

Oxford Instruments
EDS
AggieFab
Texas A&M University

1. Start SEM and EDS
2. EDS components
 - Project
 - Navigator
 - Scan image
 - Map
 - Spectral
3. Finish EDS

☐ SCOPE

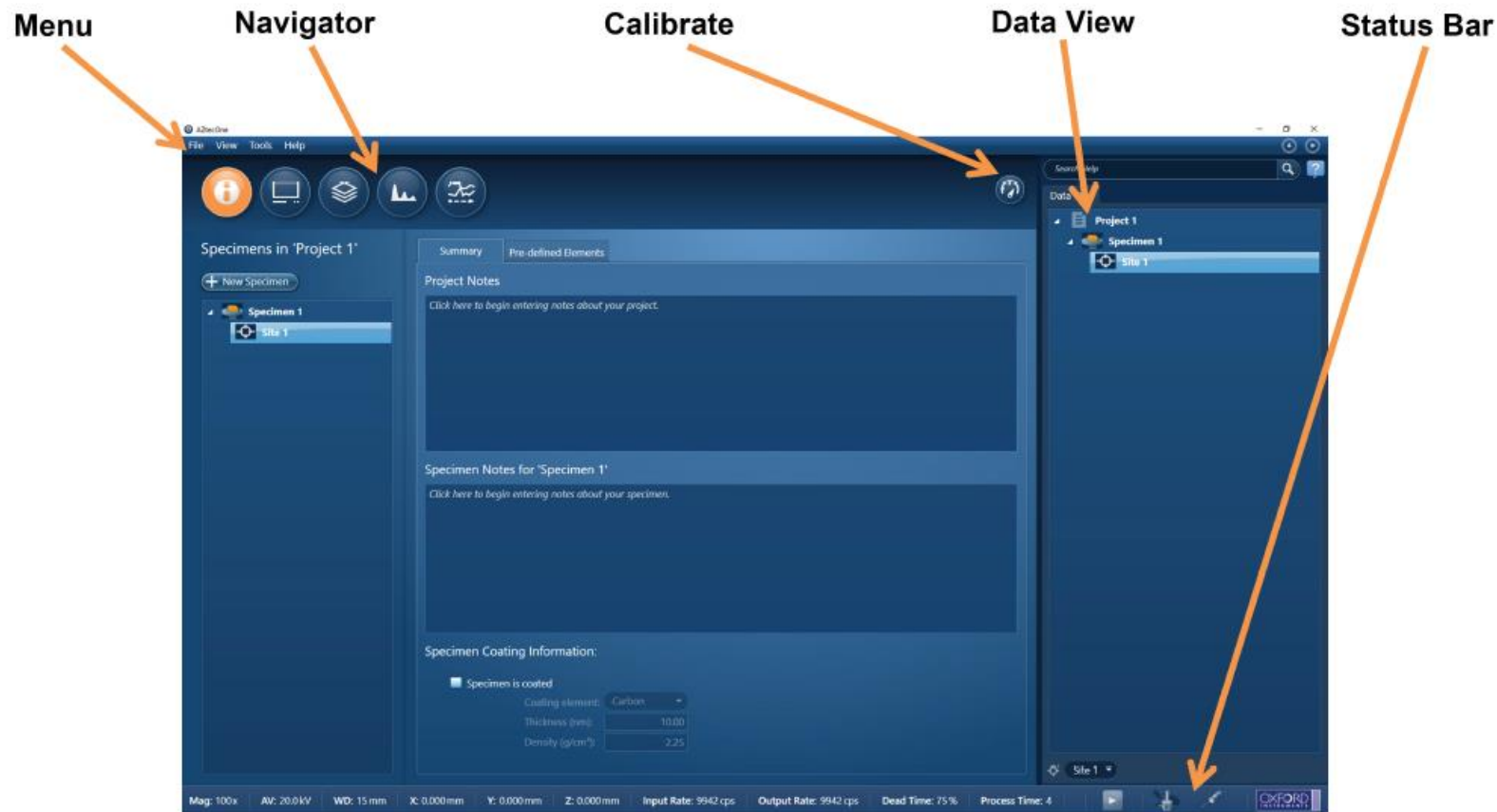
- The purpose of this document is to describe requirements and basic operating instructions for the FEI Helios SEM/FIB System. The use of this tool is limited to approved processes only.

