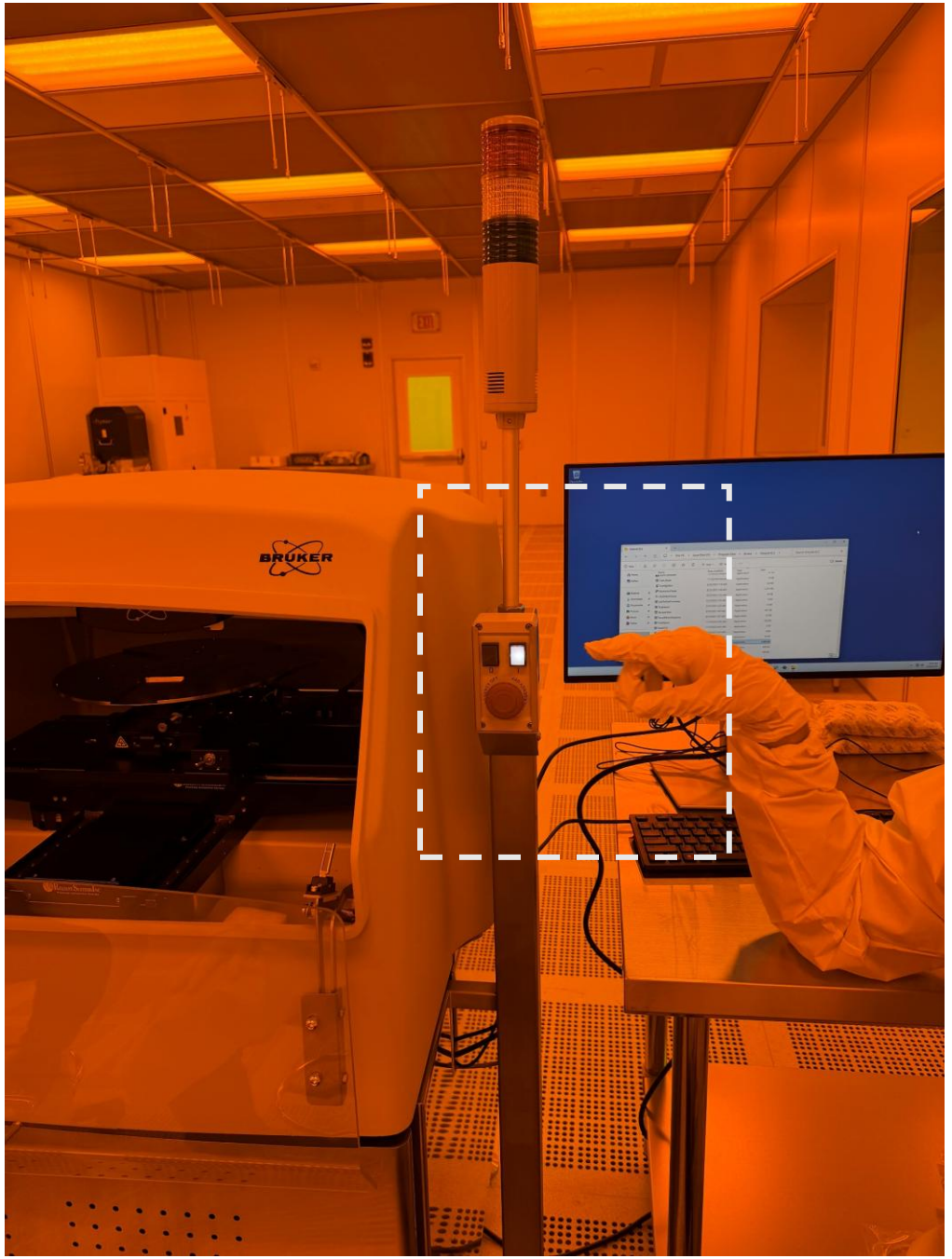
Operating a Bruker DekTak XTL

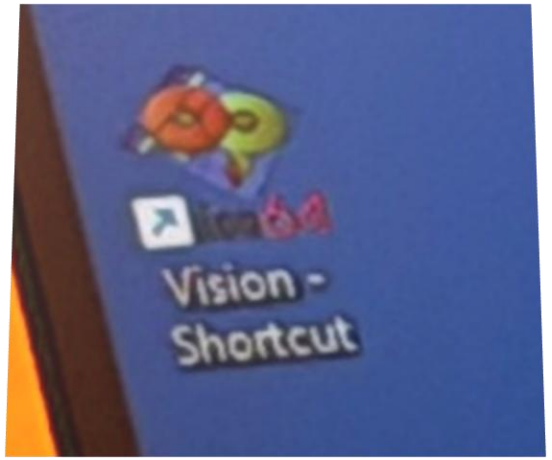
Turn on the Instrument

- By clicking the on button on the instrument, turn on the instrument
- Open software after turning on the equipment

