CLAIMS

1. A sputtering target comprising Fe-Pt-based alloy phases and non-magnetic phases, wherein the sputtering target comprises from 1 to 50 at% of C in an atomic number ratio, and has a diffraction peak derived from diamond and does not have a diffraction peak derived from graphite as measured by XRD.

2. A sputtering target comprising Fe-Pt-based alloy phases and non-magnetic phases, wherein the sputtering target comprises from 1 to 50 at% of C in an atomic number ratio, and has a diffraction peak derived from diamond as measured by XRD, and wherein the sputtering target has a peak intensity ratio (Idia/Ifept) in a range of from about 0.01 to 0.5, in which Idia is a peak intensity of diamond (111), and Ifept is a peak intensity of FePt (111).

3. A sputtering target comprising Co-Pt-based alloy phases and non-magnetic phases, wherein the sputtering target comprises from 1 to 50 at% of C in an atomic number ratio, and has a diffraction peak derived from diamond as measured by XRD.

4. The sputtering target according to claim 2, wherein the sputtering target does not have a diffraction peak derived from graphite as measured by XRD.

5. The sputtering target according to claim 3, wherein the sputtering target does not have a diffraction peak derived from graphite as measured by XRD.

6. The sputtering target according to any one of claim 1,2 and 4, wherein a content of at least one additive element other than Fe, Pt and C is from 0 to 20 at%.

7. The sputtering target according to claim 3 or 5, wherein a content of at least one additive element other than Co, Pt and C is from 0 to 15 at%.

8. The sputtering target according to claims 4 or 6, wherein the sputtering target has a peak intensity ratio (Idia/Ifept) in a range of from about 0.01 to 0.5, in which Idia is a peak intensity of diamond (111), and Ifept is a peak intensity of FePt (111), as measured by XRD.

9. The sputtering target according to any one of claims 3, 5 and 7, wherein the sputtering target has a peak intensity ratio (Idia/Icopt) in a range of from about 0.1 to 1.0, in which Idia is a peak intensity of diamond (111), and Icopt is a peak intensity of Co_3Pt (111), as measured by XRD.

10. The sputtering target according to any one of claims 1 to 9, wherein the sputtering target comprises C grains having a diamond structure, the C grains having an average grain diameter of less than 1 μm.

11. The sputtering target according to any one of claims 1 to 10, wherein the sputtering target has a relative density of 80% or more.

12. A method for manufacturing a sputtering target, the method comprising the steps of: mixing Fe-Pt-based alloy powder comprising from 10 to 45 at% of Pt, the balance being Fe and unavoidable impurities, with diamond powder to prepare mixed powder comprising from 1 to 50 at% of C in an atomic number ratio; and sintering the mixed powder in a vacuum atmosphere or an inert gas atmosphere at a sintering temperature at which the diamond in the mixed powder does not undergo a phase transition to graphite to prepare sintered body.

13. A method for manufacturing a sputtering target, the method comprising the steps of: mixing Co-Pt-based alloy powder comprising from 10 to 45 at% of Pt, the balance being Co and unavoidable impurities, with diamond powder to prepare mixed powder comprising from 1 to 50 at% of C in an atomic number ratio; and sintering the mixed powder in a vacuum atmosphere or an inert gas atmosphere at a sintering temperature at which the diamond in the mixed powder does not undergo a phase transition to graphite to prepare sintered body.

14. The method according to claim 12 or 13, wherein the diamond powder has an average grain diameter of less than 1 μm.

15. The method according to any one of claims 12 to 14, wherein the sintering temperature is 1000 °C or less.