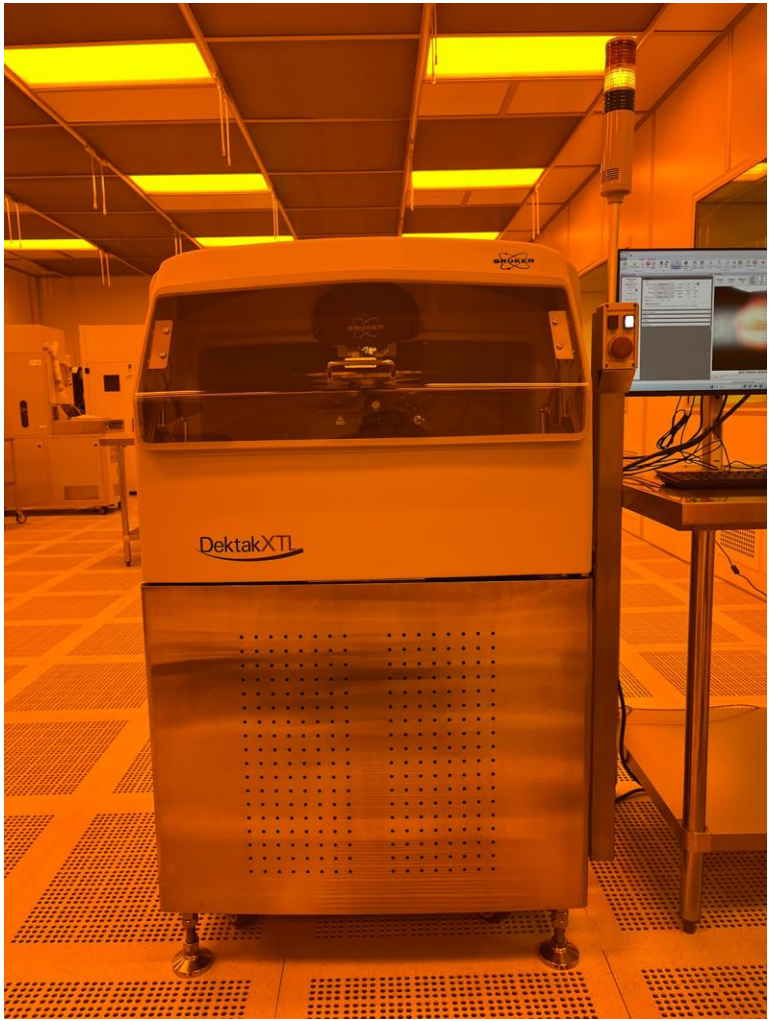
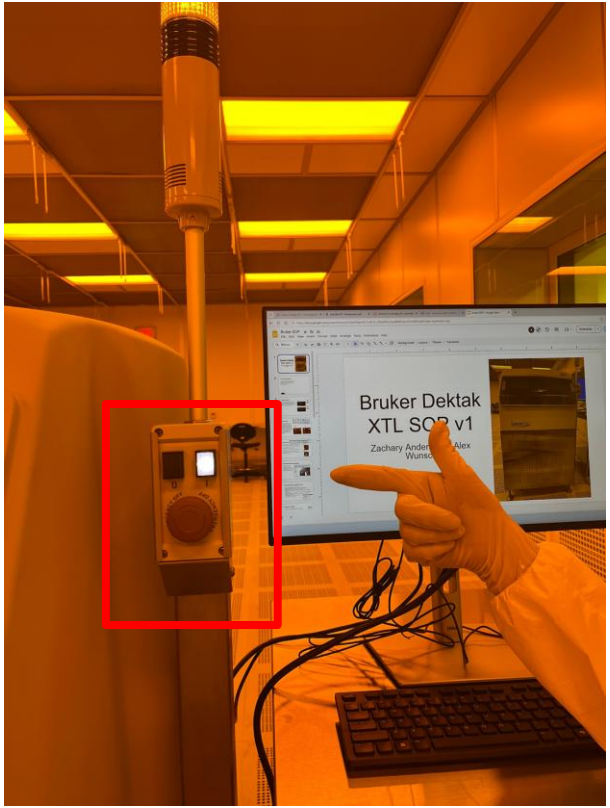
Bruker Dektak XTL SOP v1