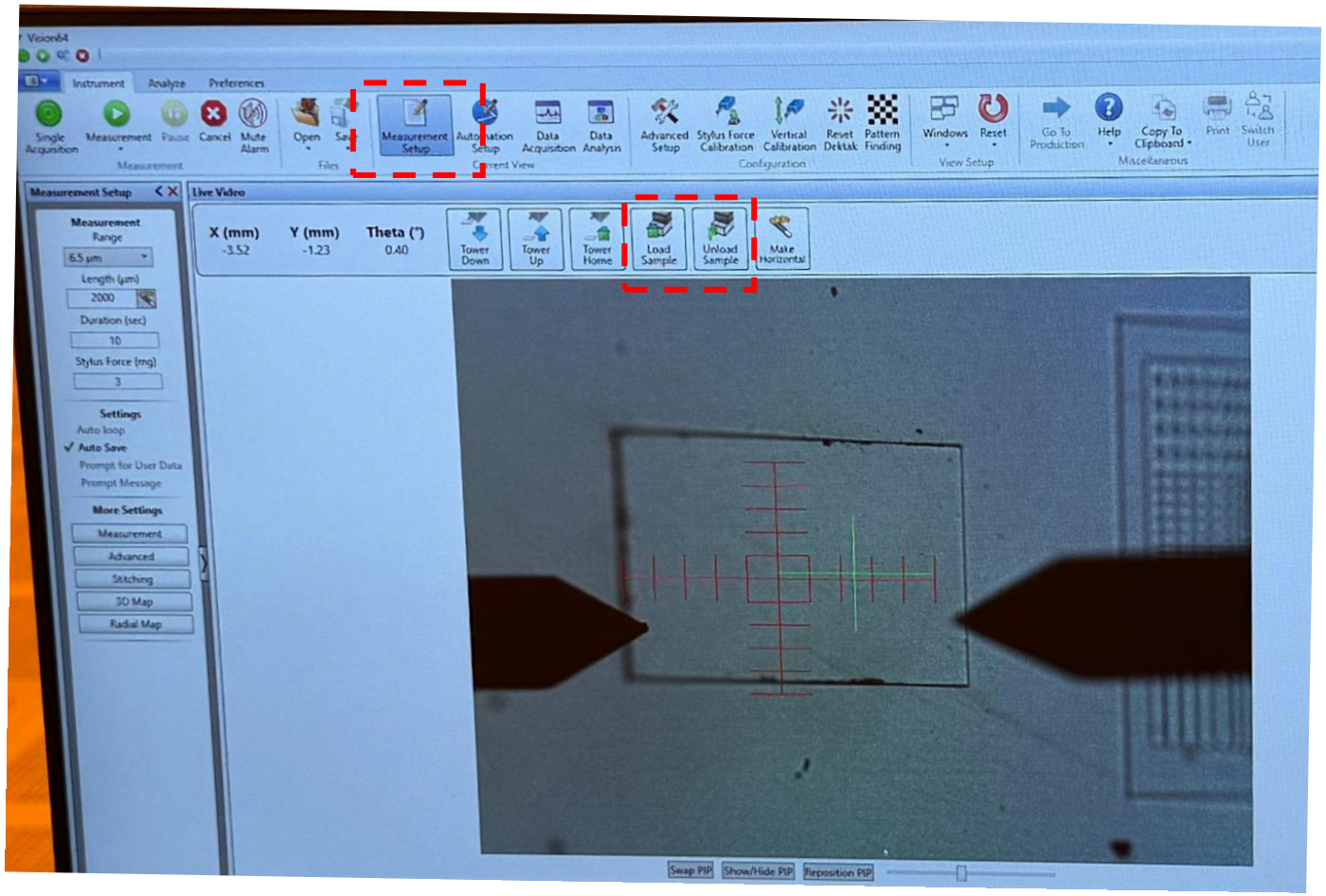


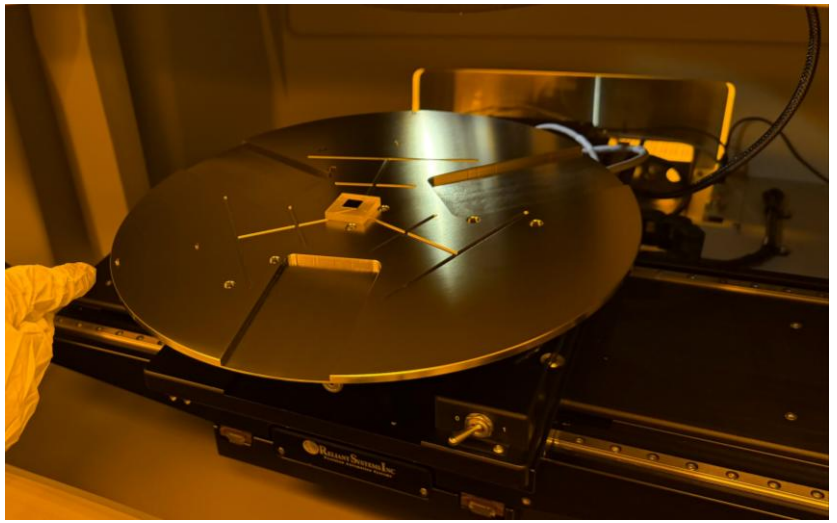
Open Vision 64 software

- After turning on the equipment, locate the shortcut for the software on the mainscreen and open it



