

~~WHAT IS CLAIMED IS:~~

1. A compression member for use in a showerhead electrode assembly of a capacitively coupled plasma chamber wherein the member applies a compression force to a portion of a film heater adjacent a power supply boot on an upper surface of a thermal control plate supported below a temperature-controlled top plate, the member comprising:

a body of electrically insulating elastomeric material configured to fit between the temperature-controlled top plate and the thermal control plate such that a lower surface of the body contacts an upper surface of the film heater and applies a compression force to a portion of the film heater adjacent a power supply boot which supplies power to the film heater.

2. The compression member of claim 1, wherein the body includes a skirt, a top hat, and at least one flexible element extending between the skirt and the top hat, the skirt having a height greater than a height of the top hat, the top hat configured to fit between the temperature-controlled top plate and a power supply boot such that a lower surface of the top hat contacts an upper surface of the power supply boot and applies a compression force to the power supply boot and the skirt having a lower surface which contacts the upper surface of the film heater.

3. The compression member of claim ~~1~~2, wherein the skirt at least partially surrounds the power supply boot and has a rectangular shape, a circular shape, a semicircular shape, a shape with one end semicircular and the other end open, or any combination thereof.

~~4. The compression member of claim 1, wherein the body has an opening in the lower surface and an inner surface of the opening is configured to completely surround the outer periphery of a power supply boot.~~

~~5. The compression member of claim 1, wherein said compression member is fabricated from a fluoroelastomeric material.~~

64. The compression member of claim 2, wherein the skirt includes four walls defining a rectangular opening, a lower surface of one of the walls having a recess therein sized to fit over a power line into the power supply boot, the top hat being located in the rectangular opening and connected to two of the walls of the skirt by two flexible elements.

75. The compression member of claim 2, wherein the skirt includes two parallel and spaced apart end walls, two parallel spaced apart side walls extending between the end walls, the top hat including a rectangular plate parallel to the upper surface of the power supply boot extending between the side walls with two parallel and spaced apart protrusions above and below the plate and oriented parallel to the end walls of the skirt, the plate being connected to the two end walls of the skirt by two flexible elements.

86. The compression member of claim 2, wherein the skirt includes two parallel and spaced apart side walls, a semicircular end wall interconnecting first ends of the two side walls, a segmented end wall extending from opposite ends of the two side walls, the side walls of the skirt configured to surround an outer periphery of the power supply boot, the top hat connected to the two parallel side walls of the skirt by two flexible elements.

97. The compression member of claim 2, wherein each of the flexible elements has a uniform cross-section and includes a bend along the length thereof.

108. The compression member of claim 2, wherein the top hat is rectangular or cylindrical in shape.

9. The compression member of claim 1, wherein the body has an opening in the lower surface and an inner surface of the opening is configured to completely surround the outer periphery of a power supply boot.

10. The compression member of claim 1, wherein said compression member is fabricated from a fluoroelastomeric material.

11. A temperature-controlled showerhead electrode assembly comprising:

- a temperature-controlled top plate;
- a showerhead electrode;

between the temperature-controlled top plate and the film heater, and the top hat fits between the temperature-controlled top plate and the power supply boot such that a compression force is applied to the film heater and the power supply boot.

~~17. A method of manufacturing a temperature control plate of a showerhead electrode assembly, the method comprising:~~

- ~~attaching a film heater to the thermal control plate;~~
- ~~attaching power supply boots to the thermal control plate such that each power supply boot electrically contacts a respective film heater section;~~
- ~~attaching compression members to the thermal control plate such that each compression member is adjacent a respective power supply boot and contacts a portion of a respective film heater section.~~

18. The method of claim 17, further comprising attaching the thermal control plate to a showerhead electrode so as to provide a thermal path therewith.

19. The method of claim 18, further comprising assembling the thermal control plate to a top plate of a capacitively coupled plasma chamber so as to provide a thermal path therewith.

20. A method of processing a semiconductor substrate in a capacitively coupled plasma chamber using the showerhead electrode assembly of claim 11, the method comprising:

- transferring a semiconductor substrate into the capacitively coupled plasma chamber;
- supplying process gas to the plasma chamber through the showerhead electrode assembly; and
- energizing the process gas into a plasma state and plasma etching the semiconductor substrate.