Claims

WHAT IS CLAIMED IS:

1. A heat-assisted magnetic recording (HAMR) device comprising:

a magnetic media including:

a magnetic recording layer comprising a plurality of magnetic grains separated from one another by nonmagnetic material; and

a thermal absorption layer formed on top of the magnetic recording layer, the thermal absorption layer being patterned to include rows extending in a cross-track direction of the magnetic media, each adjacent pair of the rows being separated from one another by an insulating material, wherein the thermal absorption layer is a granular magnetic layer.

2. The HAMR device of claim 1, wherein the thermal absorption layer is further patterned into columns extending in a down-track direction of the magnetic media, the columns extending in the down-track direction and the rows extending in the cross-track direction dividing the thermal absorption layer into rectangular islands.

3. The HAMR device of claim 1, wherein the rows of the thermal absorption layer are separated from one another by rows of insulating material.

4. The HAMR device of claim 2, wherein a ratio of a down-track length of a gap between each pair of rectangular islands and a down-track length of each of the islands is at least one-ninth.

5. The HAMR device of claim 1, further comprising:

a read/write controller configured to control a write head to write an individual data bit on the magnetic media by transitioning a group of the magnetic grains to a same magnetic polarity, the individual data bit having a down-track width corresponding to a down-track width of a corresponding one of the rows of the thermal absorption layer extending in the cross-track direction.

6. The HAMR device of claim 2, further comprising:

a read/write controller configured to control a write head to write an individual data bit on the magnetic media by transitioning a group of the magnetic grains to a same magnetic polarity, the individual data bit having a size corresponding to one of the rectangular islands.

7. A system comprising:

a magnetic media including a thermal absorption layer formed on top of a granular magnetic recording layer, the thermal absorption layer being patterned into rows, wherein the thermal absorption layer is a granular magnetic layer; and

a controller configured to control a write element to selectively transition magnetic polarity of a series of data bits contiguously-arranged along a data track of the magnetic media, each adjacent pair of the rows of the thermal absorption layer being separated by an insulating region aligned along an axis with a boundary between an adjacent two data bits in the series of data bits.

8. The system of claim 7, wherein the rows extend in a cross-track direction of the media and the thermal absorption layer is further patterned into columns extending in a down-track direction of the magnetic media, the columns and the rows dividing the thermal absorption layer into rectangular islands.

9. The system of claim 8, wherein each one of the data bits of the series underlies a different one of the rectangular islands.

10. The system of claim 7, wherein the rows of the thermal absorption layer are separated from one another rows of insulating material.

11. The system of claim 10, a ratio of a down-track length of a gap between each pair of rectangular islands and a down-track length of each of the islands is at least one-ninth.

12. The system of claim 7, wherein the insulating region between each pair of the rows is adapted to increase a thermal gradient between a corresponding pair of data bits in the series.

13. A method comprising:

controlling a write element to selectively transition magnetic polarity of a series contiguous data bits aligned along a data track of a magnetic media, the magnetic media including a thermal absorption layer patterned into rows on top of a granular magnetic recording layer, each adjacent pair of the rows of the thermal absorption layer being separated by an insulating region aligned along an axis with a boundary between an adjacent two data bits in the series, wherein the thermal absorption layer is a granular magnetic layer.

14. The method of claim 13, wherein the rows extend in a cross-track direction of the media and the thermal absorption layer is further patterned into columns extending in a down-track direction of the magnetic media, the columns and the rows dividing the thermal absorption layer into rectangular islands.

15, The method of claim 14, wherein each one of the data bits of the series underlies a different one of the rectangular islands.

16. The method of claim 14, wherein controlling the write element further comprises:

executing logic to ensure a single-dimensional write sync.

17. The method of claim 14, wherein controlling the write element further comprises:

executing logic to ensure a two-dimensional write sync.

18. The method of claim 14, wherein the insulating region between each pair of the rows is adapted to increase a thermal gradient between a corresponding pair of data bits in the series.