



Phenom XL SEM

Basic operation procedure

Please wear gloves before the sample sets up on the sample holder.

1. Load/Unload the sample.

- Open the SEM box door by clicking  to take out the sample holder.
- Set up the sample on the stage. (Reference 2)
- Load the sample holder into the SEM box until it touches the back.
- Click on  to close the door and wait for a while.

2. Set up the sample to SEM sample holder.


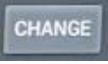
- Use carbon tape and **COPPER TAPE** to set up the sample on the mount pin.
- Set the sample+pin in the center of SEM sample holder.
- Rotate the sample holder's height adjustment knob until the surface of the sample is flush with RIM.
- Then rotate the knob an additional 6 notches to lower the top of sample below the RIM. (WD ~6mm)

3. Click on the center of the sample when you see the sample on the screen by Nav-Cam.

Click  to switch Nav- Cam to SEM view and wait for 38 seconds.

A. SEM Image

1. Making Folder

Click on the **Setting**  and select the **Customize**, name your image, and select the location by clicking  button.
(C:/Users/Thermofisher/Documents/Projects/ Your Folder)

2. Setting the system

Expands the System Settings Menu by clicking Blue arrow at the top of the screen.

System *Acc Voltage* 5 kV/10 kV

Beam Intensity Image

Detector BSD/Mix (BSD+SED) Wait for a while (check the remaining time of Vacuum pressure should be < 2Pa)

Vacuum High (0.10Pa)

Live *Averaging* Medium and *Scan size* 960-600 (Depends on user)

Acquisition Recommend using *Averaging*- High and *Scan size*-1920-1200

Check -Time estimate

3. Image enhancement

a.  Stigmatize- Use Auto Stigmatize.


b.  Contrast-Brightness

Scrolling with the mouse wheel adjusts Brightness. OR

Right-click on  and select  for Auto Contrast-Brightness adjustment.

c.  Focus

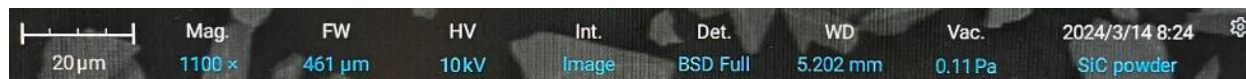
The image can be focused by right click and drag in horizontal direction. OR

Right click on the Focus icon and select  for Auto Focus.

d. Magnification


Scrolling with the mouse wheel zooms in and out.

All fields of the data bar at the bottom of the main SEM in blue text view can be edited using the mouse and keyboard.




Note-  **WD** 5.863 mm should be between 5-6.5mm.

4. Click  Acquire the image.

Click  to live the image and to get another image.

B. EDS Measurement

1. Click  button to live the image.
2. Settings the system
Expands the System Settings Menu by clicking Blue arrow at the top of the screen.



System *Acc Voltage* 15 kV
Beam Intensity Point, Map,
Detector BSD/Mix (BSD+SED) Wait for a while (check the remaining time of Vacuum pressure should be < 2Pa)
Vacuum High (0.10Pa)

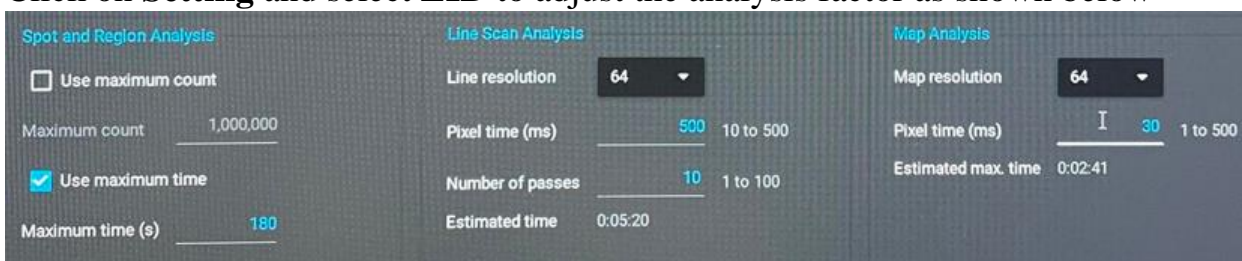
Live *Averaging* Medium and *Scan size* 960-600 (Depends on user)

Acquisition Recommend using *Averaging*- High and *Scan size*-1920-1200

All fields of the data bar at the bottom of the main SEM in blue text view can be edited using the mouse and keyboard.