Zachary Anderson & Alex Wunsch



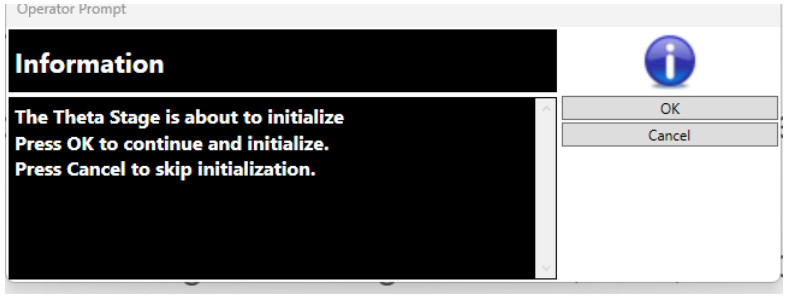
Turn On the Instrument

Turn on the machine using the power button located on the interface depicted in the image. This panel has the on, off, and emergency stop.



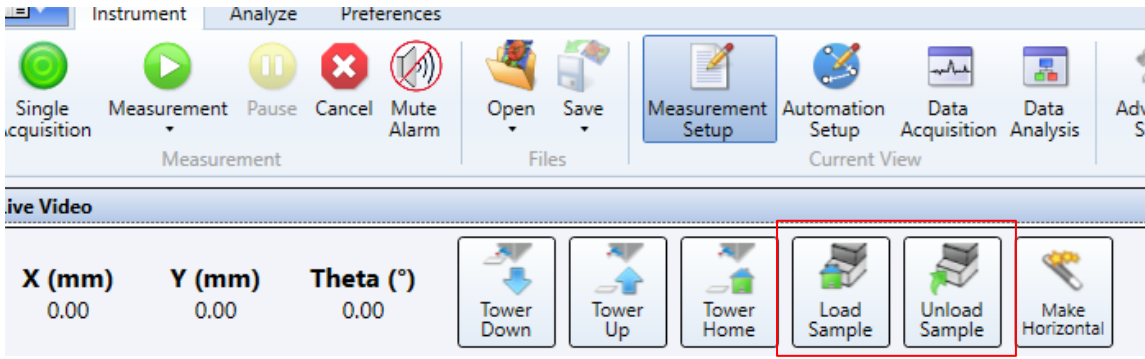
Initialize Software

Open the Vision 64 software using the shortcut on the desktop. Click “OK” on each step of the initialization process depicted on the right. The software will now open.

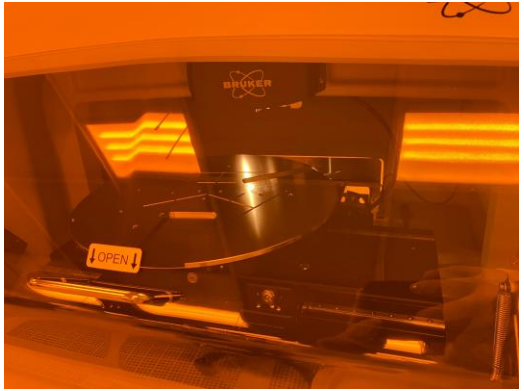


Load Sample

Select “Unload Sample” to bring the stage forward. Use the handle to open the door, and place your sample in the center of the stage. Close the door, and select “Load Sample” to prompt the stage to return to its original position. Make sure vacuum pump is on and nitrogen is flowing into the machine

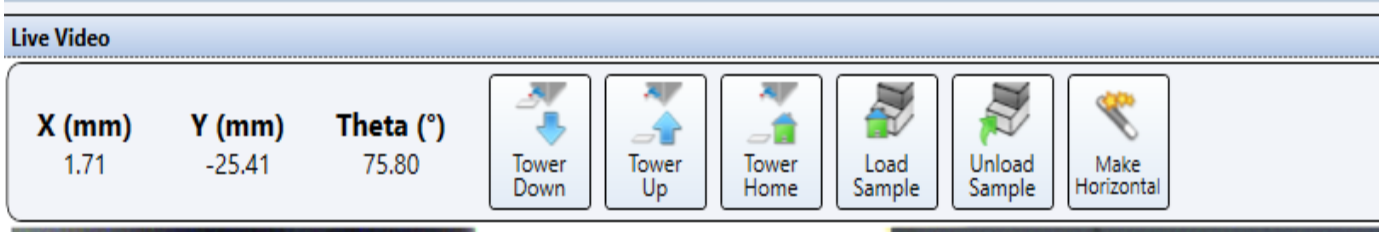


Unload:



Load:

Tower Location



Tower down to bring the tower and stylus in range of the sample, so you can see sample in the camera. This is a necessary step.

