

CLAIMS:

- 1 1. A semiconductor processing chamber comprising:
2 a pedestal comprising a platen configured to support a semiconductor substrate
3 across a surface of the platen;
4 a first conductive mesh incorporated within the platen and configured to operate
5 as a first chucking mesh, wherein the first conductive mesh extends radially across the platen;
6 and
7 a second conductive mesh incorporated within the platen and configured to
8 operate as a second chucking mesh, wherein the second conductive mesh is characterized by an
9 annular shape, and wherein the second conductive mesh is disposed between the first conductive
10 mesh and the surface of the platen.
- 1 2. The semiconductor processing chamber of claim 1, further comprising a
2 third conductive mesh incorporated within the platen and configured to operate as a third
3 chucking mesh, wherein the third conductive mesh is contained within an inner annular radius of
4 the second conductive mesh, and wherein the third conductive mesh is disposed between the first
5 conductive mesh and the surface of the platen.
- 1 3. The semiconductor processing chamber of claim 2, wherein the second
2 conductive mesh and the third conductive mesh are coplanar within the platen.
- 1 4. The semiconductor processing chamber of claim 3, wherein the second
2 conductive mesh and the third conductive mesh are separated by an annular gap.
- 1 5. The semiconductor processing chamber of claim 4, further comprising:
2 a first thermocouple associated with the second conductive mesh, and
3 a second thermocouple associated with the third conductive mesh.
- 1 6. The semiconductor processing chamber of claim 1, wherein the first
2 conductive mesh and the second conductive mesh are independently operable from a power
3 source.

1 7. The semiconductor processing chamber of claim 1, further comprising a
2 sheet of mica disposed between the first conductive mesh and the second conductive mesh.

1 8. The semiconductor processing chamber of claim 7, wherein the sheet of
2 mica extends into an aperture formed within the first conductive mesh, and wherein an electrode
3 connector extends through the aperture and the sheet of mica to electrically couple with the
4 second conductive mesh.

1 9. The semiconductor processing chamber of claim 1, further comprising at
2 least two additional conductive meshes axially aligned with the first conductive mesh and the
3 second conductive mesh.

1 10. A substrate support pedestal comprising:
2 a platen configured to support a semiconductor substrate across a surface of the
3 platen;
4 a first conductive mesh incorporated within the platen and configured to operate
5 as a first chucking mesh, wherein the first conductive mesh extends radially across the platen;
6 and
7 a second conductive mesh incorporated within the platen and configured to
8 operate as a second chucking mesh, wherein the second conductive mesh is characterized by an
9 annular shape, and wherein the second conductive mesh is disposed between the first conductive
10 mesh and the surface of the platen.

1 11. The substrate support pedestal of claim 10, further comprising a third
2 conductive mesh incorporated within the platen and configured to operate as a third chucking
3 mesh, wherein the third conductive mesh is contained within an inner annular radius of the
4 second conductive mesh, and wherein the third conductive mesh is disposed between the first
5 conductive mesh and the surface of the platen.

1 12. The substrate support pedestal of claim 11, further comprising:
2 a first thermocouple associated with the second conductive mesh, and
3 a second thermocouple associated with the third conductive mesh.

1 13. The substrate support pedestal of claim 11, wherein the second conductive
2 mesh and the third conductive mesh are coplanar within the platen.

1 14. The substrate support pedestal of claim 13, wherein the second conductive
2 mesh and the third conductive mesh are separated by an annular gap.

1 15. The substrate support pedestal of claim 10, wherein the first conductive
2 mesh and the second conductive mesh are independently operable within the substrate support
3 from a power source.

1 16. The substrate support pedestal of claim 10, further comprising a sheet of
2 mica disposed between the first conductive mesh and the second conductive mesh.

1 17. The substrate support pedestal of claim 16, wherein the sheet of mica
2 extends into an aperture formed within the first conductive mesh, and wherein an electrode
3 connector extends through the aperture and the sheet of mica to electrically couple with the
4 second conductive mesh.

1 18. The substrate support pedestal of claim 10, further comprising at least two
2 additional conductive meshes concentrically aligned with first conductive mesh and the second
3 conductive mesh.

1 19. A semiconductor processing method comprising:
2 clamping a substrate on a substrate support by engaging a first conductive mesh
3 of the substrate support, wherein the first conductive mesh extends across the substrate support;
4 engaging a second conductive mesh of the substrate support, wherein the second
5 conductive mesh comprises an annular mesh overlying the first conductive mesh, wherein the
6 first conductive mesh engages the substrate at a first clamping voltage, and wherein the second
7 conductive mesh engages the substrate at a second clamping voltage greater than the first
8 clamping voltage; and
9 performing a semiconductor processing operation on the substrate.

1 20. The semiconductor processing method of claim 19, wherein the second
2 conductive mesh is characterized by an annular shape, wherein the substrate support further

3 comprises a third conductive mesh, and wherein the second conductive mesh and the third
4 conductive mesh are coplanar.
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