☐ SAFETY

- Be sure that you are trained and signed off to use this equipment.
- Be sure to keep all doors and protective shields in place before operating this equipment.
- Use care when operating around high voltage or high current.
- If you are unsure about any procedure or indication while operating this equipment be sure to contact a staff member or trainer for assistance.

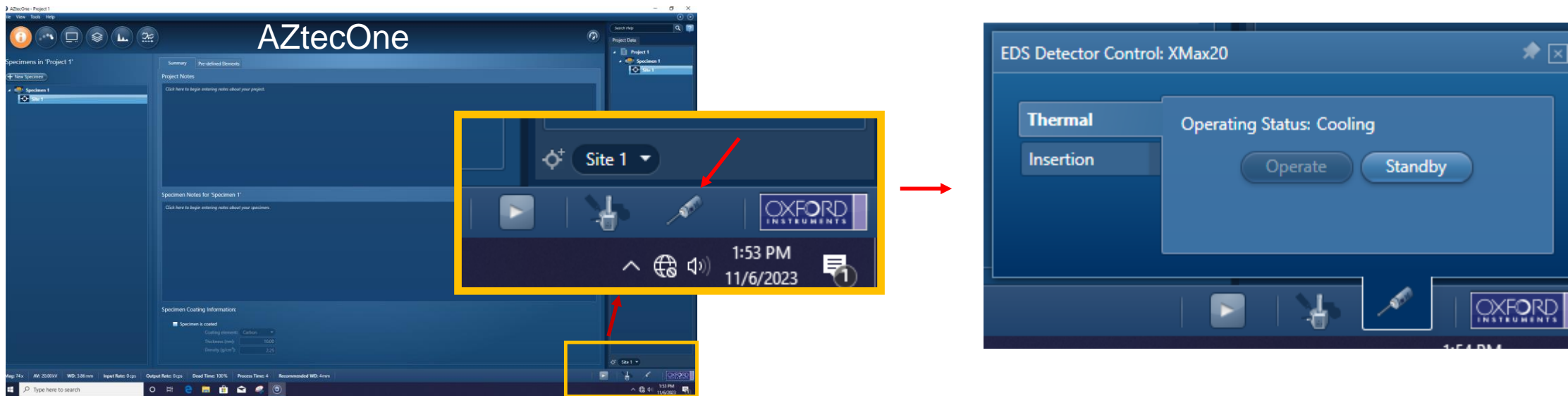
Starting EDS

1. Start SEM and do the e-beam alignment at 15 kV or higher.
 1. Please refer to the SEM operational manual if needed
2. Turn on the EDS PC monitor
3. Start the EDS operating software: 'AZtecOne'



Get EDS detector operational

1. In the status bar, click the icon pointed by the red arrow
2. Thermal tap – click 'Operate': **wait until the status changes to 'Cold'**
3. Insertion tap – click 'In' position: you will see the detector moving in.



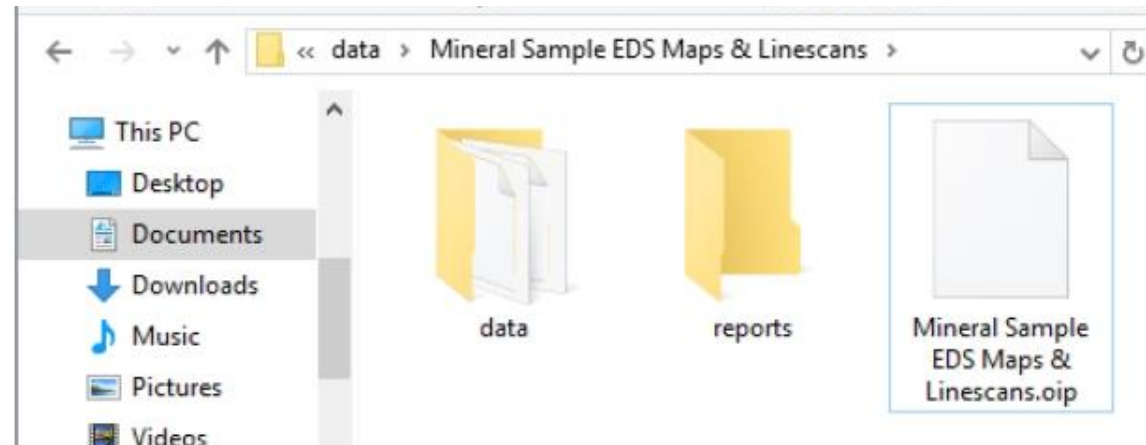
Project



Specimen: one or more sites of interest, for example, sample #. Up to 5 stubs can be loaded.

