MAGNETORESISTIVE SENSOR WITH A SOFT ADJACENT LAYER HAVING HIGH MAGNETIZATION, HIGH RESISTIVITY, LOW INTRINSIC ANISOTROPY AND NEAR ZERO MAGNETOSTRICTION

ABSTRACT

A high magnetization, high resistivity, low corrosion and near zero magnetostriction soft adjacent layer (SAL) is provided or a magnetoresistive (MR) sensor (90A) of a read head. The MR sensor (90A) may either be an anisotropic MR (AMR) sensor or a spin valve sensor. In both sensors the SAL (120) is CoHfNb or CoHfNbFe. The Hf is added to reduce corrosion and the Hf and Nb are balanced to provide near zero magnetostriction. The addition of Fe is an enhancer for reducing negative magnetostriction without diluting the magnetism of the alloy. Since CoHfNb has significantly higher magnetization than NiFeCr the SAL layer (120) of CoHfNb can be thinner than the SAL of NiFeCr which results in a significantly higher resistance SAL. The higher resistance SAL equates to less shunting of the sense current through the SAL and better signal performance of the MR read head.

FIG. 6

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