



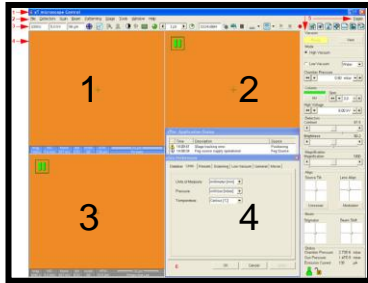
# **EDX Genesis**

(FEI Nova NanoSEM 2300)

April 2009

## SEM Operation

Optimal accelerating voltage for the analysis is 2-3x the highest expected energy measured. For example: AuL Energy = 9.712keV; select 20kV beam for analysis.



**Turn off CCD camera** (highlight Quad 4 and pause)

Check that the eucentric height is set to **5 mm WD** (located behind microscope). **Sample** should be at a final WD of **5 mm** for EDAX. Follow SEM Operation protocol.

In **Computer 2**, open **EDAX Genesis**



## SEM Operation

### XL Microscope Control

Enter **EDX mode** using:



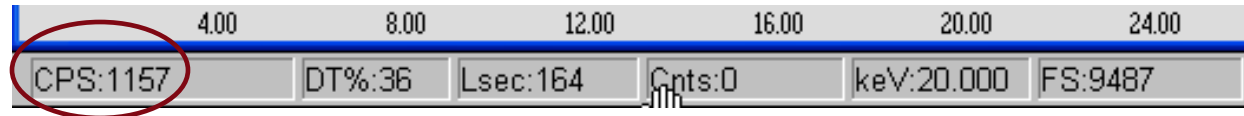
Auto adjust brightness and contrast (**F9**)

Focus on specimen

Under "**Scan**" select "**External**"

## SEM Settings

Adjust beam spot size to achieve sufficient **CPS > 1000**.



CPS	Amp (μs)
1000	100
2000	50
3000	35
5000	17
10000	10
15000	6
20000	4
25000	2.5

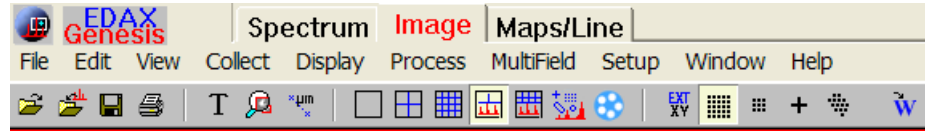
Based upon current **CPS** reading, adjust **Amp Time** to achieve Dwell Time (**DT%**) in the range of 18-40%.

Lower count rates = longer processing time  
= maximum resolution

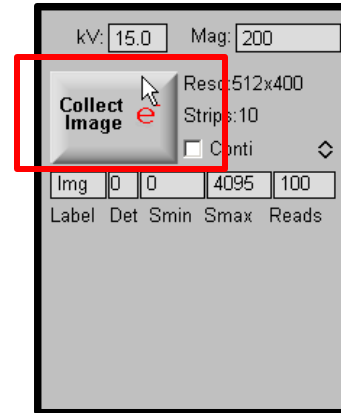
Higher count rates = shorter processing time

## Image

Click on **Image** tab

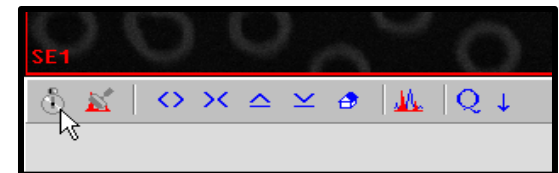


Collect the electron image by selecting **Collect Image e-** button.



Select **Preset** time needed for spectrum acquisition. (System will continue acquiring data until preset Lsec has expired or Start/Stop button is clicked to stop data acquisition).

Select Acquisition Mode



Begin Spectrum acquisition by clicking on the **Start/Stop** timer.

## Spectrum

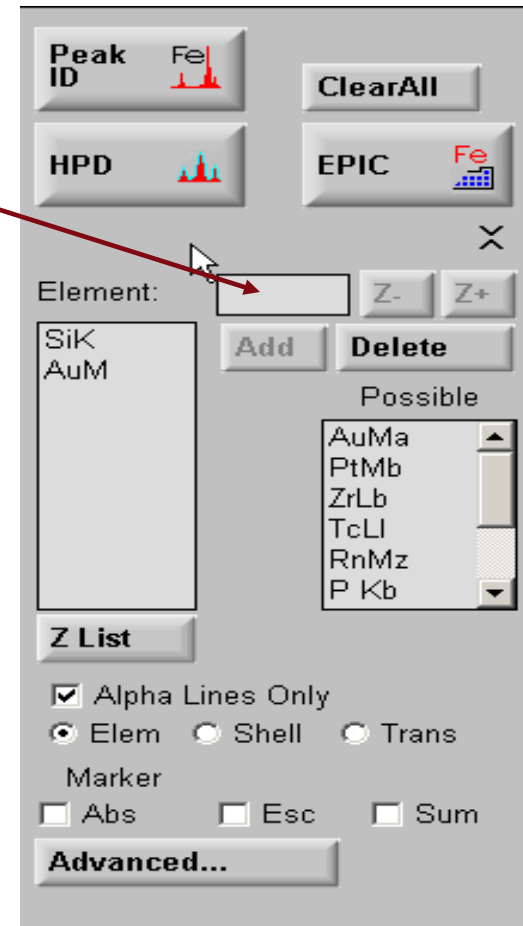
Select **Peak ID** to apply most probable elements to spectrum.

