

Fischione Model 1050 TEM Mill Procedure

1. Place the sample loading station on a firm surface with adequate lighting.
2. Place a 3 mm diameter disk in the recess machined into the central movable brass piece.
3. Turn the black knob on the side of the loading station clockwise to open the jaws of the sample holder.
4. While holding the knob in this intermediate position, slide the brass piece towards the sample holder until the disk is centered between the open jaws.
5. Turn the knob counter clockwise until the jaws clamp the sample.
6. Retract the brass piece.
7. Continue turning the knob counter clockwise until the sample holder is lifted out of the loading station to its maximum height. The knob will reach a physical stop.
8. Remove the sample holder with a pair of curved ended forceps / tweezers.
9. Vent the Model 1050 TEM Mill by mouse clicking on the corresponding virtual button in the software GUI.
10. Swivel the load lock cover counter clockwise to reveal the cylindrical piece with front slot on top of the sample stage. Note: If the window in the base of the cylindrical piece appears to not be transparent, alert staff to have it replaced before continuing.
11. Gently insert the sample holder, making sure its front tab / projection is centered within the slot and bottoms out. This is needed so that the sample will reside on the eucentric plane of the system during Argon ion milling.
12. Inspect the O ring and drag a dry Kimwipe over its surface if debris is visible.
13. Swivel the load lock cover clockwise and gently lower it until the load lock is closed.
14. Pump the load lock.
15. Create an ion milling program / recipe: 1. Step 1: Purge = 10 min., Step 2: Delay = 10 sec, Step 3: Milling = 1 hr or more. Select the number of ion sources, accelerating voltages, milling angles, rotation angle (usually 360 degrees). Select beam sequencing for bulk samples, or +/- 35 degrees rocking for cross-sectional samples.
16. Select optional settings include laser auto-termination (10%, 300 sec) for bulk samples and a temperature safeguard of -40 degrees C if the rear dewar is filled with liquid nitrogen cooling to protect the sample from overheating. Note: Use eye and hand protection while filling, and pause if boiling of the coolant occurs.
17. Run the ion milling program until a small perforation is detected manually using the optical microscope or automatically as the laser is sensed by the photocell below the sample position.
18. Repeat the sequence used in 15 with a voltage of 1.5kV for 15 min.
19. Select the virtual vent button and retrieve the sample and its holder. Note: If liquid nitrogen cooling was used, the software will indicate how many minutes are remaining until room temperature is achieved and venting occurs.
20. Return the load lock cover to its original position and pump the load lock.