- It will press against the sample and then move back up

Tower up will raise the tower incrementally

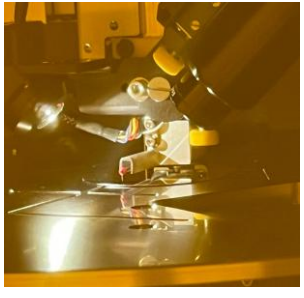
- Not always necessary but could be if hills are present

Tower Home lifts tower and stylus back to standby location

Make Horizontal to be used if your sample is not horizontal/has an angle after uploading

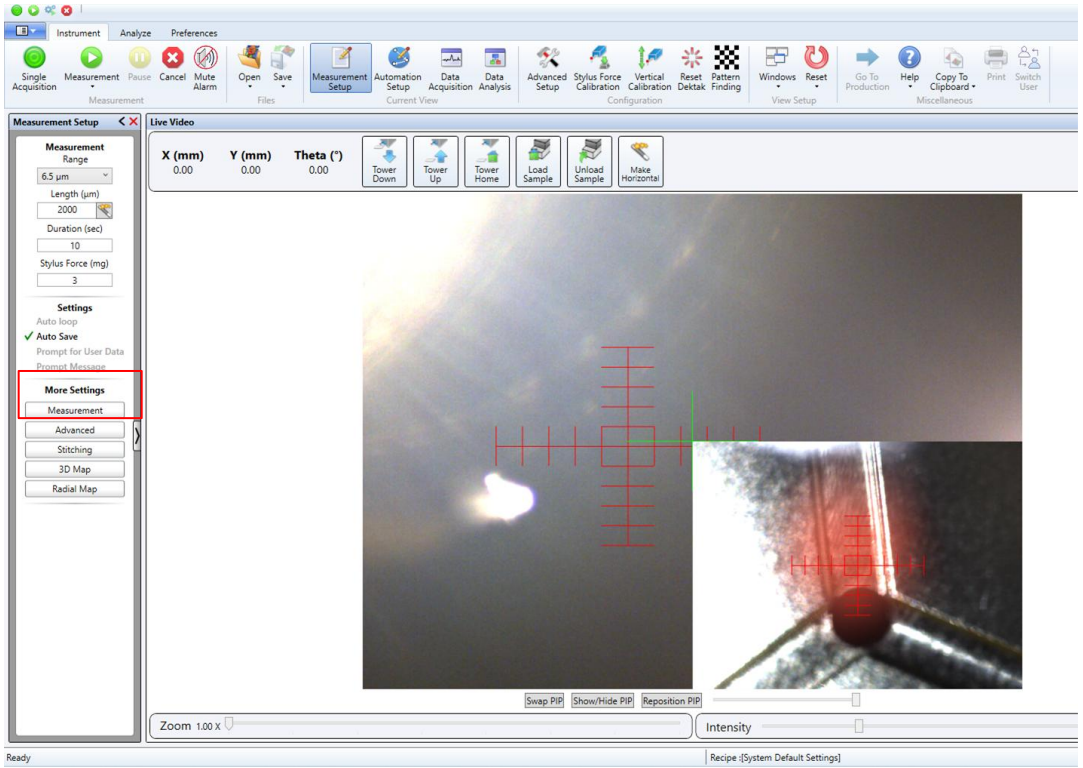
Tower Home:

Tower down:



Enter Measurement Specifications

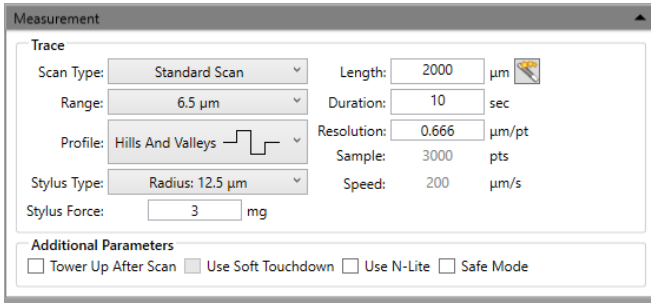
On the top, make sure “Measurement Setup” is selected on the top toolbar. Once this is done, select “Measurement” on the left toolbar under “More Settings”.



