CLAIMS

[Claim 1]

A magnetic-disk substrate, comprising a pair of main surfaces,

arithmetic average roughness Ra of each of the main surfaces being 0.11 nm or less, a value of the arithmetic average roughness Ra being obtained through measurement using an atomic force microscope with a probe having a probe tip provided with a carbon nanofiber rod-shaped member, and

the magnetic-disk substrate being a glass substrate or an aluminum alloy substrate.

[Claim 2]

The magnetic-disk substrate according to claim 1, wherein

the magnetic-disk substrate comprises a pair of main surfaces, and

an average area of regions occupied by a plurality of protrusions in surface unevenness of the main surfaces is 25 [nm^2/protrusion] or less, the protrusions having a height of 0.1 [nm] or more from an average plane of the surface unevenness.

[Claim 3]

A magnetic-disk substrate, comprising a pair of main surfaces, in which an average area of regions occupied by a plurality of protrusions in surface unevenness of the main surfaces is 25 [nm^2/protrusion] or less, the protrusions having a height of 0.1 [nm] or more from an average plane of the surface unevenness, and

a value of the surface unevenness of the main surfaces is obtained through measurement using an atomic force microscope with a probe having a probe tip provided with a carbon nanofiber rod-shaped member, and

the magnetic-disk substrate being a glass substrate or an aluminum alloy substrate.

[Claim 4]

The magnetic-disk substrate according to claim 3, wherein the

arithmetic average roughness Ra is 0.15 nm or less.

[Claim 5]

The magnetic-disk substrate according to any one of claims 2 to 4, wherein the average area of the regions occupied by the plurality of protrusions having a height of 0.1 [nm] or more from the average plane of the surface unevenness is 20 [nm^2/protrusion] or less.

[Claim 6]

The magnetic-disk substrate according to any one of claims 2 to 5, wherein the average area of the regions occupied by the plurality of protrusions having a height of 0.2 [nm] or more from the average plane of the surface unevenness is 12 [nm^2/protrusion] or less.

[Claim 7]

The magnetic-disk substrate according to any one of claims 2 to 6, wherein a difference between the average area of the regions occupied by the plurality of protrusions having a height of 0.1 [nm] or more from the average plane of the surface unevenness and an average area of regions occupied by a plurality of protrusions having a height of 0.2 [nm] or more from the average plane of the surface unevenness is 13 [nm^2/protrusion] or less.

[Claim 8]

The magnetic-disk substrate according to any one of claims 1 to 7, wherein the magnetic-disk substrate is a glass substrate.

[Claim 9]

The magnetic-disk substrate according to claim 8, wherein a glass transition point of glass of the glass substrate is 600°C or more.

[Claim 10]

The magnetic-disk substrate according to any one of claims 1 to 9, wherein the magnetic-disk substrate is used in a nominal 2.5-inch magnetic disk having a recording density of 750 gigabytes or more per the magnetic disk or a nominal 3.5-inch magnetic disk having a recording density of 1000 gigabytes or more per the magnetic disk.

[Claim 11]

The magnetic-disk substrate according to any one of claims 1 to 10, wherein the magnetic-disk substrate is used in a nominal 3.5-inch magnetic disk.

[Claim 12]

The magnetic-disk substrate according to any one of claims 1 to 11, wherein the value measured by the atomic force microscope is obtained based on information on a determined position of the probe, the determined position being obtained by shifting a position of the probe in accordance with the surface unevenness of the main surfaces such that the probe oscillates at a constant amplitude.

[Claim 13]

The magnetic-disk substrate according to any one of claims 1 to 12, wherein the carbon nanofiber rod-shaped member provided at the probe tip has a Young's modulus of 100 GPa or less.

[Claim 14]

The magnetic-disk substrate according to any one of claims 1 to 13, wherein the rod-shaped member is electrically conductive, and one end of the rod-shaped member is connected to earth.

[Claim 15]

The magnetic-disk substrate according to any one of claims 1 to 14, wherein in the measurement performed using the atomic force microscope, the probe is oscillated at a spring constant of 0.1 to 80 [N/m] and a frequency of 30 to 400 [KHz].

[Claim 16]

The magnetic-disk substrate according to any one of claims 1 to 15, wherein the substrate is a magnetic-disk substrate for energy-assisted magnetic recording.

[Claim 17]

A magnetic disk, wherein at least a magnetic film is formed on a surface of the magnetic-disk substrate according to any one of claims 1 to 16.

[Claim 18]

A magnetic-disk drive apparatus, the apparatus comprising the magnetic-disk according to claim 17.