05 JUL 2002

MAGNETIC RECORDING MEDIA WITH ANTIFERROMAGNETICALLY COUPLED FERROMAGNETIC FILMS AS THE RECORDING LAYER

ABSTRACT

A magnetic recording medium for data storage uses a magnetic recording layer (10) having at least two ferromagnetic films (12, 14) antiferromagnetically coupled together across a nonferromagnetic spacer film (16). The magnetic moments of the two antiferromagnetically-coupled films (12, 14) are orientated antiparallel, and thus the net remanent magnetization-thickness product (Mrt) of the recording layer (10) is the difference in the Mrt values of the two ferromagnetic films (12, 14). This reduction in Mrt is accomplished without a reduction in the thermal stability of the recording medium because the volumes of the grains in the antiferromagnetically-coupled films add constructively. In a magnetic recording rigid disk application, the magnetic layer comprises two ferromagnetic films, each a granular film of a sputter deposited CoPtCrB alloy, separated by a Ru spacer film having a thickness to maximize the antiferromagnetic exchange coupling between the two CoPtCrB films.

FIG 1



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