Site: interested area for data acquisitions

Note: Any project is represented by a folder which is saved with the name and location that you specify when you create and save a new project.



Specimen Details

The screenshot displays the 'Specimen Details' interface. On the left, a sidebar shows the 'Project Structure' with a tree view containing 'Specimens 1' and 'Specimen 1'. The main area has two tabs: 'Summary' and 'Pre-defined elements'. The 'Summary' tab is active, showing 'Project Notes' and 'Specimen Notes for "Specimen 1"'. Below these is the 'Specimen Coating Information' section, which includes a checked 'Specimen is coated' option and a table with the following data:

Coating element	Coating thickness (nm)	Density (g/cm ³)
Carbon	10.00	2.25

At the bottom of the interface, technical parameters are listed: Mag: 100x, Acc: 20.0kV, WD: 15.0mm, X: 0.000mm, Y: 0.000mm, Z: 0.000mm, Repet Rate: 9942 cps, Output Rate: 99.

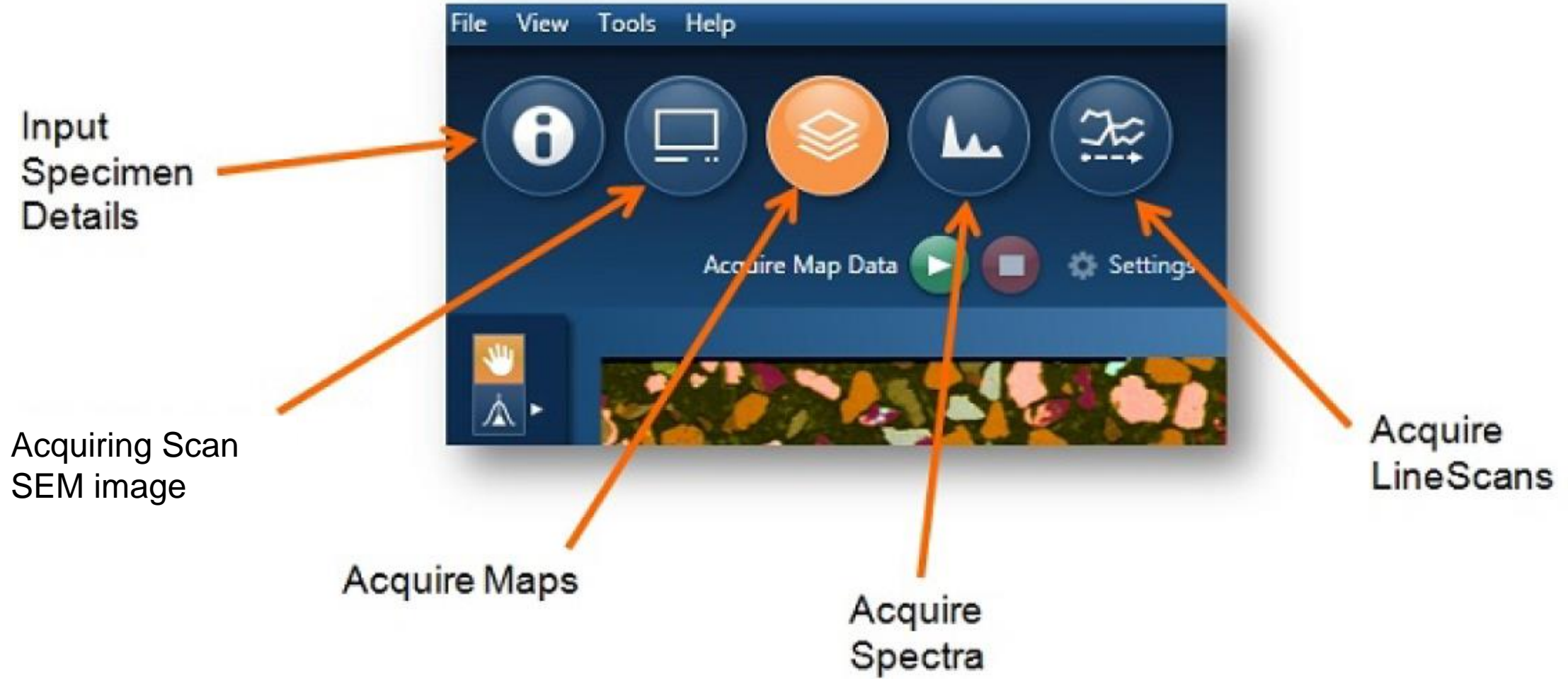
On the right, a 'Pre-defined Elements' panel is shown, featuring a periodic table where elements are either highlighted in red (selected) or blue (not selected). The selected elements include Li, Be, B, C, N, O, F, Ne, Al, Si, P, S, Cl, Ar, K, Ca, Sc, Ti, V, Cr, Mn, Fe, Co, Ni, Cu, Zn, Ga, Ge, As, Se, Br, Kr, Rb, Sr, Y, Zr, Nb, Mo, Tc, Ru, Rh, Pd, Ag, Cd, In, Sn, Sb, Te, I, Xe, Cs, Ba, La, Hf, Ta, W, Re, Os, Ir, Pt, Au, Hg, Tl, Pb, Bi, Po, At, Rn, Fr, Ra, Ac, Ce, Pr, Nd, Pm, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Th, Pa, U, Np, Pu, Am, Cm, Bk, Cf, Es, Fm, Md, No, and Lr. Buttons for 'Include', 'Exclude', and 'Clear' are located at the bottom of this panel.

