

## Advanced User Instructions for SEM

1. Load your sample and turn on the HT.
2. Set the kV to the desired level. If set above 20kV, then come and get me.  
You will need to adjust the saturation of the filament. Switch to “meter” and make the LED read around 75 (idea that bar doesn’t go further when continue to turn knob). Please always return to a setting of 6.2.
3. Let the filament warm-up for 10-20 minutes. This will help to stabilize the beam.
4. Go to a magnification above 3000x. The area can be a blank area to avoid any damage to your sample.
5. With the “video/emission” meter set to “video”, adjust the “Beam alignment” inner knob until the “video” meter is at its highest point. Do the same thing for the outer knob of “Beam alignment”.
6. If you have to significantly adjust the beam alignment, then you will need to re-align the beam in the column. If not, then skip to #9.
7. To re-align the beam in the column, set the “Beam alignment” knobs to the 12 o’clock position. Adjust the brightness so that the “video” meter is reading at 100.
8. You will use the large allen wrench to adjust three screws on the top of the column. Start with any of the three and adjust its position until the “video” meter reads at its highest point. Proceed to the next one and do the same thing. After adjusting all three, go back and do all three again.
9. Find something in the image to focus on. Get the best focus you can using the “final lens” knob.
10. Select partial field and go to an area in which you can see detail well.
11. Turn the inner knob of the “stigmator” to the location which gives best focus. Repeat with the outer knob.
12. If you can’t get a good image, you may need to adjust the final aperture position.  
Select partial field. “Wobble” the image through focus and observe how much spatial shifting of the image occurs. Make small adjustments to X and Y positions of the final aperture, one at a time, to minimize the amount of shifting that occurs.
13. For higher resolution images, you may wish to switch to a different final lens aperture. A 200 um aperture will be in place for standard use. Switching to the 100 will give better resolution. You will need to re-adjust the beam alignment and aperture position after changing apertures. Always put it back on the 200 um aperture before leaving.
14. Following significant turning of the focus knob, press the “Degauss” button. This will eliminate any current buildup in the lenses that may be hampering image quality. You will likely lose your view of the image doing this and will have to begin focusing again.