

CLAIMS

1. A stack, comprising:
 - a crystallographic orientation interlayer;
 - a magnetic zero layer disposed on the interlayer, the magnetic zero layer being non-magnetic and comprising non-magnetic grains separated by a non-magnetic segregant; and
 - a magnetic recording layer disposed on the magnetic zero layer, the magnetic recording layer comprising ferromagnetic grains separated by a non-magnetic segregant, wherein the magnetic zero layer is deposited prior to any magnetic recording layers in the stack, has a thickness of less than 10 Å, and comprises the same elements as the magnetic recording layer, and a percentage by volume of the non-magnetic segregant of the magnetic zero layer is greater than a percentage by volume of the non-magnetic segregant of the magnetic recording layer.
2. The stack of claim 1, wherein the segregant of the magnetic zero layer and the segregant of the magnetic recording layer comprise the same material.
3. The stack of claim 1, wherein the magnetic zero layer comprises the same elements in different proportions as the magnetic recording layer.
4. The stack of claim 1, wherein the magnetic zero layer comprises a Co alloy having between 40 mol % and 60 mol % Co.
5. The stack of claim 1, wherein the magnetic recording layer comprises a first magnetic layer adjacent the magnetic zero layer and a second magnetic layer separated from the first magnetic layer by an exchange break layer.
6. The stack of claim 1, wherein the grains of the magnetic zero layer are columnar grains having an HCP crystalline structure and a (0001) growth direction.
7. The stack of claim 1, wherein the magnetic zero layer comprises one or more of Pt and Ru.

8. A method of making a stack, comprising:
depositing a crystallographic orientation interlayer;
depositing a magnetic zero layer on the crystallographic orientation interlayer, the magnetic zero layer being non-magnetic and comprising non-magnetic grains separated by a non-magnetic segregant; and
depositing a magnetic recording layer on the magnetic zero layer, the magnetic recording layer comprising ferromagnetic grains separated by a non-magnetic segregant, wherein the magnetic zero layer is deposited prior to any magnetic recording layers in the stack, has a thickness of less than 10 Å, and comprises the same elements as the magnetic recording layer, and a percentage by volume of the non-magnetic segregant of the magnetic zero layer is greater than a percentage by volume of the non-magnetic segregant of the magnetic recording layer.
9. The method of claim 8, wherein:
the magnetic zero layer comprises CoCr and one or more of Pt and Ru separated by a segregant comprising an oxide, and
the magnetic recording layer comprises a Co alloy separated by a segregant comprising the oxide, and the magnetic zero layer comprises a higher percentage by volume of the oxide than the magnetic recording layer.
10. The method of claim 9, wherein the magnetic zero layer comprises greater than 5 mol % of the oxide material.