Load the sample





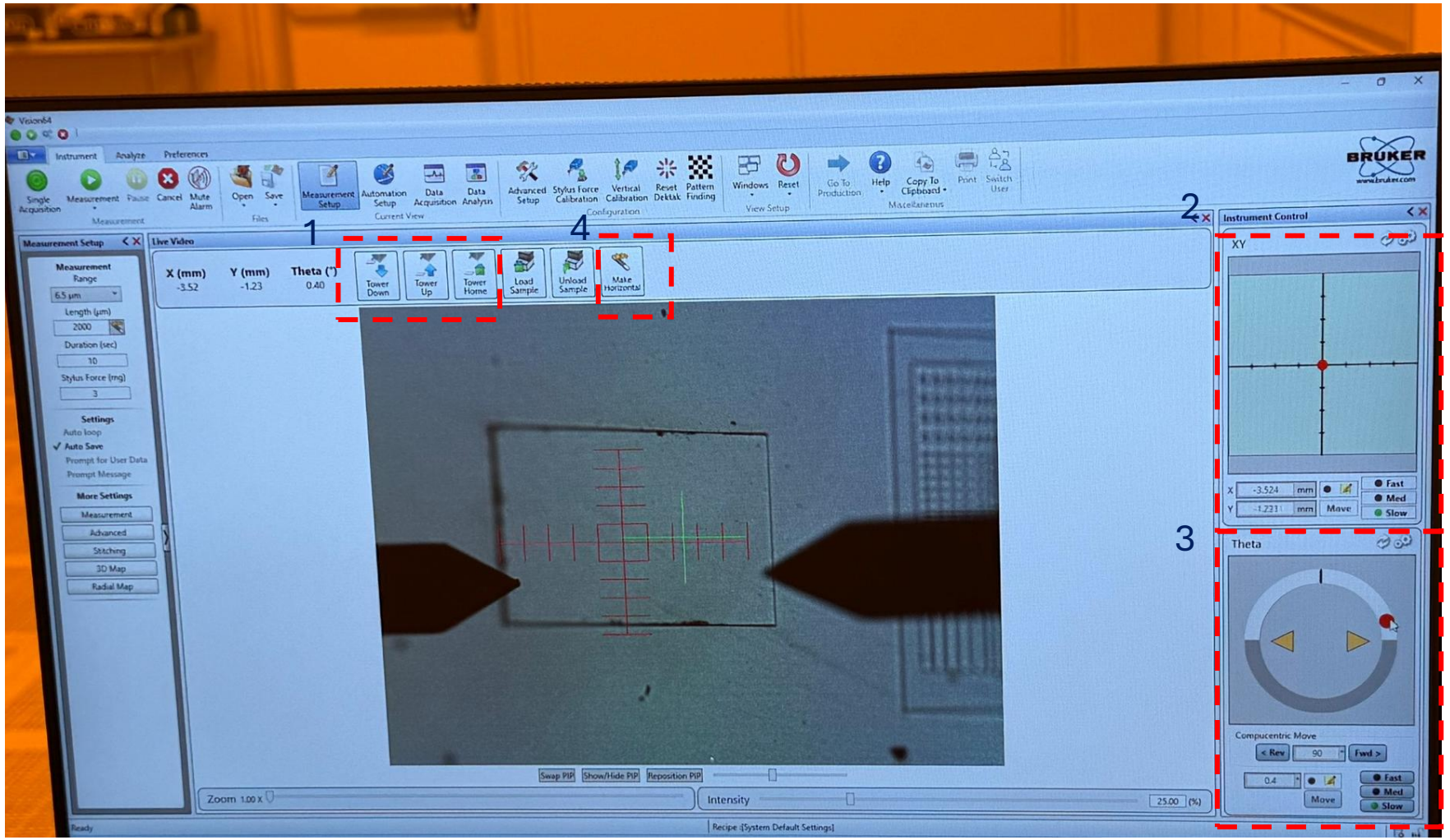
Unload mode brings the stage forward

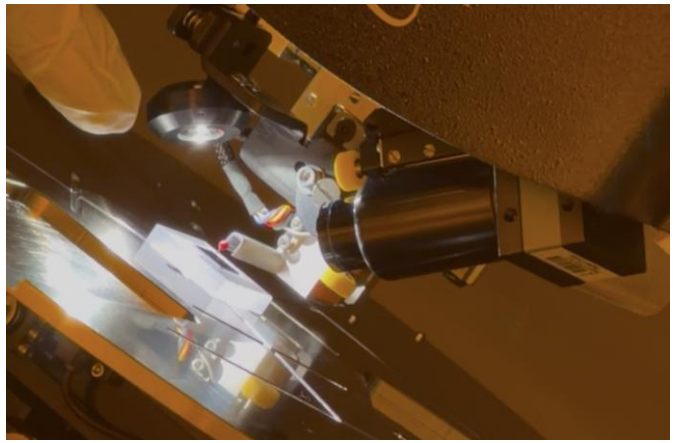
- Go to the measurement setup on the screen and click on the unload sample
- The stage moves forward, gently open the door and place your sample on the stage and load the sample

To lower your tip

- Once you load the sample and the sample is inside the equipment, Go ahead and **press the tower down** feature to lower your tip, for movement **use the XY feature** on “instrument control panel”, and change the speed of movement depending on the size of the wafer
- **Theta** can be used to **change the angle of the view**
- The tip goes up and bounces if we use the XY feature, when moving from time to time, **you don’t need to use the tower up option again** unless for extensive features
- **Use make horizontal feature, if your sample is not horizontal**/has an angle after uploading

