

Accepted Manuscript

Research articles

Dual Control on Structure and Magnetic Properties of Mg ferrite: Role of Swift Heavy Ion Irradiation

S. Raghuvanshi, P. Tiwari, S.N. Kane, D.K. Avasthi, F. Mazaleyrat, Tetiana Tatarchuk, Ivan Mironyuk

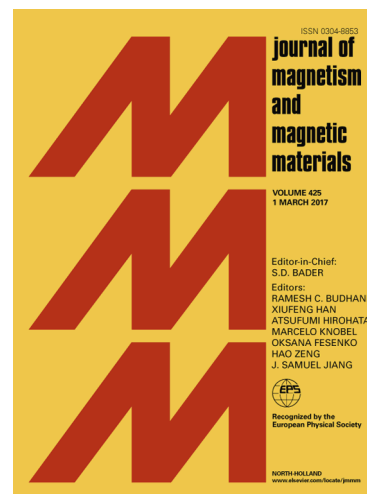
PII: S0304-8853(18)32981-0
DOI: <https://doi.org/10.1016/j.jmmm.2018.10.004>
Reference: MAGMA 64415

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

Received Date: 15 September 2018
Revised Date: 30 September 2018
Accepted Date: 1 October 2018

Please cite this article as: S. Raghuvanshi, P. Tiwari, S.N. Kane, D.K. Avasthi, F. Mazaleyrat, T. Tatarchuk, I. Mironyuk, Dual Control on Structure and Magnetic Properties of Mg ferrite: Role of Swift Heavy Ion Irradiation, *Journal of Magnetism and Magnetic Materials* (2018), doi: <https://doi.org/10.1016/j.jmmm.2018.10.004>

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.



Dual Control on Structure and Magnetic Properties of Mg ferrite: Role of Swift Heavy Ion Irradiation

S. Raghuvanshi^a, P. Tiwari^{a,b}, S. N. Kane^a, D. K. Avasthi^c, F. Mazaleyrat^d,
Tetiana Tatarchuk^{e,*}, Ivan Mironyuk^f

^a Magnetic Materials Laboratory, School of Physics, D. A. University, Khandwa Road Campus, Indore-452001, India

^b Department of Physics, Prestige Institute of Engineering Management and Research, Indore - 452010, India

^c Amity University, Noida 201313, Uttar Pradesh, India

^d SATIE, ENS Cachan, CNRS 8029, University Paris-Saclay, 61 Av. du Pdt. Wilson, F-94230, Cachan, France

^e Educational and Scientific Center of Material Science and Nanotechnology, Vasyl Stefanyk Precarpathian National University, Ivano-Frankivsk, 76018, Ukraine

^f Department of Chemistry, Vasyl Stefanyk Precarpathian National University, Ivano-Frankivsk, 76018, Ukraine

S. Raghuvanshi : roje_20@yahoo.co.in

P. Tiwari: priyanka.tiwari91092@gmail.com

S. N. Kane: kane_sn@yahoo.com

D. K. Avasthi: dka4444@gmail.com

F. Mazaleyrat: frederic.mazaleyrat@ens-paris-saclay.fr

Tetiana Tatarchuk : tatarchuk.tetyana@gmail.com

Ivan Mironyuk : myrif555@gmail.com

* Corresponding author

Abstract

Effect of swift heavy ion irradiation on MgFe₂O₄ (annealed at 450 °C/3hour) sample prepared by a sol-gel auto-combustion procedure has been studied. Single phase samples were irradiated with 120 MeV ²⁸Si⁹⁺ with ion fluence: 1×10¹¹, 1×10¹², and 1×10¹³ ions/cm² to monitor its effect on the structure, cation distribution, and magnetic properties. Electronic energy loss induced modifications of cation distribution, structural, magnetic properties were examined by XRD, VSM, FE-SEM, and EDS. XRD measurements show the formation of single phase nanocrystalline mixed cubic spinel structure (grain size 31–35 nm). Observed slight changes of experimental lattice parameter with increasing irradiation dose is ascribable to the migration of

Download English Version:

<https://daneshyari.com/en/article/11026358>

Download Persian Version:

<https://daneshyari.com/article/11026358>

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