Enter Measurement Specifications (cont.)

- Select required scan type (most will use standard scan).
- Range: Height range that can be scanned up to 1mm. Choose applicable values.
- Profile: Detects hills, valleys, or hills and valleys. Use desired measurement.
- Stylus Type: Should always be 12.5 µm, the radius of the stylus
- Stylus Force: Best between 7-10mg, but can be less than 1 mg with the use of N-lite and Safe Mode.
- Length: The distance of the scan, starting from the front of the machine moving back. Never go above 50000µm.
- Duration: Used to change the speed but it will do so automatically based on length, 95% of use cases should not change this.
- Resolution changes the sample rate and speed, can be

  changed to a minimum of .125µm/pt



Orientation of Sample

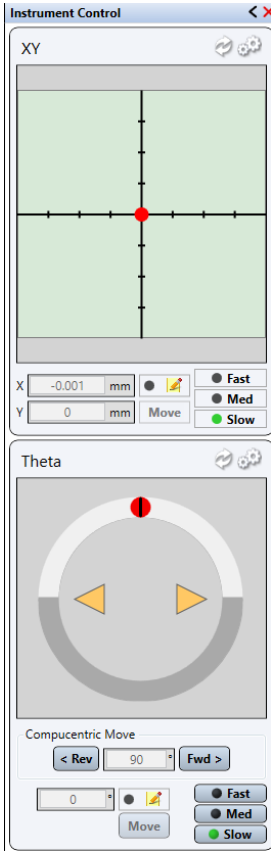
Use instrument control panel(on the right of main page)

XY: Input x y coordinates to move the stage, or drag the red dot to move towards desired location/orientation.

- Speed can be changed for drag with slow, med, fast buttons.

Theta: Rotates the stage and sample, this should be rotated so that the orientation of the features is perpendicular to the movement of the stylus.

- Can be moved by 90° left or right, or by using the arrows to move in small increments



Live Video Controls

Swap PIP: Changes perspective from either top down or side profile

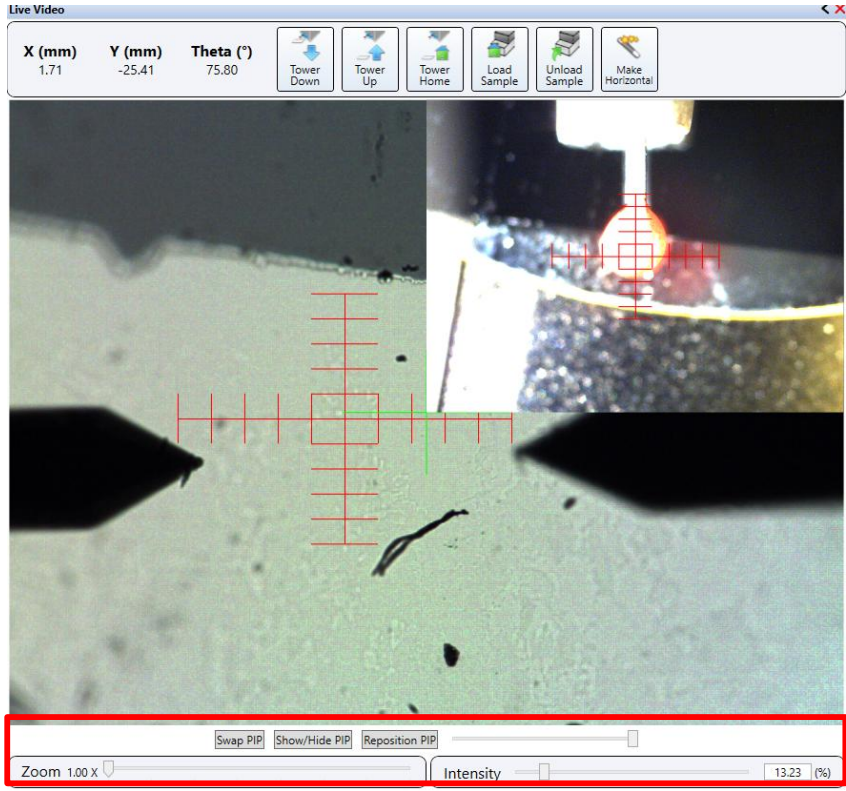
Show/Hide PIP: Shows or hides alternative perspective.

