

Non-collinear spin configurations and related magneto-transport effects in amorphous Fe-Gd thin films

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Understanding the fundamentals of the wide variety of non-collinear spin structures that occur in amorphous rare-earth – transition metal alloy thin films and their suitable control are highly required for applications based on magneto-functional effects. The present work is focused on the magnetic features of amorphous Fe-Gd thin films of similar thickness, but with different Fe concentration crossing the magnetic compensation point of this compound with antiferromagnetic coupling between Fe and Gd. The films were obtained by co-evaporation from an Fe target and an Fe target enriched with ⁵⁷Fe and covered with Gd platelets. Morpho-structural, magnetic, magneto-optic and local spin structure features were utterly investigated. The influence of the non-collinear spin structure with perpendicular spin components especially at the Fe side on the magneto-transport and magneto-optic phenomena was studied.