

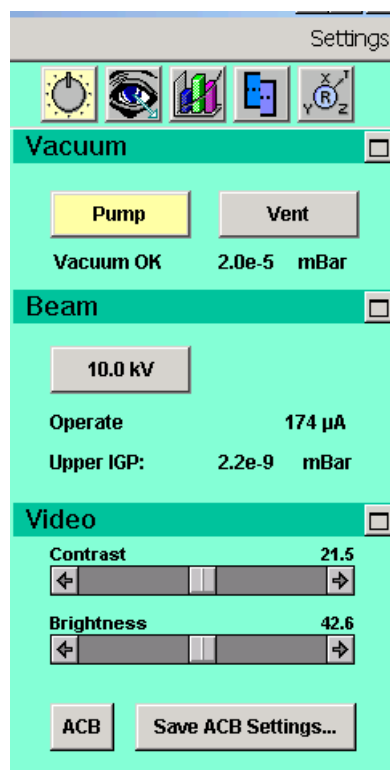
Scanning Electron Microscope Operating Procedure (Philips XL30 SEM & XL30 ESEM)

Safety Precautions

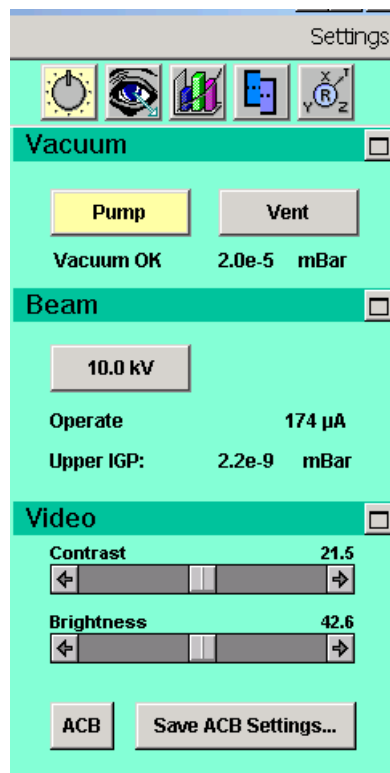
1. Always wear a pair of clean gloves to prevent contamination of the specimen and column.
2. Ensure that the spacing between the top of the specimen and the final lens is more than 10mm.
3. Do not slam the chamber door during closure. Close the chamber door slowly and ensure that there is no obstruction.
4. Do not force open the chamber door when venting. Pull the chamber door lightly to open when unloading / exchanging specimens.
5. Ensure that the stage is back to 0° tilt before venting the chamber.
6. Do not touch the exterior of the column during operation to prevent any possibilities of electrical short.

Operating Procedures

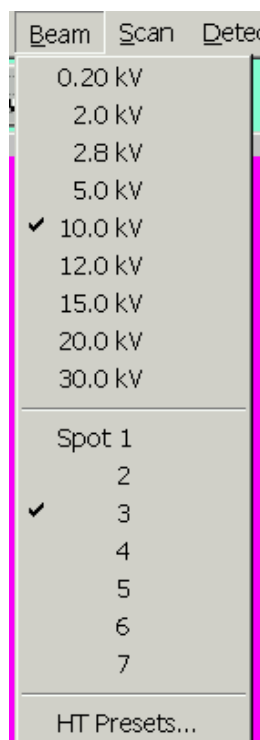
1. Place the specimen on the stub using carbon tape.
2. Click on the 'Vent' button to vent the chamber.



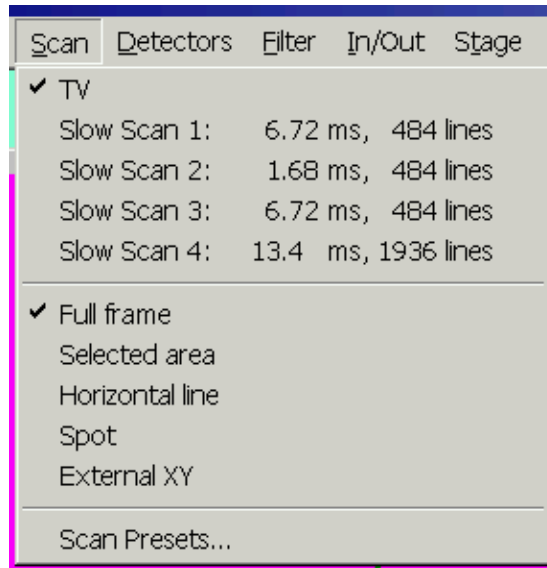
3. Open the chamber door slowly by pulling lightly on the handle.
4. Tighten the screw of stub holder after the stub is put in place.
5. Close the chamber door slowly and click on the 'Pump' button to evacuate the chamber.