Reposition PIP: Changes location of smaller perspective to one of the four corners of the camera display

PIP Slider: Adjusts size of smaller perspective.

Zoom: Adjusts magnification

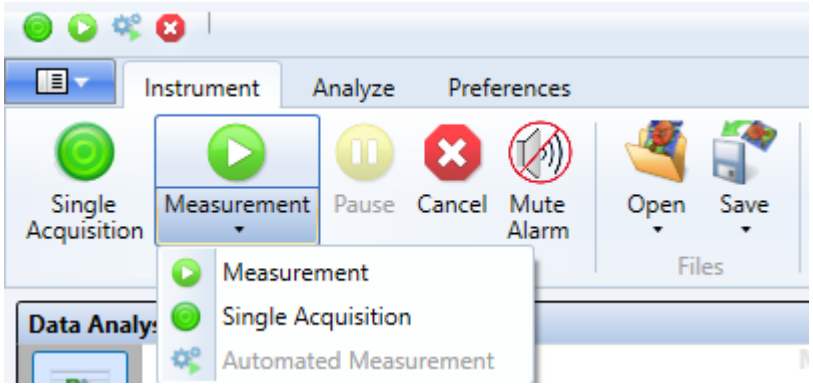
Intensity: Adjusts light intensity



Recording Measurements:

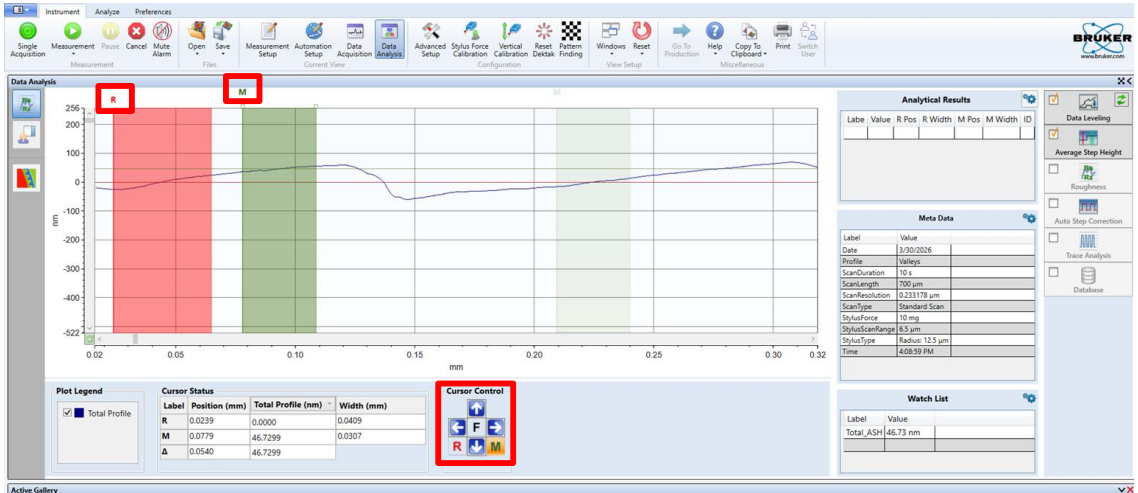
Hit the green button to begin recording

- Single acquisition: Results in only the first scan of the map being completed to confirm the measurement setup
- Measurement: Moves across the surface and records multiple data points to scan the entire map. (General Use)



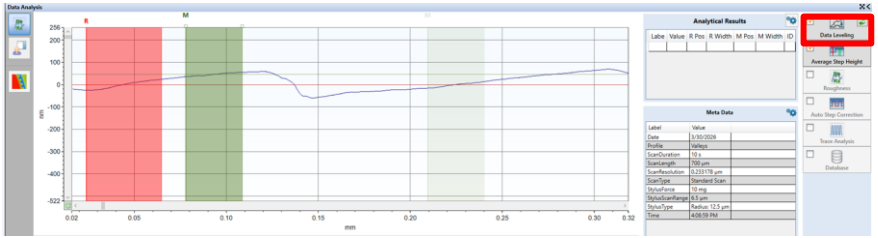
Data Analysis: Standardizing Data

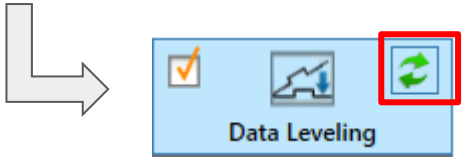
Using the cursor control, move your reference(R) and measurement(M) regions to cover the top surface as shown below. For quicker rearrangement, drag the letters R and M on the top of the graph to move the sections to their desired place. Edit the width of the R and M sections by dragging the small colored boxes on the top of the graph to the desired size.

