FEI QUANTA operation notes

Standby Condition

- Specimen chamber under vacuum.
- Simple sample holder with conical lock nut in stage.
- HT off.
- Usage recorded on time sheet.
- Computer monitors and room lights off.

If you step away briefly from the microscope select **Beam blank.**

Startup

- Turn on monitor. Microscope Control program should be running. If not seek assistance.

Sample Loading/Unloading

Loading

- Press **Vent** and wait until the stage door opens with a gentle pull.
  (Vacuum status indicator changes Green→Yellow→Red)
- Choose a sample holder appropriate for the sample and position it on the stage,
- Make sure the sample is securely held.
- (If unloading sample(s) remove sample and holder.)
- Use the height gauge to make sure that the sample will clear the back scattered electron detector (BSED). The BSED on this machine is a fragile silicon diode!!
- Close the chamber door while watching on the CCD. Hold it shut and press **Pump**.
  (Vacuum status indicator changes Red→Yellow→Green)

You may have to home the stage to activate the controls. Choose **Home** from the **Stage** menu.

Alignment Info

- Column alignment and gun tilts and shifts are preset and may not be changed by users.
- This instrument has a fixed final aperture which cannot be shifted.

Obtaining an image

- From the **Detectors** pull down menu select **ETD**. (Everhart Thornley Detector = secondary electron detector)
- Select a low magnification (<50x) from the **Magnification** pull down menu or + & - keys.
- Select accelerating voltage and spot size (beam current) from the **Beam** pull down menu. **(**These values depend upon sample type and may need some trial and error.)
- Click on the **HT** button which will light up yellow.
- Adjust Contrast and Brightness manually using the sliders or click on **ACB** or click on the half sun and half dark icon in the tool bar.

- Focus the image by clicking and holding down the right mouse button while the mouse is moved left and right.
- When the image is focused at a magnification greater than x500, and not before, click on the menu bar icon (Final lens with a red line through it.) which couples Z to FWD.

Stigmation

- Examine image when changing focus. (High magnification may be necessary.) If the image distorts by elongating in different directions as focus is changed, a stigmation correction must be applied.
- Choose a small clearly defined spot on the specimen. Hold down a **Shift** key (to change mouse function) and at the same time use the right mouse button to alter the field produced by the stigmator coils. Move the mouse left and right as well as up and down. Try to make the edges of the object appear as sharp as possible.
- Go back to focusing the image. It should expand and contract symmetrically. If not go back and stigmate further.

Taking Pictures

- Roughly compose the image with respect to magnification and x, y position.
- Double the magnification with the + key.
- Center a small clearly defined object and select the reduced area scan from the scan menu or the icon in the tool bar.
- Select an appropriate scan rate from the scan menu and focus the image carefully.
- Go back to full screen and halve the magnification with the – button.
- Compose the image carefully and check the contrast and brightness with the waveform monitor.
- Press the **F2** key on the keyboard to do a single slow scan and freeze. (Seek assistance to change this preset scan rate.)
- From **Preferences** choose the data you wish to burn on to the image. Think twice about selecting a magnification number! Type in a sample name if desired.
- From the **File** pull down menu choose **Save as** and save the image to your folder in **Shared Data.**
- Click on the pause icon ❙❙ to unfreeze the image.

Leaving the Quanta

- Click on **HT** to turn the accelerating voltage off.
- Follow the instructions in **Sample Loading/Unloading** above**.**