COERCIVE PROPERTIES OF Co/Gd MULTILAYERS WITH Si SPACER

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9.7 cm

Investigation of magnetization reversal of *rf* sputtered (Co30Å/SiXÅ/Gd75Å)·20 multilayers (X = 0, 2, 3, 5, 10 Å) has been performed in the temperature range 20-300K using the longitudinal magneto-optical Kerr effect. Due to the ferrimagnetic ordering of magnetic moments of Co and Gd layers, the compensation phenomenon has been observed. The sign of rotation of the light polarization plane was different for $T<T_C$ and for $T>T_C$ (T_C is compensation temperature), where the multilayers were Gd-aligned with the field or Co-aligned, respectively. The value of T_C depended upon Si spacer thickness X. It decreased from T_C=330K (X=0) to T_C=138K (X=5Å), disappearing for X=10Å. The change of the compensation temperature is associated with the change of the influence of Co subsystem on Gd subsystem. When approaching T_C, an increase of coercivity has been observed. This effect is originated by the decrease of the net magnetization near the compensation point. The investigation demonstrated the possibility to change the value of T_C and coercivity of multilayers, by changing the thickness of the nonmagnetic spacer.

13.4 cm

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