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Magnetic properties of ferro-ferrimagnetic ternary alloys with $A_y(B_xC_{1-x})_{1-y}$ amorphous structures: Effects of concentration, temperature and magnetic field

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Abstract

Magnetic properties of mixed spin (3/2, 1, 1/2) ferro-ferrimagnetic ternary alloys of the type $A_y(B_xC_{1-x})_{1-y}$ are investigated, by means of the Monte Carlo simulation. For this purpose, the influence of concentration, temperature and an external magnetic field on magnetization, magnetic hysteresis loop, magnetic susceptibility and specific heat of ternary alloys with amorphous structures are examined. We found that the compensation temperature exists for some concentrations. Also, it is observed that these ferrimagnetic ternary alloys indicate double hysteresis loop which have been seen theoretically and experimentally in different magnetic alloys. The thermal behavior of magnetization, hysteresis loop and specific heat are also investigated.

Keywords: Ferrimagnetism; Ternary alloys; Ising model; Monte Carlo

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