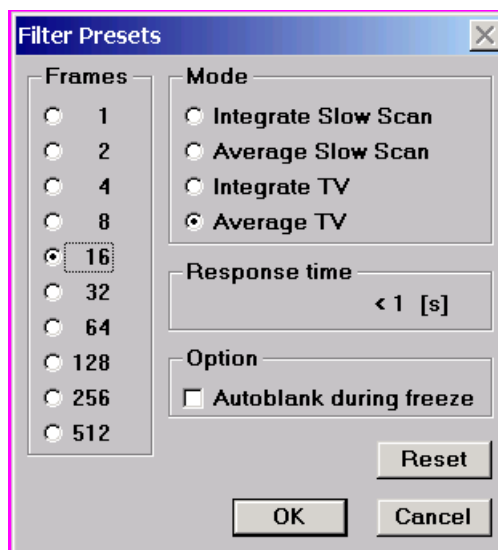
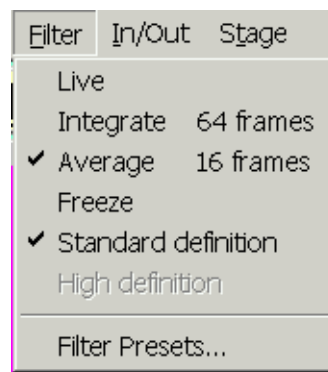
6. "Vac OK" will appear below the 'Pump' button when the chamber pressure has reached 1.3×10^{-4} mbar and below.
7. Select the Acceleration Voltage and Spot size.



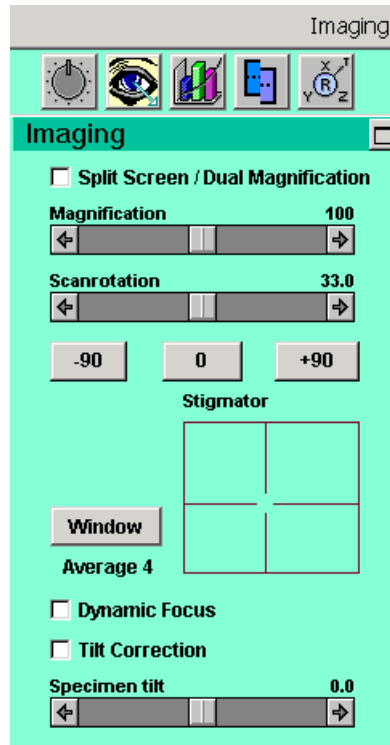
8. Set the scan rate to **TV** and scan area to **Full frame**



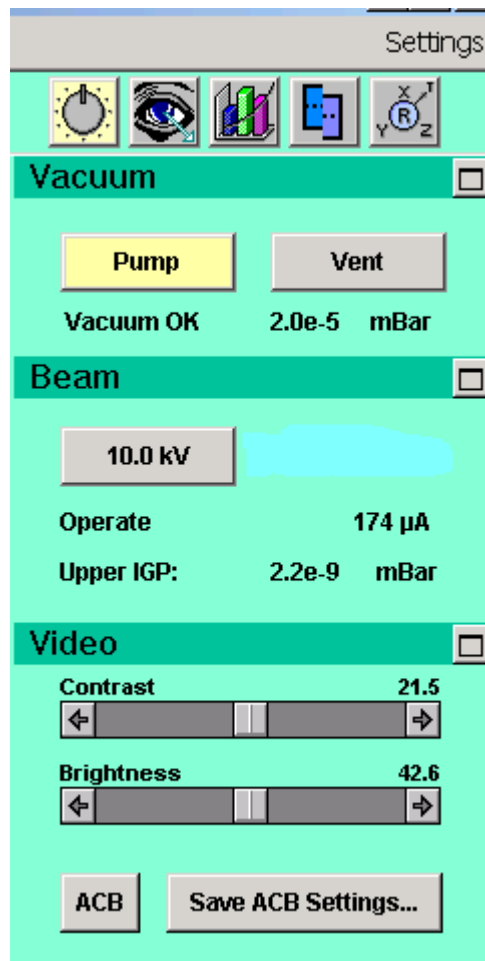
9. Select the Filter preset values by clicking on **Filter** followed by **Filter Presets** from the menu bar



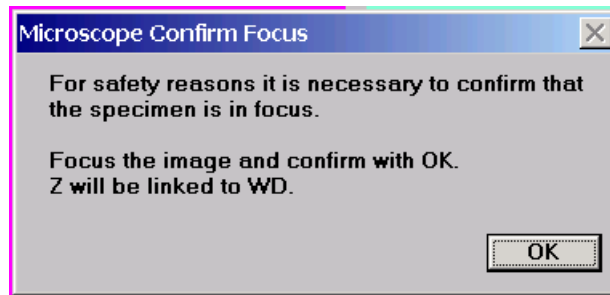
10. Click on the Imaging window and check that the Scanrotation is 0



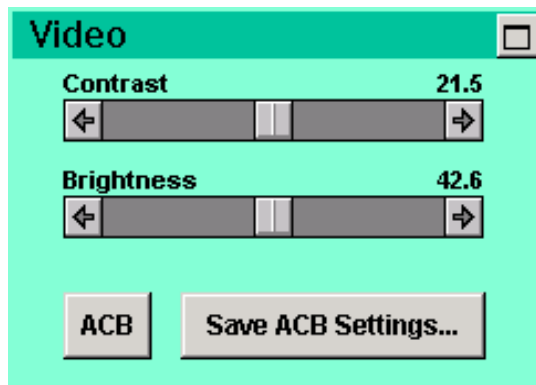
11. Click on the High Tension button to turn on the high voltage.



