I claim:

1. An apparatus for the electrodeposition of metals or metal alloys on semiconductor wafers comprising:

a cylindrical plating cell comprising an inner wall and an outer wall and having an open top and a closed bottom wherein the closed bottom is formed with a central opening;

an anode disposed within the plating cell formed with a central hole;

a stationary cathode comprising a semiconductor wafer positioned with a surface of the semiconductor wafer to be electroplated facing in and spaced-apart in relation to the anode;

a power supply providing electrical contact between the anode and the cathode;

a solution spraying means for delivering plating solution to the surface of the semiconductor wafer to be electroplated, the solution spraying means being disposed between the anode and the cathode, the solution spraying means comprising at least one hollow cross bar, the at least one hollow cross bar having a series of spaced-apart holes arranged in a line extending from one end or near one end of the at least one hollow cross bar to the other end or near the other end of the at least one hollow cross bar and further comprising side holes at both ends of said cross bar, wherein the force of a fluid flowing through the cross bar and out of the cross bar side holes causes the solution delivery assembly to rotate about its vertical axis providing a continuously rotating spray of plating solution that contacts the semiconductor wafer positioned in the plating cell without the need of a motor to rotate the solution spraying means;

an electroplating solution holding tank for holding and circulating electroplating solution into and out of the plating cell;

a pump positioned for pumping electroplating solution from the electroplating solution holding tank into the solution spraying means;

a hollow support bar having a first and a second end wherein the first end is attached to the middle of the at least one hollow cross bar to form a T-bar with the support bar being the vertical portion of the T and the hollow cross bar

positioned at the top of the support bar such that the line of spaced apart holes in the cross bar are directed at the cathode;

a plating cell manifold wherein said manifold is centrally mounted to the outer bottom wall of the plating cell;

a bearing assembly comprising two ball bearing races disposed around the hollow support bar and the plating cell manifold;

wherein the second end of the hollow support bar is formed to fit into and extend through the hole in the anode and to fit into and extend through the central opening in the bottom of the plating cell and into the plating cell manifold;

wherein the bearing assembly allows the hollow support bar to rotate about the vertical axis of the hollow support bar causing the solution spraying means to also rotate to spray the surface of the semiconducting wafer to be plated continuously and repeatedly as the solution spraying means rotates;

wherein the at least one hollow cross bar includes means for propelling the solution spraying means about the at least one hollow cross bar's axis; and

wherein the means for propelling the solution spraying means about its axis includes at least one pair of side holes, one of the side hole pair being formed and positioned near the end of one side of the cross bar and the other one of the side hole pair being formed and positioned near the end of the opposite side of the cross bar.

2. The apparatus according to claim 1, wherein the electroplating solution is sprayed on the wafer by the solution spraying means in a repeated and continuous manner.

3. An apparatus for the electrodeposition of metals or metal alloys on semiconductor wafers comprising:

a cylindrical plating cell comprising an inner wall and an outer wall and having an open top and a closed bottom wherein the closed bottom is formed with a central opening;

an anode disposed within the plating cell formed with a central hole;

a stationary cathode comprising a semiconductor wafer positioned with a surface of the semiconductor wafer to be electroplated facing in and spaced-apart in relation to the anode;

a power supply providing electrical contact between the anode and the cathode;

a solution spraying means for delivering plating solution to the surface of the semiconductor wafer to be electroplated, the solution spraying means being disposed between the anode and the cathode, the solution spraying means comprising at least one hollow cross bar, the at least one hollow cross bar having a series of spaced-apart holes arranged in a line extending from one end or near one end of the at least one hollow cross bar to the other end or near the other end of the at least one hollow cross bar; and further comprising side holes at both ends of said cross bar, wherein the force of a fluid flowing through the cross bar and out of the cross bar side holes causes the solution delivery assembly to rotate about its vertical axis providing a continuously rotating spray of plating solution that contacts the semiconductor wafer positioned in the plating cell without the need of a motor to rotate the solution spraying means;

