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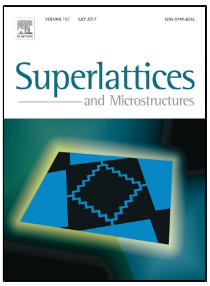

Magnetic properties of multilayered with alternating magnetic wires with the mixed spins-2 and 5/2 ferrimagnetic Ising model

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Magnetic properties of multilayered with alternating magnetic wires with the mixed spins-2 and 5/2 ferrimagnetic Ising model

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Abstract

The magnetic properties of Multilayered with alternating magnetic wires with the mixed spins-2 and 5/2 ferrimagnetic Ising model have been studied using the Monte Carlo simulations. We have given the ground state phase diagrams of a mixed Ising model on a multilayered with alternating magnetic wires with the mixed spins S (±2, ±1,0) and σ(±5/2, ±3/2,±1/2). The proposed Hamiltonian includes exchange interactions, crystal field and external magnetic field. The reduced transition temperature is deduced for a fixed value of layers. The effect of the exchange interactions and the crystal field on the magnetization of several layers has been investigated for a fixed values of layer with spin-3/2 and varying the layer values with spin-2. Magnetic hysteresis cycles of multilayered with alternating magnetic wires with the mixed spins-2 and 5/2 ferrimagnetic Ising model for several of exchange interactions between the mixed spins (S and σ), sizes of layer L_1 and temperatures values have been established.

Keywords: Bilayers nanowires; Ising model; Monte Carlo simulation; Magnetic hysteresis.