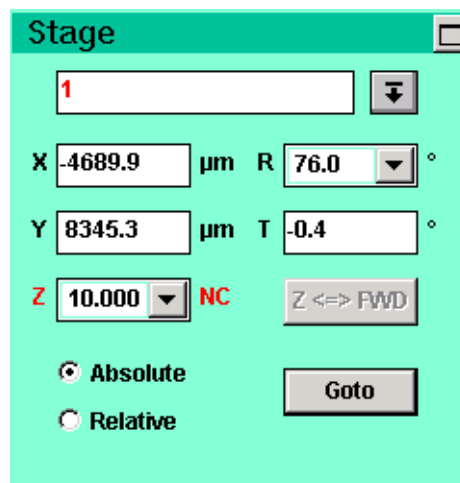
12. A confirmation dialogue box will appear. **Do not click on the OK button until the image is focused.**



13. Adjust the Contrast and Brightness to obtain the optimum display

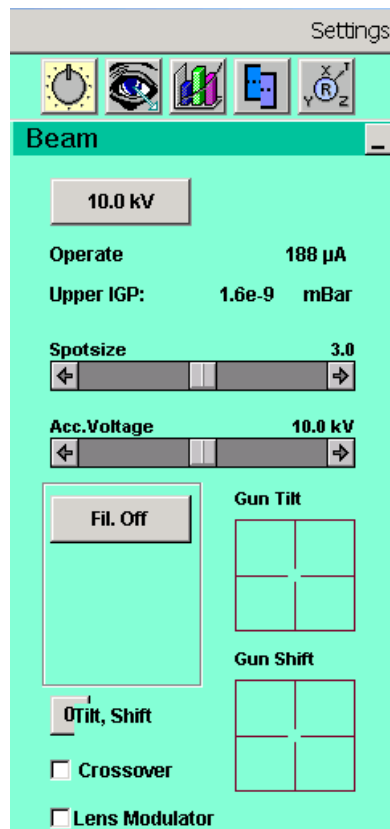


14. Set the Z value to 10mm after linking Z to FWD (Free Working Distance).

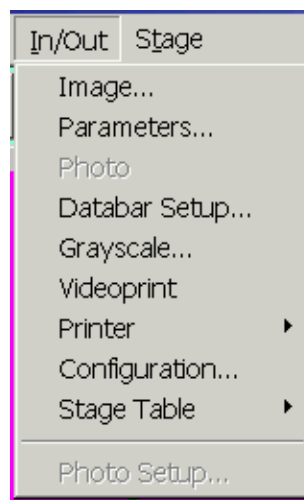


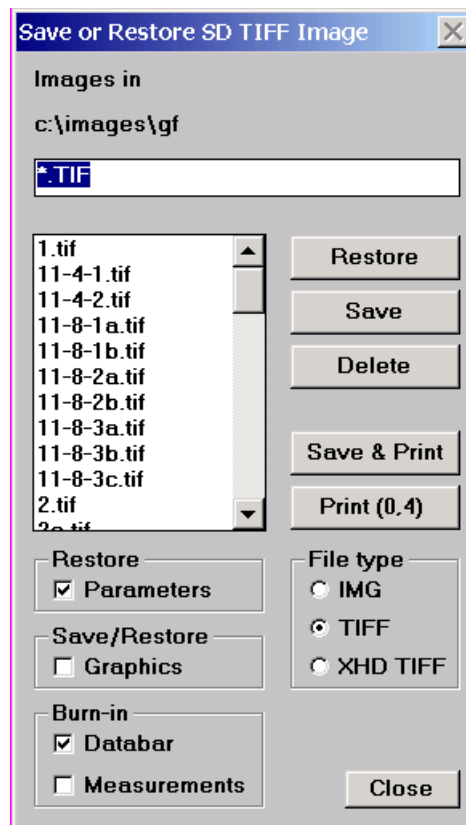
15. Focus and optimize the image by correcting the contrast, brightness and astigmatism. Increase the magnification using the + key on the numeric pad and decrease the magnification using the - key on the numeric pad.

16. Perform Lens modulation adjustment if there is image shift when focusing the image.



17. To capture the image, press **F2**
18. Save the captured image by clicking on **In/Out** followed by **Image** from the menu bar





19. Click on the High Tension button to turn off the high voltage.
20. Wait for 5 minutes or more before venting the chamber for exchanging the specimen.
21. Repeat the procedure starting from step 1 if necessary.

Shutdown Procedures

1. If necessary, switch off the high voltage.
2. Shut down the PC
3. Press the **STBY** (Standby) button on the control panel of the microscope.
4. Wait for 20 minutes before switching off the water supply

Created by: KOO Chee Keong

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