an electroplating solution holding tank for holding and circulating electroplating solution into and out of the plating cell;

a pump positioned for pumping electroplating solution from the electroplating solution holding tank into the solution spraying means;

a hollow support bar having a first and a second end wherein the first end is attached to the middle of the at least one hollow cross bar to form a T-bar with the support bar being the vertical portion of the T and the at least one hollow cross bar positioned at the top of the support bar such that the line of spaced apart holes in the cross bar are directed at the cathode;

a plating cell manifold wherein said manifold is centrally mounted to the outer bottom wall of the plating cell;

a bearing assembly comprising two ball bearing races disposed around the hollow support bar and the plating cell manifold;

wherein the second end of the hollow support bar is formed to fit into and extend through the hole in the anode and to fit into and extend through the central opening in the bottom of the plating cell and into the plating cell manifold;

wherein the bearing assembly allows the hollow support bar to rotate about the vertical axis of the of the hollow support bar causing the solution spraying means to also rotate to spray the surface of the semiconducting wafer to be plated continuously and repeatedly as the solution spraying means rotates;

wherein the at least one hollow cross bar includes means for propelling the solution spraying means about the at least one hollow cross bar's axis; and

wherein the means for propelling the solution spraying means about its axis includes at least one pair of side holes, one of the side hole pair being formed and positioned near the end of one side of the cross bar and the other one of the side hole pair being formed and positioned near the end of the opposite side of the cross bar.

4. An apparatus for the electrodeposition of metals or metal alloys on semiconductor wafers comprising:

a cylindrical plating cell comprising an inner wall and an outer wall and having an open top and a closed bottom wherein the closed bottom is formed with a central opening;

an anode disposed within the plating cell formed with a central hole;

a stationary cathode comprising a semiconductor wafer positioned with a surface of the semiconductor wafer to be electroplated facing in and spaced-apart in relation to the anode;

a power supply providing electrical contact between the anode and the cathode;

a solution spraying means for delivering plating solution to the surface of the semiconductor wafer to be electroplated, the solution spraying means being disposed between the anode and the cathode, the solution spraying means comprising at least two or more hollow cross bars, wherein at least one of the two or more hollow cross bars having a series of spaced-apart holes arranged in a line extending from one end or near one end of the at least one of the two or more

hollow cross bars to the other end or near the other end of the cross bar and further comprising side holes at both ends of said cross bar, wherein the force of a fluid flowing through the cross bar and out of the cross bar side holes causes the solution delivery assembly to rotate about its vertical axis providing a continuously rotating spray of plating solution that contacts the semiconductor wafer positioned in the plating cell without the need of a motor to rotate the solution spraying means;

an electroplating solution holding tank for holding and circulating electroplating solution into and out of the plating cell;

a pump positioned for pumping electroplating solution from the electroplating solution holding tank into the solution spraying means; and

a hollow support bar having a first and a second end wherein the first end is attached to the middle of the hollow cross bar to form a T-bar with the support bar being the vertical portion of the T and the hollow cross bar positioned at the top of the support bar such that the line of spaced apart holes in the cross bar are directed at the cathode;

a plating cell manifold wherein said manifold is centrally mounted to the outer bottom wall of the plating cell;

a bearing assembly comprising two ball bearing races disposed around the hollow support bar and the plating cell manifold;

wherein the second end of the hollow support bar is formed to fit into and extend through the hole in the anode and to fit into and extend through the central opening in the bottom of the plating cell and into the plating cell manifold;

wherein the bearing assembly allows the hollow support bar to rotate about the vertical axis of the hollow support bar causing the solution spraying means to also rotate to spray the surfaces of the semiconducting wafer to be plated continuously and repeatedly as the solution spraying means rotates; and

wherein the hollow cross bar includes means for propelling the solution spraying means about its axis.

5. A method of electroplating metals or metal alloys onto semiconducting wafers comprising electrodepositing a metal or metal alloy on the semiconducting wafer using the apparatus according to any one of claims 1, 3 or 4.