

# General Instructions for FEI Tecnai F20

*NOTE: These instructions assume you have been trained by URinc staff on equipment operation and safety. Call Brian with questions or emergencies (x53058, 301-3145 cell, 394-0572 home).*

## Start up and Operation

1. **Log in** using your Windows account. **Start** the "Tecnai User Interface" (TUI).
2. **Open "Vacuum" tab.** Check vacuum levels (green zone) and that "Col Valves" are closed.
3. **Retrieve LN<sub>2</sub>** (if you don't already have some) in the 4 liter dewar and fill the thermos-like reservoir. Slowly immerse the copper braids into the LN<sub>2</sub>. Be sure to occasionally check LN<sub>2</sub> level so the anticontamination trap doesn't warm-up while working.
4. **Place your sample in the TEM sample holder** using the "hat-pin" to lift and lower the grid clamp. This clamp is delicate so be careful. Replace the "hat-pin" back into its hole.
5. **Carefully put sample holder into the compustage.** The small pin on the holder should align with the "Close" line diagram on the stage and slip into a pin slot when done correctly (make sure you feel the O-ring slide into the airlock). The red light will come on while you are inserting the holder, the turbo will spin up, and a valve will open to begin pumping down the airlock. Do **NOT** force movement of holder. Indicate which sample holder you've inserted using the dialog box.
6. **Wait for the red light to go out (airlock is evacuated).** You should also note that the buttons for "Col. Valves Closed" and "Turbo On" are no longer grayed out (e.g. they are now available). Carefully turn the holder counter-clockwise until it stops and align the large pin with the hole at the 6 o'clock position; control the insertion of the holder into the column. Note that the vacuum in the column will pull the holder, so you need to control it.
7. **Check the column vacuum (green zone). Turn off the turbo pump (Turbo On button).**
8. **Open the Col. Valves using the "Col. Valves Closed" button in the Vacuum tab.**
9. **You should now be able to find the beam on the fluorescent screen.** This may require lowering the magnification, moving the sample, spreading the beam ("Intensity" knob on left console) and repositioning the beam (trackball on left console). You can now change the spotsize too.
10. **Adjust specimen height with Z-axis controls** (eucentric focus then find minimum contrast or alpha-wobble unto stationary).
11. **Start Digital Micrograph (if using the bottom mounted Gatan camera) or TIA (if using the HAADF/STEM detector).**
12. **If performing EDS analysis remember to run RTEM application to insert detector and check for reasonable count-rate (<10000 cps).**
13. Store DM images as .dm3 files initially and then "Batch Convert" them to .tif format. TIA images must be stored as .emi files and then converted.

## Shutting Down

1. **Close the Column valves** (Col. Valves Closed button in Vacuum tab).
2. **Reset holder** (pullout menu in Stage tab).
3. **Remove the sample holder** while pressing on the purple faceplate (straight out then clockwise rotation). Put holder in clean tube or in the plasma cleaner.
4. **Remove LN<sub>2</sub>** and start Cryo-Cycle if you're the last reservation this day.
5. **Transfer images** and data to flashdrive and **Logout** of your windows account. Scroll-lock (2x) toggles computer KVM switch.