MAGNETIC RECORDING DISK WITH ANTIFERROMAGNETICALLY-COUPLED MAGNETIC LAYER HAVING MULTIPLE LOWER LAYERS

Abstract of the Disclosure

A magnetic recording disk has an antiferromagnetically-coupled (AFC) structure that has three lower ferromagnetic layers (LL1, LL2, LL3) and an upper ferromagnetic layer (UL), all four ferromagnetic layers being antiferromagnetically-coupled together across corresponding antiferromagnetically-coupling layers. The UL has a magnetization-remanence-thickness product (Mrt) greater than the Mrt each of the three lower layers LL1, LL2, LL3, and greater than the sum of the Mrt values of LL1 and LL3. The middle lower layer LL2 has an Mrt less than the Mrt of each of the other lower layers LL1 and LL3, and as a result the composite Mrt of the AFC structure is less than the composite Mrt of a conventional AFC structure having only a single lower layer. The AFC structure achieves this composite Mrt reduction without increasing the Mrt of any of the three lower layers above the maximum Mrt of the single lower layer in the conventional AFC structure.

Figure 2