3. Click on  icon for EDS analysis.
4. Click **NEW**  to get a new project and name the project title once EDS layout screen pops up.
5. Click on **Setting** and select **EID** to adjust the analysis factor as shown below-




Check the estimated time on the corresponding analysis and close it.


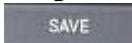
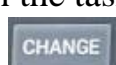
- Click on the live SEM image will acquire an image, add it to the project and start an EDS measurement.
- ON the Automative Identify elements.
- Select the measurement type from the toolbar on the left.

 - Point Analysis



 - Region

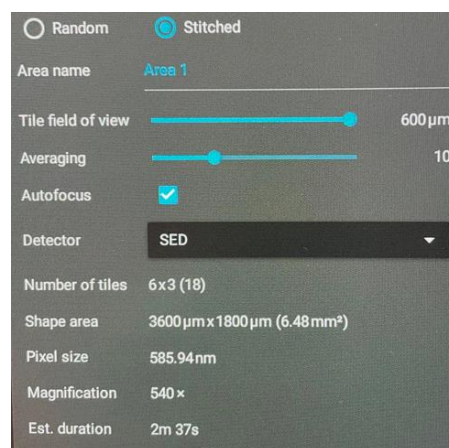
 - Line Scan

 - Mapping



- Click on Stop  icon if you want to cancel the task.
- Click on  to save the data when the task is done.
- Select the save designation by clicking  button.
(C:/Users/Thermofisher/Documents/Projects/ Your Folder)

C. Stitching

- Click  button.
- Select the area on the sample.
- Click **NEW**  and write the area name once stitched layout screen pops up.
- Select the **Detector** using the down arrow and check the Number of tiles and estimated duration.
- Choose the location to save the data then click on **START**.



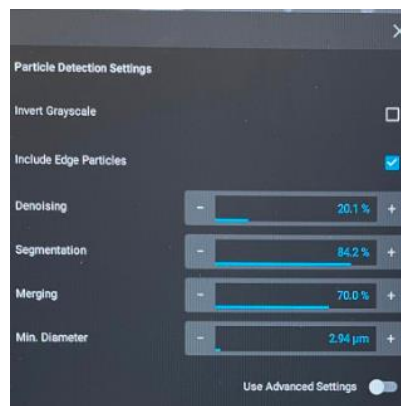
D. Particle Measurement

- Click  button to live the image and click  button.



2. A prompt will appear and ask to select image from the list

3. Edit Particle Metric's ability (e.g. **Min. Diameter**) that you desire when **Particle detection setting** screen pops up. You can see the number of particles on the bottom of image.



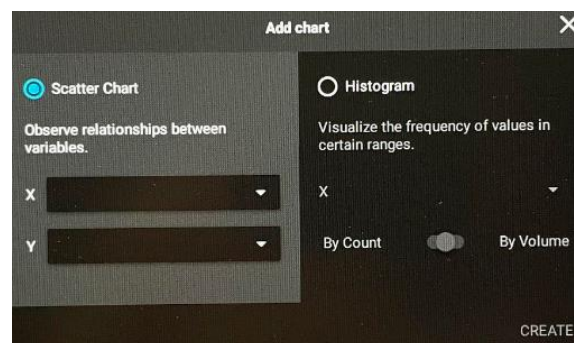
4. Click on **START PROJECT**.

5. Click **NEW** **NEW** to create the file.

Write the image name once layout screen pops up. You can see the no. of particles and data distribution for all particles.

6. Select or Create the desire X and Y axis data for Scatter Chart using + button at the top bar of the chart. OR

Select or create the desire X data and mention by Count/ by Volume for Histogram using + button at the top bar of the chart.



7. Click on Save **NEW** **LOAD** **SAVE** to save the data when the task is done.

8. Select the save designation by clicking **CHANGE** button.

(C:/Users/Thermofisher/Documents/Projects/ Your Folder)

E. Unload the sample.

- Open the SEM box door by clicking to take out the sample holder.
- Take your sample+Pin.
- Load the sample holder back into the SEM box until it touches the back.
- Click on to close the door.

* Keep the software in standby mode, accessible under Setting, Phenom.