedral and octahedral sites.

Keywords: Zinc ferrite; Indium; Cation distribution; Magnetic properties;

^{*} Corresponding author: e-mail: mhashemi@iust.ac.ir, Phone: +98 21 77240540, Fax: +98 21 77240480

Download English Version:

<https://daneshyari.com/en/article/5490259>

Download Persian Version:

<https://daneshyari.com/article/5490259>

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