To lower your tip





Touch down position of the tip

Details for loading a sample

1. Tower down - lowers the tip
- Tower up - the tip goes up
- Tower home – the tip goes all the way up
- If you cannot find your sample, go to (0,0) on XY

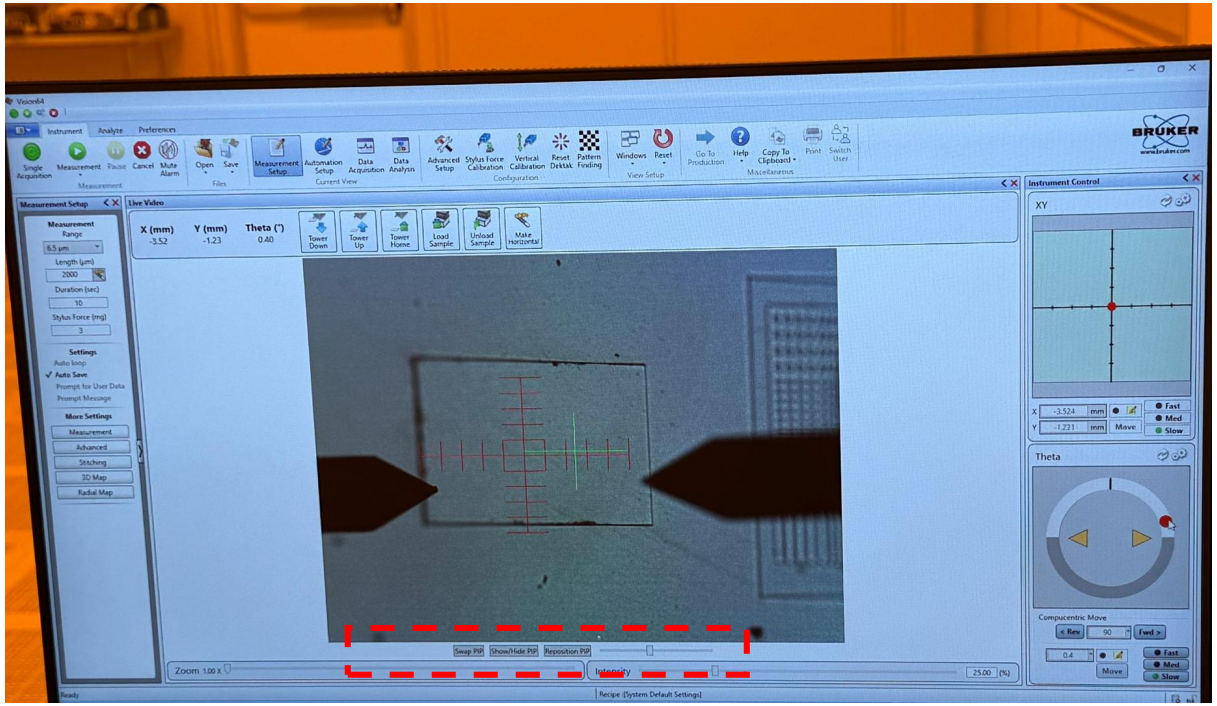
2. Stage can be moved by dragging the cursor on the XY chart
- Slow/medium/Fast mode – to change the speed for moving the stage

