

Claims:

1. An apparatus, comprising:
 - a chamber body and a lid defining a volume therein;
 - a substrate support disposed in the volume opposite the lid, the substrate support comprising:
 - a support body disposed on a stem, and
 - a ground plate disposed between the support body and the stem;
 - a top flange coupled to a lower peripheral surface the ground plate;
 - a bottom flange coupled to a bottom of the chamber body; and
 - a plurality of straps, each of the straps comprising a first end coupled to the bottom flange and a second end coupled to the top flange.
2. The apparatus of claim 1, wherein the plurality of straps comprises 10 to 20 straps.
3. The apparatus of claim 2, wherein the plurality of straps comprises 12 to 16 straps.
4. The apparatus of claim 1, wherein each of the plurality of straps is composed of a metal comprising stainless steel, inconel, carbon, chromium, nickel, manganese, silicon, nitrogen, phosphorus, sulfur, or combinations thereof.
5. The apparatus of claim 1, wherein the first end of each of the plurality of straps is coupled to a recessed portion of a top surface of the bottom flange using screws and the second end of each strap is coupled to a recessed portion of a bottom surface of the top flange using screws.
6. The apparatus of claim 5, wherein each of the screws comprise stainless steel.
7. The apparatus of claim 1, wherein the top flange comprises a metal comprising steel, aluminum, alloys thereof, or combinations thereof.

8. The apparatus of claim 1, wherein the bottom flange is coupled to the bottom of the chamber using a plurality of stainless steel fasteners.

9. The apparatus of claim 1, wherein each of the plurality of straps are configured to bend radially inward when the substrate support is in a retracted position.

10. The apparatus of claim 1, wherein each strap comprises a spring constant of from 17 lb/in to about 20 lb/in.

11. The apparatus of claim 1, wherein a minimum distance between the top and bottom flange is greater than 6 mm.

12. The apparatus of claim 1, further comprising a conductive rod extending through the stem.

13. The apparatus of claim 12, wherein the conductive rod is configured to couple to ground.

14. A method of processing a substrate, comprising:

positioning a substrate on a substrate support in a volume of a processing chamber, the substrate support disposed in the volume opposite ~~the~~ a lid, the substrate support comprising a support body disposed on a stem, a ground plate disposed between the support body and the stem, and a top flange coupled to a lower peripheral surface the ground plate, the processing chamber comprising a bottom flange coupled to a bottom of the chamber volume, and a plurality of straps, each of the straps comprising a first end coupled to the bottom flange and a second end coupled to the top flange;

raising the substrate support to a raised position forming an upper portion of the volume;

introducing a gas to the upper portion of the volume; and

activating the gas using radio frequency energy.

15. The method of claim 14, wherein the lower portion of the volume is substantially free of plasma.

16. The method of claim 14, comprising processing the substrate in a plasma enhanced chemical vapor deposition, or etch process.

17. The method of claim 14, wherein raising the substrate support to a raised position comprises raising the ground plate and maintaining a radio frequency path from the bottom flange to the ground plate through at least one of the plurality of straps.

18. A system comprising an algorithm stored in a memory of the system, wherein the algorithm comprises a number of instructions which, when executed by a processor, causes the method of claim 14 to be performed.

19. An apparatus, comprising:

a top flange comprising a top flange upper surface and a top flange lower surface;

a bottom flange comprising a bottom flange upper surface and a bottom flange lower surface, the bottom flange comprising a lower portion extending radially inward from an inner diameter of the bottom flange, the lower portion comprising one or more apertures configured to receive screws; and

a plurality of straps, each of the straps comprising a first end coupled to the bottom flange and a second end coupled to the top flange.

20. The apparatus of claim 19, wherein the top flange lower surface comprises recesses configured to receive the first end of each of the plurality of straps and the bottom flange upper surface comprises recesses configured to receive the second end of each of the plurality of straps.