Acquiring an image using the phosphorous screen

1. Check the vacuum in the octagon and make sure the vacuum is lower than 20 Log, if so you can open the column valves.
2. Make sure the phosphorous screen is inserted into the optical column.
3. Load the alignment files for the FEG and the operating mode of the microscope.
4. Open the column valves and check for a bundle.
5. Press the eucentric focus button to reset all displacements.
6. Using the sample z-height buttons try to minimise the contrast of the picture.
7. Further minimise the contrast of the picture by magnifying and then using the focus knob.

High Resolution TEM image using digital Camera

1. Make sure the screen current is roughly less than 10 nA.
2. Retract the phosphorous screen using the R1 button.
3. In the Velox camera software press the play button to start acquiring.
4. Before changing the beam intensity or magnification always reinsert the phosphorous screen
5. Open the fast Fourier transform window on the top right.
6. By pressing the stigmator button and using the multifunction knobs correct the stigmator such that there are concentric circles visible in the FFT. Using the focus buttons make the circles larger. The flat inner section of the innermost circle should fill most of the FFT image.
7. The most detail can be achieved if there are bright spots or rings on the edges of the FFT.
8. Acquire a HRTEM picture using the camera button in the top toolbar.

STEM imaging

1. Load alignment file for high tension STEM. (STEM 300 kV)
2. In the Velox software activate the HAADF detector by clicking it in the column overview.
3. Make sure the Titan PC is in control of the electron beam deflection by checking that the box under the monitor is set to ”INT SCAN”.
4. Refocus on the sample using the same method as in the HRTEM section.
5. Pause the beam and set it to illuminate amorphous material.
6. Activate the condenser stigmator and correct the Ronchigram to show a flat circle in the beam.

EDX

1. Re-check if the focus of is correct.
2. Select a region for the EDX inspection.
3. Select a region for the drift correction, make sure it has well-defined horizontal and vertical features.
4. Use the analysis toolset to analyse a region of interest.
5. Using the periodic table on the right of the screen you can select which elements you want to show.

Shutting down

1. Close the column valves.
2. Center the stage using (Search) $\rightarrow$ (Stage) $\xrightarrow{\text{fly-out}}$ Reset Holder.
3. Take out the holder, remove the sample and reinsert it.
4. After octagon vacuum is sufficient, and the holder is fully inserted, turn of the turbo pump.