3. Compucentric view of 90 º can turn sample view from horizontal to vertical

4. If the sample is not horizontal/has an angle

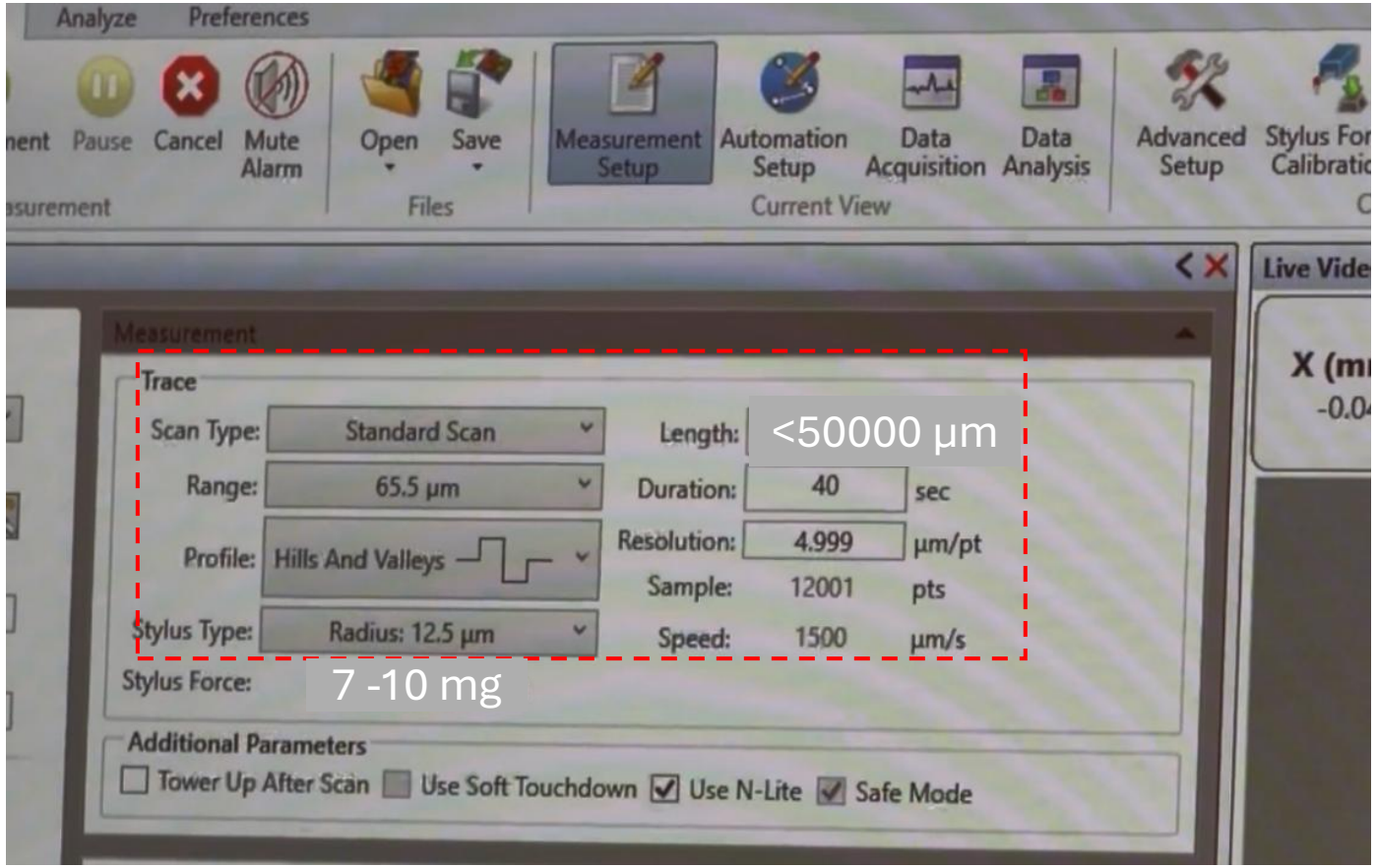
Cameras

- The equipment consists of a normal camera and a topview camera for operational easiness



Measurement settings

- 90% of the users only need the standard scan, the profiles has three options, hills , valleys, and hills and valleys. Any stylus force b/w 7 – 10 mg is considered optimum. Stylus force is used to protect sample from damage
- Please consult with TA if you have liquid samples for the height of the samples
- Make sure stylus tip is at radius 12.5 micrometers, standard tip size
- If your tip size crosses the sample, use esc, cancel or emergency stop feature

