CLAIMS

1. A method of reducing the formation of insoluble deposits in semiconductor electrochemical plating equipment or a surface thereof during electrochemical plating, the method comprising:

removing the semiconductor electrochemical plating equipment or a surface thereof from an electroplating solution, wherein residual electroplating solution is disposed atop the semiconductor electrochemical plating equipment or a surface thereof, and wherein the residual electroplating solution has a first pH;

contacting the residual electroplating solution with a rinse agent having a second pH approximate to the first pH to form a rinsate; and

removing the rinsate from the semiconductor electrochemical plating equipment or a surface thereof.

2. The method of claim 1, wherein the first pH is within a pH value of plus or minus 0.2 to 2.0 of the second pH.

3. The method of claim 1, wherein the first pH is equal to the second pH.

4. The method of claim 1, wherein the first pH is 2 to 5, and the second pH is 2 to 5.

5. The method of claim 1, wherein the rinse agent is a mineral acid.

6. The method of claim 1, wherein the first pH is 8 to 10, and the second pH is 8 to 10.

7. The method of claim 1, wherein the rinse agent is applied under conditions sufficient to prevent precipitation of organometallic or metallic precursors from the rinsate.

8. The method of claim 1, wherein the rinse agent is applied under conditions that maintain the pH of the residual electroplating solution.

9. The method of claim 1, wherein contacting the rinse agent with the residual electroplating solution causes a reduction of the formation of insoluble deposits in semiconductor electrochemical plating equipment or a surface thereof.

10. The method of claim 1, wherein the surface is disposed upon a seal.

11. A method of reducing or eliminating the formation of conductive deposits on surfaces in an electrochemical plating equipment, comprising contacting an acidic rinse agent with one or more surfaces comprising electrolyte to form an acidic rinsate; and flowing the acidic rinsate away from the one or more surfaces, wherein the electrolyte has a first pH approximate to a second pH of the acidic rinse agent.

12. The method of claim 11, wherein the first pH is within a pH value of plus or minus 0.2 to 2.0 of the second pH of the acidic rinse agent.

13. The method of claim 11, wherein the first pH is equal to the second pH of the acidic rinse agent.

14. The method of claim 11, wherein the first pH is 2 to 5, and the second pH is 2 to 5.

15. The method of claim 11, wherein the acidic rinse agent is a mineral acid.

16. The method of claim 11, wherein the acidic rinse agent is carbonic acid.

17. The method of claim 11, wherein the acidic rinse agent is applied under conditions sufficient to prevent precipitation of organometallic or metallic precursors from the acidic rinsate.

18. The method of claim 11, wherein the acidic rinse agent is applied under conditions that maintain the pH of the electrolyte.

19. The method of claim 11, wherein contacting the acidic rinse agent with the electrolyte causes a reduction of the formation of conductive deposits in the electrochemical plating equipment or a surface thereof.

20. The method of claim 19, wherein the surface is disposed upon a seal.