

## Accepted Manuscript

Rietveld refinement, morphology analysis, optical and magnetic properties of magnesium-zinc ferrite nanofibers

N. Ghazi, Hossein Mahmoudi Chenari, F.E. Ghodsi

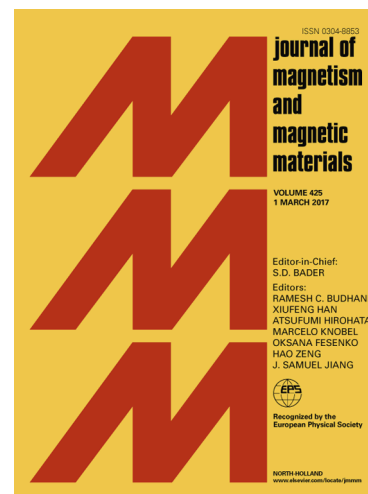
PII: S0304-8853(18)31452-5  
DOI: <https://doi.org/10.1016/j.jmmm.2018.07.084>  
Reference: MAGMA 64190

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

Received Date: 12 May 2018  
Revised Date: 14 July 2018  
Accepted Date: 30 July 2018

Please cite this article as: N. Ghazi, H. Mahmoudi Chenari, F.E. Ghodsi, Rietveld refinement, morphology analysis, optical and magnetic properties of magnesium-zinc ferrite nanofibers, *Journal of Magnetism and Magnetic Materials* (2018), doi: <https://doi.org/10.1016/j.jmmm.2018.07.084>

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.



## Rietveld refinement, morphology analysis, optical and magnetic properties of magnesium-zinc ferrite nanofibers

N. Ghazi, Hossein Mahmoudi Chenari\*, F. E. Ghodsi

Department of physics, Faculty of science, University of Guilan, Namjoo Ave, Po Box 41335-1914, Rasht, Iran

### Abstract

The magnesium-zinc ferrite ( $\text{Mg}_{1-x}\text{Zn}_x\text{Fe}_2\text{O}_4$ ) nanofibers (with  $x=0, 0.05, 0.10$ , and  $0.15$ ) were successfully prepared by the electrospinning technique followed by calcinations at temperature  $550^\circ\text{C}$ . The structural, morphological, optical properties and magnetic characterization of the prepared nanofibers were studied by X-ray diffraction (XRD), scanning electron microscopy (SEM), Fourier Transform Infrared (FTIR), DRS and VSM. The XRD pattern has been analyzed employing Rietveld technique and revealed the diffraction peaks are mainly assigned to the cubic structure of the  $\text{MgFe}_2\text{O}_4$  phase. The SEM images exhibit fabrication of the smooth and free of beads nanofibers with average diameter ranged from  $180\pm 20$  to  $100\pm 20$  nm. The absorption spectra and optical band gap were estimated by diffuse reflectance spectroscopy (DRS). DRS study showed an increase in the band gap energy of  $\text{MgFe}_2\text{O}_4$  nanofibers upon increase in doping concentration. Magnetic properties of the pure  $\text{MgFe}_2\text{O}_4$  and 10% Zn-doped  $\text{MgFe}_2\text{O}_4$  nanofibers were characterized by using VSM magnetometer. Magnetic results showed saturation magnetism and eminence decrease with Zn doping.

**Keywords:** magnesium-zinc ferrite; Nanofibers, Electrospinning, XRD, SEM, FT-IR, DRS, VSM

\*Corresponding author: H. Mahmoudi Chenari

E-mail address: mahmoudi\_hossein@guilan.ac.ir, h.mahmoudiph@gmail.com

Download English Version:

<https://daneshyari.com/en/article/8152468>

Download Persian Version:

<https://daneshyari.com/article/8152468>

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