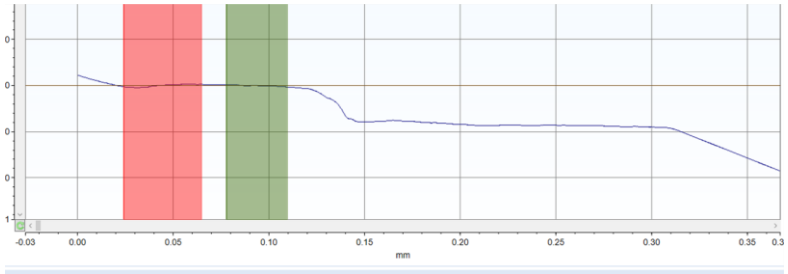


Data Analysis: Standardizing Data

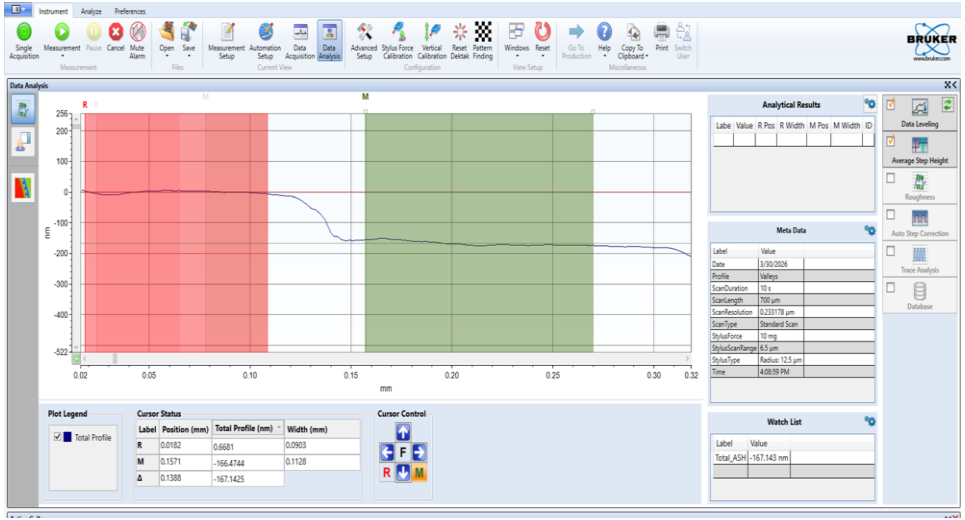
To level your data, drag the R and M selections to the same side as the data you want leveled. Click the green Refresh arrows in the Data Leveling box to level the selected data.







Data Analysis: Measuring Selection



Cursor Status

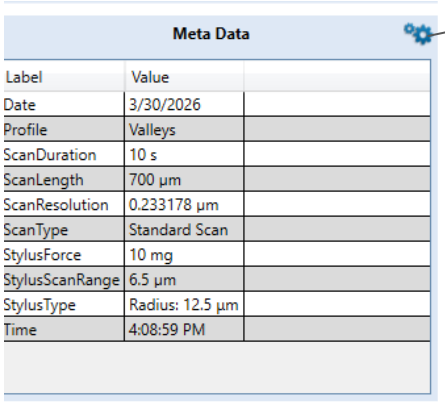
Label	Position (mm)	Total Profile (nm)	Width (mm)
R	0.0193	0.6254	0.0893
M	0.1524	-165.7529	0.1128
Δ	0.1331	-166.3783	

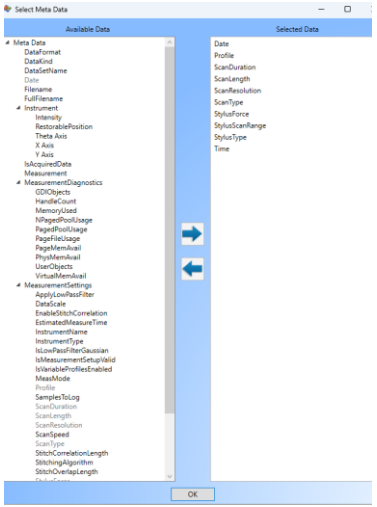
Highlight the desired R and M sections for your appropriate measurement. The section under “Cursor Status” contains a data table with your measured values; R, M, and the difference, Δ.