Annotations with orange arrows point to the 'Summary tab', 'Pre-defined elements tab', 'Project Structure', and the 'Coating information' table.

Coating information

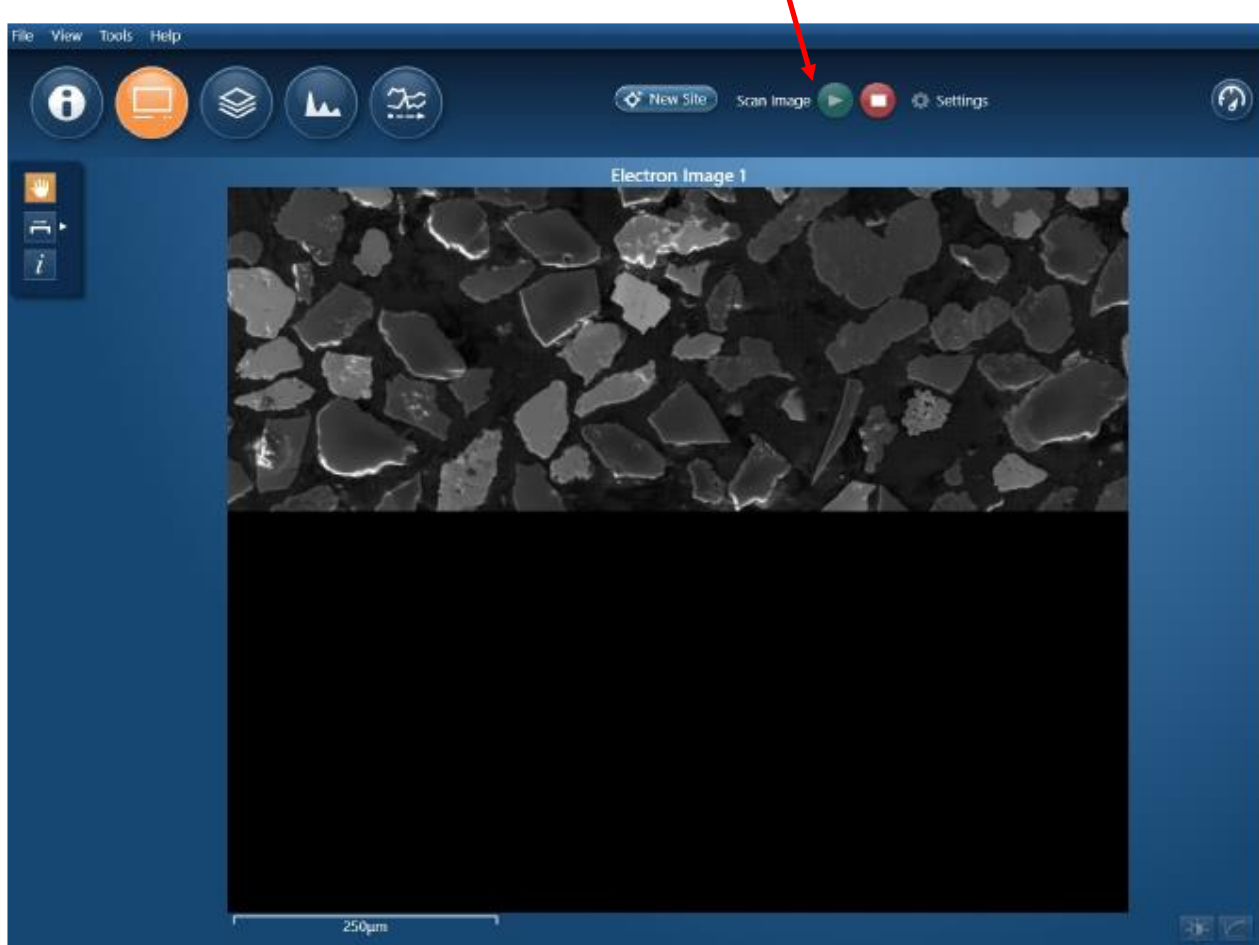
- Carbon is recommended.
- As thin as possible
- Coated element automatically deconvoluted

