Operating Instructions for the Hitachi S-3400N

Start up:

1. Enter your complete name, CMRF user code, date, the starting clock time, and the starting beam time into the record book. You must have previously filled out a project information sheet.

2. Turn on computer. Log in to computer. Log in name is: PC-SEM. There is no password. (When using the x-ray microanalysis system, login to the SEM computer with the login name: administrator and the password: hitachi and the Bruker computer with the login name: administrator and the password: test.)

3. Log in with your log in name and password when S-3400N dialog window opens.

Loading specimens:

1. Insert stub onto specimen holder and tighten set screw.

2. Click the AIR button. The chamber will take approx. 2 minutes to vent.

3. The Specimen Setting window will appear. Click on the Specimen Setting button.

4. When vented, pull the stage out using the handles.

5. Click OK button in the Specimen/Detector Setting window.

6. Measure height of the specimen at its highest point with the height gauge. If the specimen is wider than the specimen stub, measure the width of the specimen at its widest point.

7. Enter the size (width) and height of your specimen.

8. Click the Stage Move button. There will be beeping sounds while the stage is moving to its maximum height.

9. Once the beeping stops set the specimen holder into the receptacle on the stage. (It is recommended to wear gloves when handling the specimen holder.)

10. Carefully push the stage into the chamber. Confirm that the specimen will pass under the check gauge (there should be a 2mm interval).

11. Click the OK button.

12. Click EVAC button. It should take less than 2 minutes to evacuate the chamber. When evacuation is complete, the ON button will become active.

Turning on the beam:
1. Press the ON button.

2. To select accelerating voltage, open the Setup window by clicking on the area directly to the right of the ON button. Select the Optics tab. Desired accelerating voltage can be chosen from the pull down menu.

VP-SEM operation:
1. Click on Cond. Tab on the Operation panel (right side of screen).

2. Select VP-SEM.

3. Set desired vacuum level. The allowable range is from 6 to 270Pa.

Note: The backscattered electron detector is automatically selected. The chamberscope must be off when using the BSE detector.

Alignment:
1. Click on Align button.

2. Select Beam Align. Tilt and adjust the Stigma./Alignment X and Y knobs to obtain the brightest image.

3. Select Beam Align. Shift and adjust the Stigma./Alignment X and Y knobs to obtain the brightest image.

4. Select Aperture Align. and adjust the Stigma./Alignment X and Y knobs until the image does not shift back and forth.

5. Select Stigma Align. X and adjust the Stigma./Alignment X and Y knobs until the image does not shift back and forth.

6. Select Stigma Align. Y and adjust the Stigma./Alignment X and Y knobs until the image does not shift back and forth.

7. Close the Alignment window.

8. Increase magnification to about 20,000X, focus, and use Stigma./Alignment X and Y knobs to correct astigmatism.

Capturing images:

1. Select desired resolution and speed/integration in the capture setup window. To open this window, click on the black tab above the capture button (to the right of the magnification display).

2. Select area to be imaged, focus and click the capture button.

3. When image capture is complete, the Captured Image window will open. Click on Save button.

4. Enter image name and select image type and folder to which the image is to be saved. Click on Save button.

Ending a microscope session (or exchanging specimens):

1. Click the OFF button.

2. Press the AIR button.

4. When vented, pull the stage out using the handles.

5. Remove the specimen holder from the stage.

6. Carefully push the stage into the chamber.

7. Press EVAC button on the front of the microscope main unit.

8. Close the S-3400N software.

9. Shut down the computer.

10. Sign out in the record book.