

CLAIMS

What is claimed is:

1. A stack, comprising;
a substrate;
a magnetic recording layer; and
an MgO-Ti(ON) layer disposed between the substrate and the magnetic recording layer wherein the MgO-Ti(ON) layer comprises at most 20 vol. % MgO.
2. The stack of claim 1, wherein the MgO-Ti(ON) layer has NaCl-type crystal structure.
3. The stack of claim 1, wherein growth orientation of the magnetic recording layer is based on the MgO-Ti(ON) layer.
4. The stack of claim 1, wherein the MgO-Ti(ON) layer is a $(\text{MgO})_x (\text{Ti(ON)})_{1-x}$ layer.
5. The stack of claim 1, wherein the MgO-Ti(ON) layer is a $(\text{MgO})_x (\text{Ti}_{0.5} (\text{O}_y\text{N}_{(1-y)})_{0.5})_{1-x}$ layer.
6. The stack of claim 1, wherein a thickness of the MgO-Ti(ON) layer determines an amount of laser power applied to heat the stack.
7. The stack of claim 4, wherein the composition (x) of the $(\text{MgO})_x (\text{Ti(ON)})_{1-x}$ layer determines thermal conductivity of the stack.
8. The stack of claim 5, wherein the nitrogen content (1-y) of the $(\text{MgO})_x (\text{Ti}_{0.5} (\text{O}_y\text{N}_{(1-y)})_{0.5})_{1-x}$ layer determines an amount of laser power applied to heat the stack.
9. The stack of claim 1, wherein the MgO-Ti(ON) layer has a thickness of 1 to 500 angstroms.

~~10. The stack of claim 1, wherein the MgO-Ti(ON) layer comprises at most 20 vol. % MgO.~~

~~11~~10. The stack of claim 1, wherein the MgO-Ti(ON) layer laterally conducts heat in the stack.

~~12~~11. The stack of claim 1, wherein the MgO-Ti(ON) layer is a continuous layer.

~~13~~12. A stack, comprising;
 a substrate;
 a magnetic recording layer;
 a heatsink layer disposed between the substrate and the magnetic recording layer;
 and
 a MgO-Ti(ON) layer disposed between the heatsink layer and the magnetic recording layer wherein the MgO-Ti(ON) layer comprises at most 20 vol. % MgO.

~~14~~13. The stack of claim ~~13~~12, wherein growth orientation of the magnetic recording layer is based on the MgO-Ti(ON) layer and the MgO-Ti(ON) layer laterally conducts heat in the stack.

~~15. The stack of claim 13, wherein the MgO-Ti(ON) layer comprises at most 20 vol. % MgO.~~

~~16~~14. The stack of claim ~~13~~12, wherein the MgO-Ti(ON) layer is a $(\text{MgO})_x (\text{Ti(ON)})_{1-x}$ layer.

~~17~~15. The stack of claim ~~13~~12, wherein the MgO-Ti(ON) layer is a $(\text{MgO})_x (\text{Ti}_{0.5} (\text{O}_y \text{N}_{(1-y)})_{0.5})_{1-x}$ layer.

~~18~~16. A method, comprising:

depositing MgO and TiO using a composite sputtering target, wherein the composite sputtering target comprises at most 25 vol. % MgO in a nitrogen environment to form a MgO-Ti(ON) layer; and
epitaxially growing an FePt magnetic layer on the MgO-Ti(ON) layer.

~~19~~17. The method of claim ~~18~~16, wherein the MgO-Ti(ON) layer is deposited using DC-sputtering.

~~20.~~ ~~The method of claim 18, wherein the composite sputtering target comprises at most 25 vol. % MgO.~~

~~21~~18. The method of claim ~~18~~16, further comprising forming a heatsink layer, wherein the MgO-Ti(ON) layer is a thermal resistor formed on the heatsink layer.

~~22~~19. The method of claim ~~18~~16, wherein the MgO-Ti(ON) layer is deposited in less than 10 seconds.

~~23~~20. The method of claim ~~18~~16, wherein the nitrogen environment includes 0.1-100% N₂.

~~24.~~ ~~An apparatus comprising:~~

~~—— a substrate;~~

~~—— a magnetic recording layer; and~~

~~—— means for determining growth orientation of the magnetic recording layer and for laterally conducting heat in the apparatus.~~

~~25.~~ ~~The apparatus of claim 24, wherein the means for determining growth orientation and for laterally conducting heat has NaCl type crystal structure.~~