CLAIMS

[Claim 1] A method for manufacturing a perpendicular magnetic disk, comprising:

producing a perpendicular magnetic disk precursor having a substrate having a circular shape, a magnetic film which is a magnetic recording layer provided on the substrate, and a soft magnetic layer; and

performing heat treatment of the magnetic film of the perpendicular magnetic disk precursor,

wherein the heat treatment increases a magnetic anisotropy constant Ku of the magnetic film, and

the heat treatment is performed by spirally irradiating a main surface of the perpendicular magnetic disk precursor with a laser beam.

[Claim 2] The method for manufacturing a perpendicular magnetic disk according to claim 1,

wherein the heat treatment is performed such that irradiating with a laser beam set to focus on the magnetic film.

[Claim 3] The method for manufacturing a perpendicular magnetic disk according to claim 1 or 2,

wherein a spot diameter of the laser beam on the main surface of the substrate is 0.5 to 5.0 mm.

[Claim 4] The method for manufacturing a perpendicular magnetic disk according to any one of claims 1 to 3,

wherein the substrate is an aluminum alloy substrate having a plating film made of a Ni-based alloy on the surface, or a glass substrate.

[Claim 5] The method for manufacturing a perpendicular magnetic disk

according to any one of claims 1 to 4,

wherein the magnetic disk precursor has a heat insulating layer provided between the substrate and the magnetic film.

[Claim 6] The method for manufacturing a perpendicular magnetic disk according to claim 5,

wherein a main component of the heat insulating layer has a thermal conductivity of 40 [W/(m・K)] or less.

[Claim 7] The method for manufacturing a perpendicular magnetic disk according to any one of claims 1 to 6,

wherein the magnetic film contains an FePt-based alloy or a CoPt-based alloy.

[Claim 8] The method for manufacturing a perpendicular magnetic disk according to any one of claims 1 to 7,

wherein the magnetic film after heat treatment has an $L1_0$ crystal structure.

[Claim 9] The method for manufacturing a perpendicular magnetic disk according to any one of claims 1 to 8,

wherein the substrate has a thickness of 0.5 mm or less.

[Claim 10] The method for manufacturing a perpendicular magnetic disk according to any one of claims 1 to 9,

wherein the magnetic disk is a magnetic disk for energy-assisted magnetic recording systems.