

## Monte Carlo Simulation of Magnetic Properties in Bit Patterned Media

**Authors :** O. D. Arbeláez-Echeverri, E. Restrepo-Parra, J. C. Riano-Rojas

**Abstract :** A two dimensional geometric model of Bit Patterned Media is proposed, the model is based on the crystal structure of the materials commonly used to produce the nano islands in bit patterned materials and the possible defects that may arise from the interaction between the nano islands and the matrix material. The dynamic magnetic properties of the material are then computed using time aware integration methods for the multi spin Hamiltonian. The Hamiltonian takes into account both the spatial and topological disorder of the sample as well as the high perpendicular anisotropy that is pursued when building bit patterned media. The main finding of the research was the possibility of replicating the results of previous experiments on similar materials and the ability of computing the switching field distribution given the geometry of the material and the parameters required by the model.

**Keywords :** nanostructures, Monte Carlo, pattern media, magnetic properties

**Conference Title :** ICMMM 2015 : International Conference on Magnetism and Magnetic Materials

**Conference Location :** Barcelona, Spain

**Conference Dates :** August 17-18, 2015