EDS operation instruction

1. **Obtain a good electron image of an area of interest on the sample (refer to FESEM operation procedure)**
   The preferred WD for EDS is 10mm

2. **Push insert detector button (on the table)**

   !!! when using EDS, CCD camera window (lower right) can not be unpause at the same time of the image scanning window (upper left)!!!

3. **Double click on** **to open the EDS software**

4. **Choose the project file saving path (recommend under D:/shareddata/user/EDS) and create a new project folder**

5. **Spectrum mode**

   Selecting Spectrum Mode by clicking on .

   1. Click the Acquisition Properties setting button . Input 100 (seconds) for Live Time Limit section in the Termination Criteria group. Leave other termination settings at defaults.
   2. In the Pulse Processor group, select Auto in the Time Constant edit box.
   3. Adjust the beam spot size on the microscope to obtain a detect rate of 2,000 - 2,500 counts, or a dead time of between 25% - 30% for a Si(Li) detector. For UltraDry detectors, the count rate will be higher
   4. Click Start Spectrum button to begin spectrum acquisition. You can stop an acquisition by clicking on the stop button. The spectrum is saved. To pause the acquisition, click the Pause button . To continue the acquisition, click the pause button again. Click the Abort button to stop the acquisition. The spectrum will not be saved.
   5. Acquire until Time Limit termination. The green rate bar in the Status Bar at the bottom of the software window indicates the time remaining for an acquisition. After ending, the Go button will return to active status (turns black).
   6. Element identification will be performed automatically during the acquisit llick on the button on the left side of

e. Then click on file menu, select save.

6. **Imaging Mode**

   1. Selecting Imaging Mode by clicking on
   2. Click Map Processing button on the bottom right of software pane, click on QUANT under map type to display. Choose the map data type from the pull down menu.
   3. Click the Get Image button to acquire image. Wait until the image acquisition is complete. To pause the acquisition, click the Pause button   on the Acquisition Toolbar. The Image Acquisition pauses at the completion of the current frame. Click Start to resume. To immediately stop the acquisition, click the Stop button   on the Acquisition Toolbar. The Image Acquisition stops at the completion of the current frame. Click the Abort button   to stop the acquisition at the end of the current line. The data are not saved. The electron image will be collected from the microscope based on the parameters set in the acquisition properties. The electron image is used as the reference for the data set to be acquired in the next step.
   4. Click on Start Map to get mapping data. When the acquisition is complete, acquired images and maps are stored automatically in the pre selected project folder. To generate word document report, click on the   button on the left side of the software pane. Then click on file menu, select save.

      Extract data from spectral imaging:
      Click on Cursor in the image pane, click on a position on the image, the mapping for that position will show up in map pane. Select point or an area shape or line in the image pane, then click on Process button   to extract data according to the selections. Click on the Surface button in image pane, the 3D representation of map data will show up.

7. **Point and Shoot Mode**

   1. Selecting Point and Shoot Mode by clicking on

   2. Acquire a new Image by click the Get Image button.

   Immediate (individual) acquisitions

   1. Check the Immediate Acquisition button   in the image pane and

3. Click on the image at the location where you want to begin the acquisition. In spot mode, acquisition starts when you click the point. For area modes, acquisition begins when you complete selecting the area.

4. Wait for acquisition to complete, or you can move the spot/area to a new location before the acquisition completes. The new location will have the same number as the original.

5. To add another point, click a new location for point mode, or complete area selection.

Note: software begins a new acquisition at each new position under the base name appended with point number.

Batch Processing

1. Click the Batch Acquisition button   in the image pane Toolbar. Leave the button NOT DEPRESSED.

2. Select the type of acquisition. You can mix spots with areas. Each spot/area will be numbered sequentially.

3. Click on the image to mark the locations you want to acquire. For areas, adjust the size of the area.

4. When you are finished marking locations, click Process button   to begin spectral acquisition at each location. Each spectrum will be acquired individually.

Reviewing data locations

1. Click the select button   .

2. Click on the point or area you want to view. The spectrum from that location/area will be displayed in the Spectrum View pane. The spectrum name is the number of the point. The spectrum can be analyzed using the same functions as in Spectrum MoþMiea.
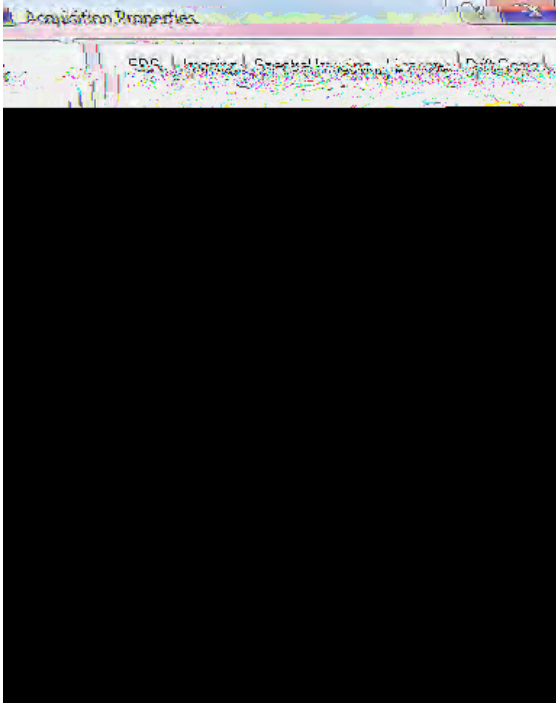
3. Click Line Processing button and choose the line scan data type.
4. Click the Get Image button and acquire an image.
5. Once the image is acquired, click on the image and draw the line on the image. The line can be drawn in any direction and length.
6. Click on the Star Linescan button. The linescan acquisition will start and data will appear in the linescan view.
7. Either wait until the acquisition terminates according to the criteria set up in the Linescan

   Acquisition Properties dialog box, or click the Stop button   to stop. To pause the

   acquisition, click the Pause button   . Click the Start linescan button to resume.

When the acquisition is complete, acquired images and Spectrum are stored automatically

in the pre selected project folder. To generate word document report, click on the
button on the left side of the software pane. Then click on file menu, select save.

Analyzing a Linescan