Ferrimagnetism in Gd-Ni bilayers

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Physical properties of thin films play an increasingly important role in technical applications. With controlled growth and the production of layered systems, interesting and novel mechanical, optical, electrical and chemical characteristics can be obtained.

Here we present studies of structural and magnetic properties of Gd-Ni bilayers. Temperature-dependent SQUID magnetization measurements show antiferromagnetic coupling between Gd and Ni films, with compensation temperature determined for various bilayer structures. Furthermore, field-dependent magnetization measurements reveal the typical switching behaviour of an artificíal ferrimagnet with two exchange-coupled layers. A small exchange bias effect was observed, and first results of magnetoresistance measurements are shown.

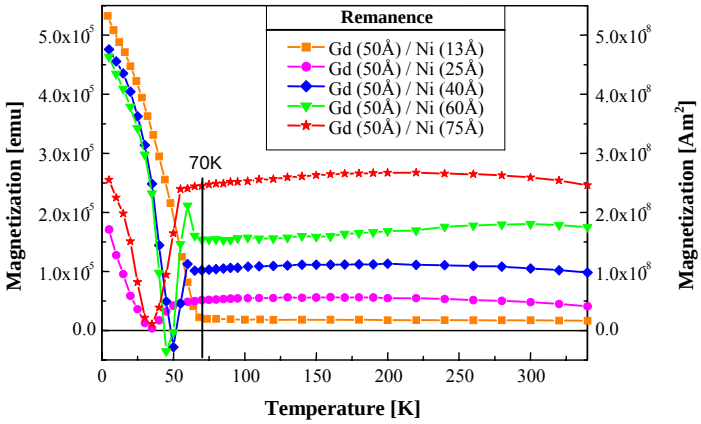

Fig. 1. Temperature dependence of magnetization of Gd/Ni bilayers for different thicknesses of Ni.

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