Type in desired element into **Element** field if it is not labeled on spectrum.

A reference mark will be posted on spectrum indicating where element occurs

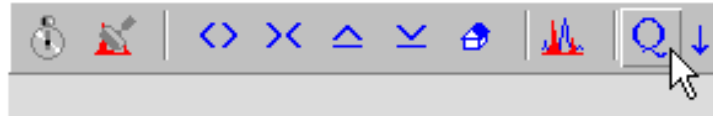
Click **Add** to apply the element to spectrum

Double check spectrum to make sure data/element definitions are accurate.



## Spectrum

Click **Q** to perform quantitative analysis of labeled elements.



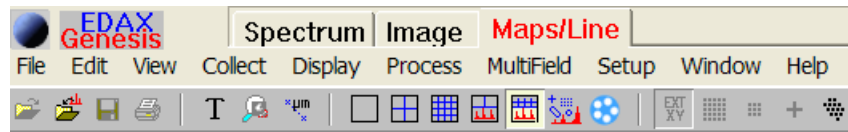
A list of the labeled elements with the **Atomic %** and **Weight %** will be displayed in upper right data box.

Element	Wt%	At%
SiK	79.89	96.54
AuM	20.11	3.46

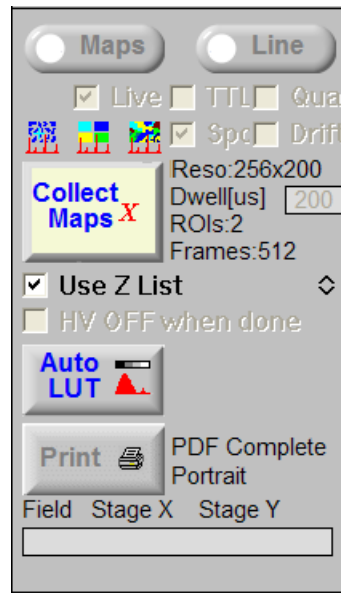
Save the data as a .txt file in any word processing software

## Mapping

Select **Maps/Line** Tab

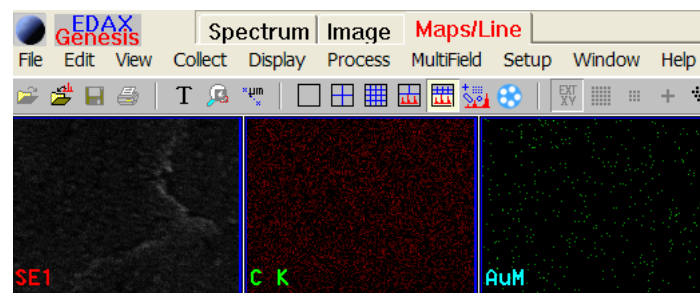


Select **Collect Maps** icon



Select **File** and **Save As** and **File Name** to save the map. EDX will save the SE background and each individual elemental count image.

Mapping will stop automatically once final count frame has been acquired.





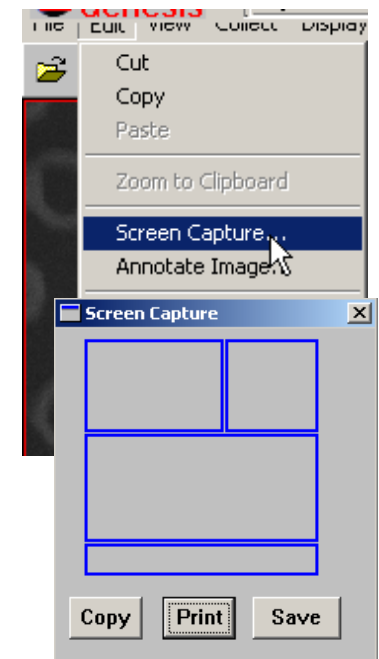
## Saving and Transferring Data

**Screen Capture:** Captures the SE image, Quant data, and spectrum as either .bmp or .tif files

Select **Edit > Screen Capture**

Highlight all four areas of the screen in blue.

Save to your **Archive** folder.



## Saving and Transferring Data

**Spreadsheet File:** Saves spectral data as a file that can be imported into an external spreadsheet program for further analysis.

Select the **Spectrum** Tab in Genesis

Select **File > Import Spectrum > from Image or Maps/Line**

Select **File > Save As**

Pick option **.csv**

Save to your **EDAX** folder.