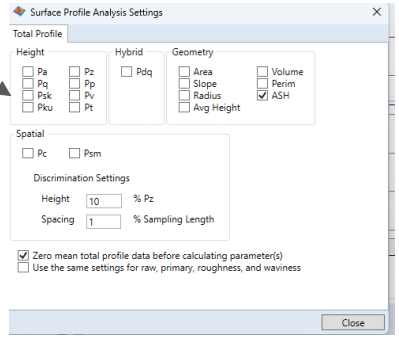
Data Selection:

By clicking the cogs in the top right of the Meta Data table and watch list table you can select additional data to be shown and to change how the total profile is analyzed.

- Select proper specifications for your particular sample



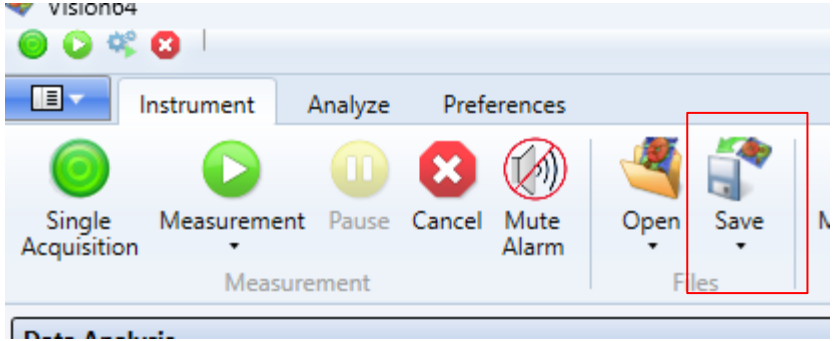


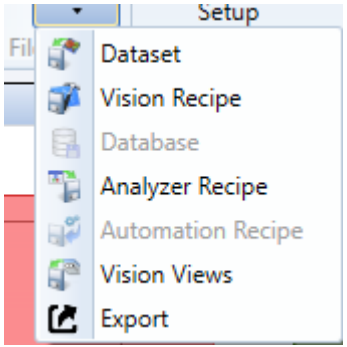


Save Data:

Select Save

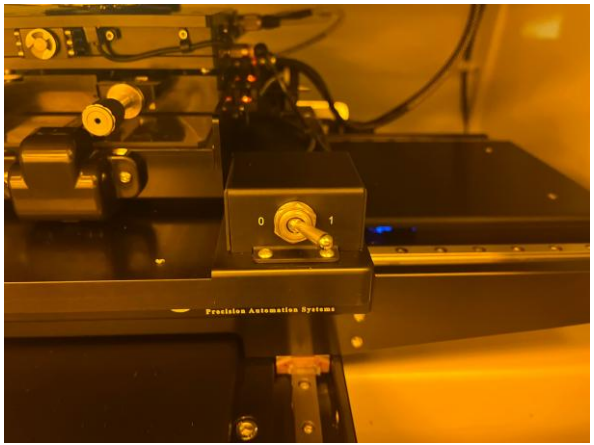
- Clicking the icon will save all data
- The drop down will allow you to save just specifics like the dataset, analyzer and vision recipe, and more.

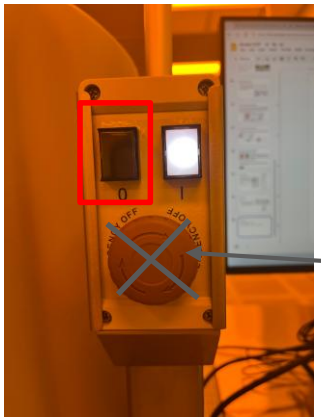




Shut Down

- Collect data and export if needed
- Close the software
- Hit the off switch button (WARNING: NOT THE RED EMERGENCY STOP)
- Turn off nitrogen(Switch under stage, 1 is on)





DO NOT TOUCH UNLESS EMERGENCY

Notes

DO NOT MESS WITH CALIBRATION OR STYLUS CHANGE

If there is noise in your data, check to make sure that all pistons are engaged as shown in picture below. If not, inform lab TA/Instructor.