SUMMARY OF THE INVENTION

It is an object of the present invention to ameliorate one or more of the above mentioned disadvantages.

According to one aspect of the invention there is disclosed a magnetic recording disk for use in a disk drive of the type that positions the carrier supporting the recording head in a textured landing zone on the disk when the disk drive is not operating, the disk comprising:

a disk substrate;

a plurality of first generally like and symmetrically-shaped laser-induced bumps for use in forming laser-induced bumps in the landing zone, the first bumps being formed on the surface of the disk substrate in an annular test band;

a plurality of second generally like and symmetrically-shaped laser-induced bumps for providing texturing in the landing zone, the second bumps being formed on the surface of the disk substrate in an annular textured landing zone radially spaced from the annular test band, the bumps in both the test band and the textured landing zone being formed of the same material as the disk substrate; and

a magnetic recording layer formed over the disk substrate surface, including over the bumps in the textured landing zone, the magnetic recording layer including a portion located over an annular region of the disk substrate surface that is radially spaced from both the test band and the textured landing zone and that has no bumps formed on it, whereby said magnetic recording layer portion over said annular region forms a data region that is radially spaced from the portion of the magnetic recording layer formed over the textured landing zone.

According to another aspect of the present invention there is disclosed A magnetic recording disk for use in a disk drive of the type that positions the carrier supporting the recording head in a textured landing zone on the disk when the disk drive is not operating, the disk comprising:

a disk substrate having a surface located between a disk inside diameter and a disk outside diameter, the surface including an annular test band located near the inside diameter for the location of test bumps for use in forming the textured landing zone, an annular landing zone located radially outwardly from the test band for the location of texturing bumps, and an annular data region located radially outwardly from the landing zone;

a plurality of generally like symmetrically-shaped laser-induced bumps formed of the same material as the disk substrate on the surface of the disk substrate in the test band, the bumps in the test band having generally the shape of a crater with a rim and an apex in the center of the crater and extending above the rim, the heights of the apexes of the bumps in the test band being substantially the same as one another;

a plurality of generally like and symmetrically-shaped laser-induced bumps formed of the same material as the disk substrate on the surface of the disk substrate in the landing zone, the bumps in the landing zone having generally the shape of a crater with a rim and an apex in the center of the crater and extending above the rim, the heights of the apexes of the bumps in the landing zone being substantially the same as one another and substantially different from the height of the apexes of the bumps in the test band; and

a magnetic recording layer formed over the disk substrate surface, the magnetic recording layer including a landing zone portion located over the bumps in the landing zone and generally replicating the texturing pattern of the landing zone bumps, and a data region portion located over the data region and generally replicating the surface of the disk substrate in the data region, whereby said magnetic recording layer data region portion forms a data region for the magnetic recording of data and is located radially outwardly from said magnetic recording layer landing zone portion formed over the bumps in the landing zone.

BRIEF DESCRIPTION OF DRAWINGS

Fig. 1 is a schematic of a contact start/stop (CSS) disk drive showing a disk with a textured band that serves as the CSS landing zone.

Fig. 2 is a plan view of a disk illustrating the annular data region and the radially speaced annular textured band, with a portion of the textured band expanded to show individual laser-induced texturing bumps.

CLAIMS

1. A magnetic recording disk for use in a disk drive of the type that positions the carrier supporting the recording head in a textured landing zone on the disk when the disk drive is not operating, the disk comprising:

a disk substrate;

a plurality of first generally like and symmetrically-shaped laser-induced bumps for use in forming laser-induced bumps in the landing zone, the first bumps being formed on the surface of the disk substrate in an annular test band;

a plurality of second generally like and symmetrically-shaped laser-induced bumps for providing texturing in the landing zone, the second bumps being formed on the surface of the disk substrate in an annular textured landing zone radially spaced from the annular test band, the bumps in both the test band and the textured landing zone being formed of the same material as the disk substrate; and

a magnetic recording layer formed over the disk substrate surface, including over the bumps in the textured landing zone, the magnetic recording layer including a portion located over an annular region of the disk substrate surface that is radially spaced from both the test band and the textured landing zone and that has no bumps formed on it, whereby said magnetic recording layer portion over said annular region forms a data region that is radially spaced from the portion of the magnetic recording layer formed over the textured landing zone.

2. The disk according to claim 1 wherein the bumps in the test band are formed in a first spiral track and the bumps in the textured landing zone are formed in a second spiral track that is discontinuous with the first spiral track.

3. The disk according to claim 1 wherein the bumps in both the test band and the textured landing zone have a physical shape of a crater having an outer rim, the rim being raised above the surface of the disk substrate, the average height of the rims above the surface of the substrate for the bumps in the textured landing zone being substantially different from the average height of the rims above the surface of the disk substrate for the bumps in the test band.

4. The disk according to claim 1 wherein the disk substrate is formed of glass, ceramic or an aluminum alloy having a nickel-phosphorous surface coating.

5. The disk according to claim 4 wherein the crater-like bumps in the both the test band and the textured landing zone also have an apex located generally in the center of the crater, the center apex being higher than the crater rim.

6. The disk according to claim 5 wherein the average height of the apexes above the surface of the substrate for the bumps in the textured landing zone is substantially different from the average height of the apexes above the surface of the substrate for the bumps in the test band.

7. The disk according to claim 1 wherein the bumps in the test band and the textured landing zone are formed by pulsed laser heating of the disk substrate.

8. A magnetic recording disk for use in a disk drive of the type that positions the carrier supporting the recording head in a textured landing zone on the disk when the disk drive is not operating, the disk comprising:

a disk substrate having a surface located between a disk inside diameter and a disk outside diameter, the surface including an annular test band located near the inside diameter for the location of test bumps for use in forming the textured landing zone, an annular landing zone located radially outwardly from the test band for the location of texturing bumps, and an annular data region located radially outwardly from the landing zone;

a plurality of generally like symmetrically-shaped laser-induced bumps formed of the same material as the disk substrate on the surface of the disk substrate in the test band, the bumps in the test band having generally the shape of a crater with a rim and an apex in the center of the crater and extending above the rim, the heights of the apexes of the bumps in the test band being substantially the same as one another;

a plurality of generally like and symmetrically-shaped laser-induced bumps formed of the same material as the disk substrate on the surface of the disk substrate in the landing zone, the bumps in the landing zone having generally the shape of a crater with a rim and an apex in the center of the crater and extending above the rim, the heights of the apexes of the bumps in the landing zone being substantially the same as one another and substantially different from the height of the apexes of the bumps in the test band; and

a magnetic recording layer formed over the disk substrate surface, the magnetic recording layer including a landing zone portion located over the bumps in the landing zone and generally replicating the texturing pattern of the landing zone bumps, and a data region portion located over the data region and generally replicating the surface of the disk substrate in the data region, whereby said magnetic recording layer data region portion forms a data region for the magnetic recording of data and is located radially outwardly from said magnetic recording layer landing zone portion formed over the bumps in the landing zone.

[redacted] spiral track and the bumps in the landing zone are formed in a second spiral track that is [redacted]