

ABSTRACT

A heterogeneous thin film structure (10) including a discontinuous layer (15) of ferromagnetic material deposited on an insulating substrate (13) and overcoated with a layer (17) of nonmagnetic electrically conductive material exhibits giant magnetoresistance in saturation fields on the order of 350 Oersteds. A layer of ferromagnetic material is deposited on a heated insulating substrate by evaporation techniques to form a layer of isolated ferromagnetic particles and overcoated with a nonmagnetic conductive material to form a plurality of ferromagnetic particles embedded in a nonmagnetic conductive matrix. As the ferromagnetic and nonmagnetic materials are deposited separately, it is not required that the two materials be immiscible and subsequent annealing is not required to induce phase separation.

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