

WHAT IS CLAIMED IS:

1. A substrate processing apparatus, the apparatus comprising:
a process treating unit providing a treating space performed treating the substrate;
a plasma generation unit generating the plasma by discharging a process gas, and
supplying the plasma to the treating space,
wherein the plasma generation unit providing:
a plasma chamber having a plasma generating space;
an antenna wound to surround the plasma chamber outside the plasma chamber;
a first coating film covering inside walls of the plasma chamber and comprising
yttrium fluoride (YF₃); and
a second coating film covering the inside walls of the plasma chamber, wherein the
first coating film is provided on the second coating film,
wherein when viewed from a front cross-section of the plasma chamber, when it
comes to a thickness of the first coating film, the thickness of an upper area and a lower area
of the plasma chamber is thicker than a central area of the plasma chamber.
2. The apparatus of Claim 1, wherein
the second coating film comprises yttrium oxide (Y₂O₃).

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3. The apparatus of Claim 1, wherein according to the entire inside walls of the plasma chamber, the sum of the thickness of the first coating film and the second coating film is the same.

4. The apparatus of any one of Claims 1 to 3, wherein the antenna is an ICP antenna,
wherein a power source applying a power to the antenna is connected to one end of the antenna, and an opposite end of the antenna is grounded.

5. The apparatus of Claim 4, wherein when viewed from the front cross-section of the plasma chamber, the one end and the opposite end of the antenna are provided in a height corresponding to the upper area and the lower area of the plasma chamber.

6. The apparatus of any one of Claims 1 to 3, wherein
the plasma generation unit comprising,
a gas supply unit supplying process gas to the plasma generating space,
wherein the process gas comprises fluorine and/or hydrogen.

7. The apparatus of any one of Claims 1 to 3, wherein the plasma chamber is formed of a material comprising aluminum oxide (Al_2O_3).

8. The apparatus of any one of Claims 1 to 3, wherein the plasma generation unit further comprises a diffusion chamber that is arranged below the plasma chamber and has a diffusion space for diffusing the plasma generated from the plasma chamber.

9. A substrate treating apparatus using a plasma, the apparatus comprising:
a chamber;
a gas supply unit supplying process gas into the chamber;
a plasma source generating the plasma in the chamber;
a first coating film covering inside walls of the chamber; and
a second coating film covering the inside walls of the chamber and provided in a material different from the first coating film; and
the second coating film is provided on the inside walls of the chamber,
wherein the first coating film is provided on the second coating film,
wherein when viewed from the front cross-section of the chamber, when it comes to a thickness of the first coating film, the thickness of the upper area and the lower area of the chamber is thicker than the central area of the chamber.

10. The apparatus of Claim 9, wherein according to the entire inside walls of the chamber, the sum of the thickness of the first coating film and the second coating film is the same.

11. The apparatus of any one of Claims 9 to 10, wherein the chamber is the plasma chamber generating the plasma,
wherein at the outside of the plasma chamber, the antenna is wound multiple times on the plasma chamber.

12. The apparatus of Claim 11, wherein the antenna is the ICP antenna,
wherein the power source applying the power to the antenna is connected to the one end of the antenna, and the opposite end of the antenna is grounded.

13. The apparatus of any one of Claims 9 to 11, wherein the first coating film comprises yttrium fluoride (YF₃),
wherein the second coating film comprises yttrium oxide (Y₂O₃).

14. The apparatus of Claim 13, wherein the chamber is formed of the material comprising aluminum oxide (Al₂O₃).

15. The apparatus of any one of Claims 9 to 10, wherein the process gas comprises fluorine and/or hydrogen.