E-BEAM

E-BEAM Protocol

- Mount up to 4 wafers to the stage using screws with washers. Use care to not overtighten the screws as this can cause cracks in the wafer
- Set Ti crucible to active using the hearth controller
- Press the big red button to vent the chamber
- Once the pressure reaches atmospheric (~$7.6x10^{2}$ torr), unlatch and open the door
- Mount the stage to the ceiling of the E-BEAM evaporation chamber with the center screw
- Check the level of titanium in the crucible. If needed, add more pellets (the crucible should be between 1/2 and 2/3 full). Do not overfill, as this can cause the rotating hearth to jam.
- Vacuum any loose debris from the floor of the chamber, as well as around the O-ring and the door mating surface
- Clean the O-ring with isopropanol and a cleanroom wipe, as well as the door mating surface
- Shut the door and latch shut (~ finger tight)
- Press the big green button to begin venting down the chamber
- Wait 3-5 hours or until the chamber reaches a pressure of ~$1.0x10^{-6}$ torr
- Turn on main power switches
- Turn main power key to on
- Wait ~10 seconds for fans and relays to turn on
- Press main power reset, then main power on
- Sweep select on
- Select titanium film on main controller screen
- Press start. The screen should show `ready'
- Press start once more
- Press manual mode
- Open the E-Gun shutter
- Using the hand controller, set power to 3.1-3.3%
- 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
- Deposit 400 Å of titanium, keeping the evaporation rate between 1.0-2.0 Å/sec
- Once 400 Å of titanium has been deposited, press stop and close the sample shutter simultaneously.
- Close the E-gun shutter
- Turn off the sweep controller
- Main power off, main power key off
- Turn off main power switches
- Press the big red button to vent the chamber
- Once the pressure reaches atmospheric (~$7.6x10^{2}$ torr), unlatch and open the door
- Remove the stage with attached wafers
- Vacuum any loose debris from the floor of the chamber, as well as around the O-ring and the door mating surface
- Clean the O-ring with isopropanol and a cleanroom wipe, as well as the door mating surface
- Shut the door and latch shut (~finger tight)
- Press the big green button to begin pressuring down the chamber
- Remove wafers from the stage, and place screws & washers in correct storage bin