

Accepted Manuscript

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PII: S0925-8388(17)32215-6

DOI: [10.1016/j.jallcom.2017.06.216](https://doi.org/10.1016/j.jallcom.2017.06.216)

Reference: JALCOM 42285

To appear in: *Journal of Alloys and Compounds*

Received Date: 25 March 2017

Revised Date: 25 May 2017

Accepted Date: 20 June 2017

Please cite this article as: H. Nakhaei Motlagh, G. Rezaei, Monte Carlo simulation of giant magneto-impedance effect in amorphous ferromagnetic thin films, *Journal of Alloys and Compounds* (2017), doi: 10.1016/j.jallcom.2017.06.216.

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Monte Carlo simulation of giant magneto- impedance effect in amorphous ferromagnetic thin films

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Abstract

A three dimensional model for the giant- magneto impedance effect in amorphous ultra- thin films with AB_xC_{1-x} ferromagnetic compounds is presented. For this purpose, we have simulated magnetic properties of the system by using the Monte Carlo technique in the framework of the Ising model. In our simulations, the influence of temperature and concentration on the magnetic properties of the system such as magnetization, critical point, hysteresis loop, coercivity and magneto- impedance effect are investigated. The electrical conductivity and frequency dependence of the giant- magneto impedance ratio are also examined.

Keywords: Giant- magneto impedance effect; Ising model; Monte Carlo simulation; Magnetic thin film.

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