

INSTRUCTIONS FOR USING THE AMRAY 1810 SCANNING ELECTRON MICROSCOPE

1. INSERT YOUR SPECIMEN INTO THE CHAMBER

1. The chamber door will be sealed tightly and cannot be opened
2. Turn the main valve on the nitrogen tank to open it
3. Press the "Vent" button on the console on the SEM
(~ 10 sec.: hear air flowing; ~ 20 sec.: the door can be opened)
4. Use the round-tipped tweezers to pick up the specimen stub and insert it into the slot on the stage.
5. Use the small Allen wrench to tighten the stub in the slot.
6. Make sure that the seal is seated within its slot on the inside of the door
7. Close the chamber door
8. Press the "Evacuate" button on the console on the SEM
9. When the chamber has been evacuated of air, the "Ready" light will come on (this takes a few minutes)

2. START UP THE CONTROL PANEL OF THE SEM

1. Press the "Power On" button (on the far right); it will glow green
2. Now, the "Final lens" and the red light under the video/emissions meter will be glowing
3. Use the buttons under "Accelerating Potential" to select the kV (it will be at zero; press the top row, middle button 15 times to get 15 kV)
 - higher KV means greater resolutions...And more likely to blow the filament - do not go above 20 kv
 - the red light under the meter will go off
4. Use the buttons under "Magnification" to select an initial magnification to view the specimen (press the top row, middle and right buttons to get 20-30x to start)
5. For control of brightness/contrast:
 - a. Press "Auto Video" (the final lens light will go off)
 - b. Manually control this using the brightness and contrast knobs
6. For control of Focus there are three options:
 - a. Press "Auto Focus"
 - b. Turn the large knob beside the "Final Focus" button
 - c. Press "Auto Stig" which will also optimize the focus
7. If more resolution is needed, adjust the spot size
 - a. Press the "cond lens" button
 - b. Turn the focus knob
 - c. the number on the bottom right of the screen should get larger (from 5.0 upward)
 - d. Compromise: contrast will decrease when you do this

3. TO CAPTURE IMAGES USING THE COMPUTER

1. Open 'dt-acquire' from the desktop
2. You may have to select device/open device (first button on toolbar)
 - there is only one choice
3. Press "Slow Scan" to get the best quality image on the video monitor
4. When the whole frame has been scanned once, press "Freeze"
5. Choose 'single frame acquire' (looks like a camera)
6. Under file, select 'save image file'
 - only saves as a bitmap
 - open in Photoshop later and convert to tiff

4. TO SHUT DOWN THE SEM

1. Decrease the acceleration potential to Zero
2. Press the "Power Off" button (located below the Power On button)
3. Open the valve on the Nitrogen tank
4. Press "Vent" on the SEM console
5. When the chamber has been vented, open the door and remove the specimen
6. Turn off the Nitrogen tank
7. Close the chamber door, making sure it is seated correctly
8. Press the "Evacuate" button on the SEM console
9. When the "Ready" light comes on, press "Standby"