

Sample Transfer Procedures

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1 Loading Samples into Load-Lock

1. Ensure load-lock valve is closed.
 - click "CLOSE VALVE" in "LL Controls" box
2. Start the venting procedure: click "VENT"
3. Turn off scroll pump using rocker switch at rear. Pay attention to the correct pump.
4. Loosen the loadlock door to ensure it does over-pressure.
 - Wait for door to open, this will happen once load-lock is vented. The pressure should be approximately 760 Torr
5. Gently open the load-lock door, do not let it slam.
6. Load samples
 - Ensure gloves are used at all times
 - Grasp the sample plates using the sample tab with tweezers.
 - Gently slide the sample holders into the carousel. Do not bend the retaining clips.
7. Use GUI to select sample levels: "1", "2", "3", "4" OR "5" and rotation: "TRAN" (transfer) OR "LOAD".
 - **Ensure you do not place hands in load-lock while moving motors.**
8. Close door, do not over-tighten, only snug door.
9. Start Scroll Pump
10. Begin evacuation macro: click "PUMP"
 - Ensure the power draw once up to speed (1350 Hz) is not more than 10W. If the power exceeds 15W shut down the pump and contact beamline staff. It may be that the door has a hair in it, wait for the load-lock to vent and check door seal.
11. Wait until pressure is less than 5×10^{-7} Torr before attempting any sample transfers.

2 Transfer Sample Plate from Load-Lock into Main Chamber

1. Ensure pressure in load-lock is less than 5×10^{-7} Torr.
2. Grab sample plate holder with transfer arm.
 - Click to sample level "1 to 5" and "TRAN" to position the carousel in the transfer rotation and select a sample plate.
 - Use the transfer arm to grasp sample plate, do not force the pincers, just reposition and retry.
 - Ensure that when the sample plate is facing you in the load-lock that the "T" and not the "B" is visible on the pincers.
 - Smoothly retract the sample transfer arm fully.
3. Move load-lock out of the way by clicking "0"
4. Move sample stage into transfer position using `moveSS tran` in the SPEC terminal.
5. Ensure the beamline valve and shutter are closed.
 - `setPSH close`

- *setVVR close*
6. Open the load-lock valve
 - click "OPEN VALVE" in "LL Controls" box
 7. Using the transfer arm, move the sample plate into the main chamber.
 - While grasping both cams, smoothly slide the sample plate into the holder. You will need to rotate the sample so it is vertical before insertion (do not rotate until the sample plate has cleared the load-lock valve).
 8. Fully retract load-lock arm
 9. Close the load-lock valve once the sample arm is fully retracted.
 - click "CLOSE VALVE" in "LL Controls" box
 10. Move sample stage to the measure position using *moveSS meas* in the SPEC terminal.

3 Transfer Sample Plate from Main Chamber into Load-Lock

1. Ensure pressure in load-lock is less than 5×10^{-7} Torr.
2. Ensure the beamline valve and shutter are closed.
 - *setPSH close*
 - *setVVR close*
3. Move Sample Stage to transfer position.
 - *moveSS tran*
4. Move load-lock out of the way by clicking "0"
5. Open the load-lock valve
 - click "OPEN VALVE" in "LL Controls" box
6. Move the transfer arm into the main chamber, ensure the "T" on the upper pincer is visible.
7. Grasp the sample plate.
 - Do not force the pincers, just reposition and retry.
 - You will need to rotate the sample plate such that it is level before retracting the transfer arm fully (ensure you rotate the sample plate level before the sample plate proceeds through the load-lock valve).
8. Fully retract transfer arm
9. Close the load-lock valve once the sample arm is fully retracted.
 - click "CLOSE VALVE" in "LL Controls" box
10. Select the sample tray you wish to place the sample into.
 - Click to sample level "1 to 5" and "TRAN" to position the carousel in the transfer rotation and select a sample plate.
11. Gently slide the sample plate into the ladder and release the pincer.
12. Fully retract the sample transfer arm.