

Poster Presentation

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Change of magnetic properties of (Fe_{1-x}Mn_x)₇₅P₁₅C₁₀ amorphous alloys ribbon

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Magnetic properties of amorphous (Fe_{1-x}Mn_x)₇₅P₁₅C₁₀ alloy ribbon where x represents the manganese content in the alloy, have been investigated as a function of temperature and magnetic field. It is observed that the alloys have exhibited soft magnetic properties, such as low coercivity and high magnetic permeability of the order of 22×10^3 with low magnetic loss for x=0. [1] The value of coercive force is found to have increased and the effective permeability has decreased with increasing Mn content. The observed magnetic properties have shown a transition from the ferromagnetic Fe₇₅P₁₅C₁₀ to an anti-ferromagnetic like behavior with different Mn content. It is observed that the saturation magnetization is high for x=0 and the value of saturation magnetization has decreased with increasing Mn contents of x=0.05, 0.1, 0.2 and 0.3 [2]. These anomalous magnetic properties lead to the suggestion that the antiferromagnetic interactions introduced by Mn atoms cause deviations from a pure ferromagnetic structure at low Mn concentrations (up to x=0.3)

[1] Kraus, E., Heinemann, K., Bärner, K., Khan, F.A., Medvedeva, I.V., Schicketanz, H. and Terzieff, P. (2000), "Thermoelectric Power of Some (Fe_{1-x}Mn_x)₇₅P₁₅C₁₀ Amorphous Alloys." phys. stat. sol, vol.177, pp. 547-553,

[2] Luborsky, F. E., Huang, S. C. and Fiedler, H. C (1981), IEEE Trans. Magn., MAG-17, 3463



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