Navigator:

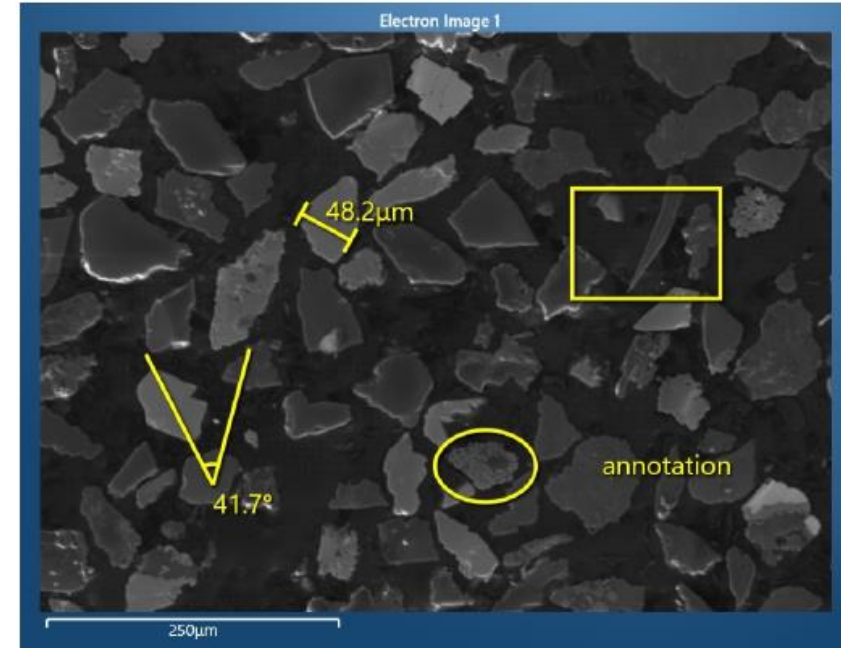


Scan image

Scan SEM image

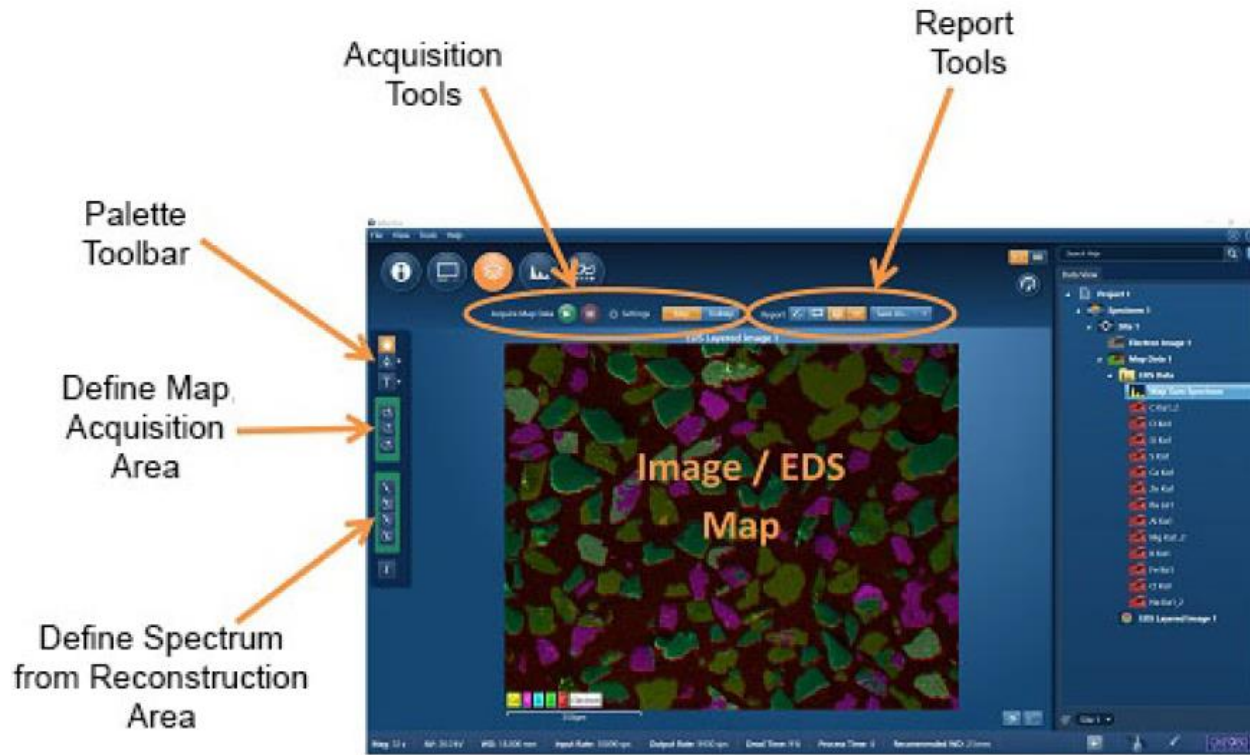


