Removing and Inserting the Holders

Do not leave the airlock empty for significant amounts of time. If you are going to delay more than 10-15 minutes before inserting the holder, please put one of the other holders into the microscope or cover the opening with foil.

Remember not to force the holder in any way: there should be very minimal resistance during all the following steps

Holder removal:

1. Make certain that the goniometer is in the neutral position: x/y/z/x-tilt & y-tilt are all zero; this can be accomplished by double-clicking on the "Stage Neutral" area of TEMCon (lower right corner of main menu).
2. While the holder is in the column, the switch below the airlock should be in the "PUMP" position: toggle the switch to "AIR" before doing anything else.
3. Slowly pull the holder straight out of the column; it will pull out about 6 cm and then stop; if you release the holder at this point, the vacuum will pull it back into the column.
4. Rotate the holder ~80° counter-clockwise; if you release the holder now, the vacuum will not pull the holder back into the column.
5. Pull out the holder another 1 cm and rotate the holder an additional ~10° counter-clockwise.
6. Release the holder and wait for the vacuum reading in the GUI on the PC to read >230 µA (this should take < 1 min).
7. At this point, pull the holder completely out of the column.

Holder insertion:

1. Return the goniometer to the neutral position as described in step 1 above.
2. Change the entry in the text box above the stage position values in TEMcon to reflect the holder that you are about to put into the microscope; there are six possible choices and if you are uncertain which to choose, check with the staff.
3. The switch beneath the specimen airlock should be toggled to "AIR" before putting a holder into the microscope.
4. Align the pin on the rod of the holder with the slit at "9 o'clock" in the opening of the specimen air lock.
5. Gently push the holder as far into the airlock as it will go and toggle the switch to "PUMP."

6. The yellow light above the switch should come on; you should hear valves open and close, and a pump will start after a short while.
7. After 30 s to several minutes, the second (green) light will also come on.
8. Rotate the holder ~10° clockwise and let the vacuum pull the holder a short way (~1 cm) into the column; the yellow light will turn off after this 10° rotation.
9. Rotate the holder a further ~80° clockwise and again let the vacuum pull the holder the rest of the way into the column; a very light push against the end of the holder can be used to make certain that it is seated properly.
10. While following steps 8 & 9, watch the lower vacuum gauge on the large electronics cabinet behind the JEOL PC monitors; it will likely deflect fully to the right but should IMMEDIATELY begin to recover; if recovery does NOT begin immediately, ask for help.
11. Once the holder is fully inserted into the column, the yellow light will remain off and the green light will remain lit.

    NOTE: Until the holder is fully inserted into the column, the “Beam Valve” region of TEMcon will remain grey and the beam valve cannot be opened; this is a lock-out feature of the microscope to prevent X-rays from leaking through the specimen airlock.