

E-Beam

1. Mount up to 4 wafers to the stage using screws with washers. Use care to not over-tighten the screws as this can cause cracks in the wafer
2. Set Ti crucible to active using the hearth controller
3. Press the big red button to vent the chamber
4. Once the pressure reaches atmospheric ($\sim 7.6 \times 10^2$ torr), unlatch and open the door
5. Mount the stage to the ceiling of the E-BEAM evaporation chamber with the center screw
6. Check the level of titanium in the crucible. If needed, add more pellets (the crucible should be between $\frac{1}{2}$ and $\frac{2}{3}$ full). Do not overfill, as this can cause the rotating hearth to jam.
7. Vacuum any loose debris from the floor of the chamber, as well as around the O-ring and the door mating surface
8. Clean the O-ring with isopropanol and a cleanroom wipe, as well as the door mating surface
9. Shut the door and latch shut (\sim finger tight)
10. Press the big green button to begin venting down the chamber
11. Wait 3-5 hours or until the chamber reaches a pressure of $\sim 1.0 \times 10^{-6}$ torr
12. Turn on main power switches
13. Turn main power key to on
14. Wait ~ 10 seconds for fans and relays to turn on
15. Press main power reset, then main power on
16. Sweep select on
17. Select titanium film on main controller screen
18. Press start. The screen should show 'ready'
19. Press start once more
20. Press manual mode
21. Open the E-Gun shutter
22. Using the hand controller, set power to 3.1-3.3%
23. Wait for the titanium to heat. When the evaporation rate passes ~ 1.0 Å/sec, open the sample shutter and reset the evaporation counter simultaneously
24. Deposit 400Å of titanium, keeping the evaporation rate between 1.0-2.0 Å/sec
25. Once ~ 400 Å of titanium has been deposited, press stop and close the sample shutter simultaneously.
26. Close the E-gun shutter
27. Turn off the sweep controller
28. Main power off, main power key off
29. Turn off main power switches
30. Press the big red button to vent the chamber
31. Once the pressure reaches atmospheric ($\sim 7.6 \times 10^2$ torr), unlatch and open the door
32. Remove the stage with attached wafers
33. Vacuum any loose debris from the floor of the chamber, as well as around the O-ring and the door mating surface
34. Clean the O-ring with isopropanol and a cleanroom wipe, as well as the door mating surface
35. Shut the door and latch shut (\sim finger tight)
36. Press the big green button to begin pressuring down the chamber
37. Remove wafers from the stage, and place screws & washers in correct storage bin

Bibliography

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