Annotating



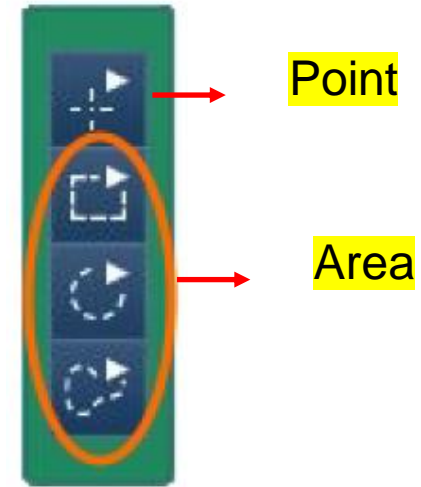
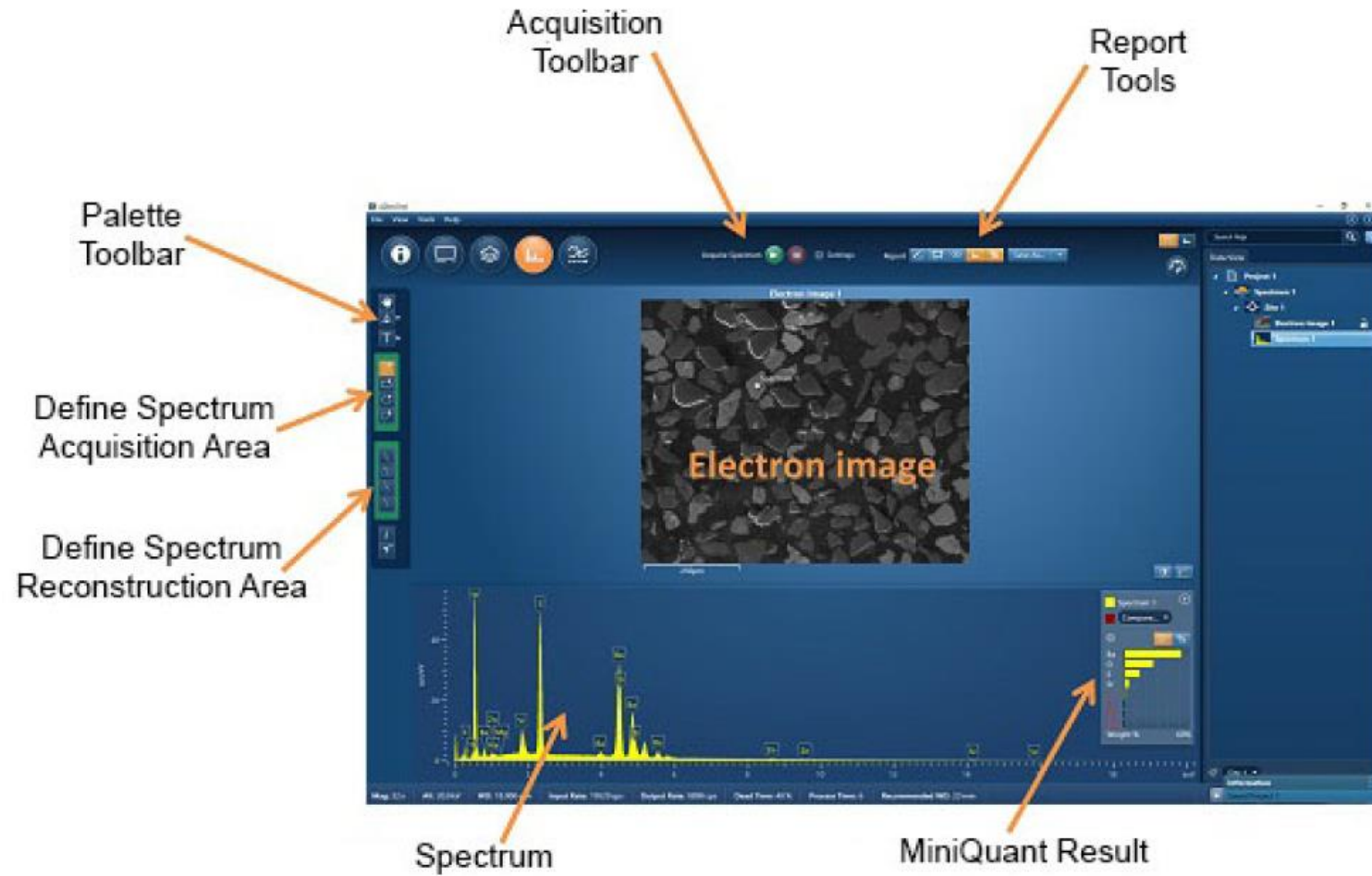
Use the annotating tools if needed

