Claims:

1. A cup assembly for holding, sealing, and providing electrical power to a semiconductor substrate during electroplating, the cup assembly comprising:

(a) a cup bottom element comprising a main body portion and a radially inwardly protruding moment arm, wherein the main body portion is rigidly affixed to another feature of the cup assembly, and wherein the ratio of the average vertical thickness of the main body portion to the average vertical thickness of the radially inwardly protruding moment arm is greater than about 5, and wherein the ratio of the radial width of the main body portion to the radial width of the radially inwardly protruding moment arm is between about 5 and about 75;

(b) an elastomeric sealing element disposed on the radially inwardly protruding moment arm, wherein the elastomeric sealing element is supported by the radially inwardly protruding moment arm, wherein the elastomeric sealing element, when pressed against by the semiconductor substrate, seals against the substrate so as to define a peripheral region of the substrate from which plating solution is substantially excluded during electroplating; and

(c) an electrical contact element disposed on the elastomeric sealing element, wherein the electrical contact element contacts the substrate in said peripheral region when the elastomeric sealing element seals against the substrate so that the contact element may provide electrical power to the substrate during electroplating.

2. The cup assembly of Claim 1, wherein said peripheral region is substantially radially symmetric and characterized by a first radially inner diameter, wherein the region of contact between the substrate and the electrical contact element is substantially radially symmetric and characterized by a second radially inner diameter, and wherein the second radially inner diameter is larger than the first radially inner diameter.

3. The cup assembly of Claim 2, wherein the magnitude of the difference between the first and second radially inner diameters is less than about 0.5 mm.

4. The cup assembly of Claim 1, wherein the radially inwardly protruding moment arm of the cup bottom element has a radial width of at most about 0.5 inches.

5. The cup assembly of Claim 4, wherein the main body portion of the cup bottom element has an average vertical thickness of at least about 0.2 inches.

6. A cup assembly for holding, sealing, and providing electrical power to a semiconductor substrate during electroplating, the cup assembly comprising:

(a) a cup bottom element comprising a main body portion and a radially inwardly protruding moment arm, wherein the ratio of the radial width of the main body portion to the radial width of the radially inwardly protruding moment arm is between about 5 and about 75;

(b) an elastomeric sealing element disposed on the radially inwardly protruding moment arm, wherein the elastomeric sealing element is supported by the radially inwardly protruding moment arm, wherein the elastomeric sealing element, when pressed against by the semiconductor substrate, seals against the substrate so as to define a peripheral region of the substrate from which plating solution is substantially excluded during electroplating; and

(c) an electrical contact element having a substantially flat but flexible contact portion, wherein an entirety of the substantially flat but flexible contact portion is directly disposed upon a substantially horizontal portion of the elastomeric sealing element, wherein the substantially flat but flexible contact portion contacts the substrate in said peripheral region and deforms when pressed upon by the substrate when the elastomeric sealing element seals against the substrate so that the contact element may provide electrical power to the substrate during electroplating.

7. The cup assembly of Claim 6, wherein the elastomeric sealing element has a radial width of about 0.5 inches or less.

8. The cup assembly of Claim 7, wherein the elastomeric sealing element has a vertical thickness of between about 0.005 and 0.050 inches.

9. The cup assembly of Claim 7, wherein the substantially flat but flexible contact portion of the electrical contact element has a radial width of between about 0.01 and 0.5 inches.

10. The cup assembly of Claim 6, wherein the substantially flat but flexible contact portion of the electrical contact element is configured to conform to a portion of the shape of the substrate, the conforming facilitated by a spring-like counter-force resulting

from compression of the elastomeric sealing element upon which the contact element is disposed.

11. The cup assembly of Claim 10, wherein the conforming of the contact element to the shape of the substrate includes conforming to a portion of the profile of the substrate's edge bevel region.

12. The cup assembly of Claim 6, wherein the elastomeric sealing element has an upward protrusion which contacts and seals the semiconductor substrate when the substrate is pressed against the elastomeric sealing element, wherein said upward protrusion is radially inward of the substantially horizontal portion of the elastomeric sealing element upon which the electrical contact element is disposed.

13. The cup assembly of Claim 12, wherein said upward protrusion of the elastomeric sealing element compresses when sealing against the substrate, wherein said compression enables contact between the substrate and the electrical contact element, and wherein before compression, said upward protrusion of the elastomeric sealing element is vertically above said substantially horizontal portion of the elastomeric sealing element.

14. The cup assembly of Claim 6, wherein the electrical contact element comprises a sheet of flexible metal.

15. The cup assembly of Claim 14, wherein the flexible metal is a palladium-silver alloy.

16. The cup assembly of Claim 14, wherein the flexible metal comprises palladium, silver, gold, and platinum.

17. The cup assembly of Claim 14, wherein the flexible metal comprises platinum.

18. The cup assembly of Claim 14, wherein the flexible metal comprises stainless-steel.

19. The cup assembly of Claim 14, wherein the sheet of flexible metal is about 0.005 inches thick or less.

20. A cup assembly for holding, sealing, and providing electrical power to a semiconductor substrate during electroplating, the cup assembly comprising:

(a) a cup bottom element comprising a main body portion and a radially inwardly protruding moment arm, wherein the main body portion is rigidly affixed to another feature

of the cup assembly, and wherein the ratio of the radial width of the main body portion to the radial width of the radially inwardly protruding moment arm is between about 5 and about 75;

(b) an elastomeric sealing element integrated with the cup bottom element such that the elastomeric sealing element is disposed on the radially inwardly protruding moment arm and supported by the radially inwardly protruding moment arm, wherein the elastomeric sealing element, when pressed against by the semiconductor substrate, seals against the substrate so as to define a peripheral region of the substrate from which plating solution is substantially excluded during electroplating; and

(c) an electrical contact element disposed on the elastomeric sealing element, wherein the electrical contact element contacts the substrate in said peripheral region when the elastomeric sealing element seals against the substrate so that the contact element may provide electrical power to the substrate during electroplating.

21. The cup assembly of Claim 20, wherein the elastomeric sealing element is molded and affixed to the radially inwardly protruding moment arm of the cup bottom element.

22. The cup assembly of Claim 20, wherein the elastomeric sealing element is molded directly into the radially inwardly protruding moment arm of the cup bottom element.