Map



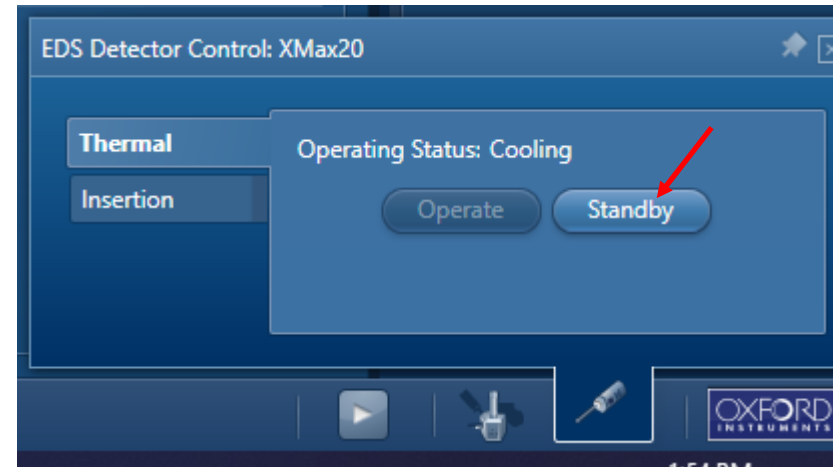
1. Select the map acquisition tool (left)
2. Outline the acquisition region using mouse drag

Spectra



Finishing EDS

1. 'Thermal' tap – click 'Standby'
2. Insertion – click 'Out'
3. Close the 'AZtecOne'
4. Power off the monitor



Revision history

SIGNATURES AND REVISION HISTORY

1. Original author of this document: Dr. Sung Oh Woo
2. Original author Title or Role: Research Engineer
3. Date of original: 8/1/2024
4. Revision B notes: description of the LMIS handling is added

Approvals:

Technical Manager Signature: _____

Sandra Malhotra

Date: 8/2/2024

Revision	Author	Date
Original Issue	Sung Oh Woo	8/1/2024