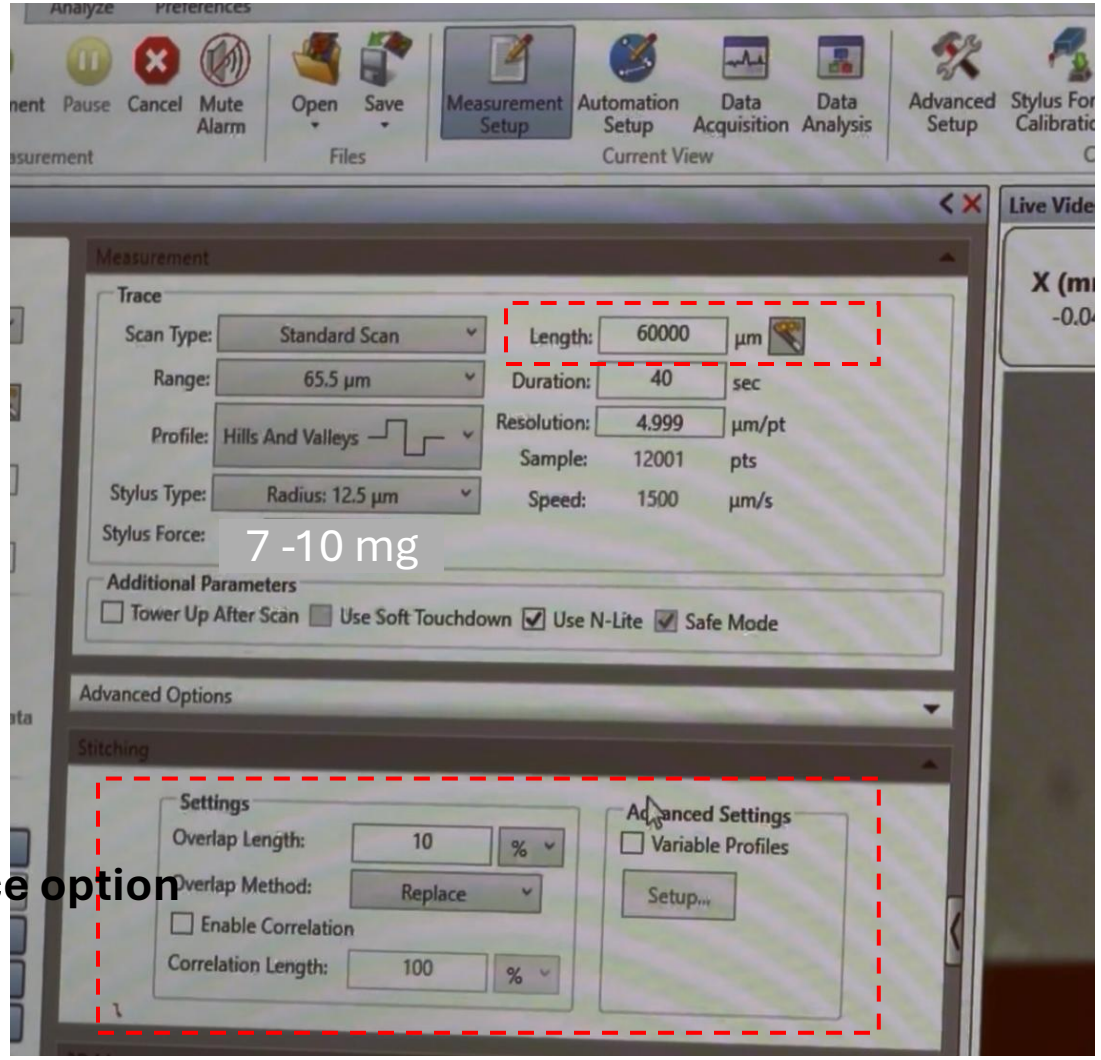


Length should be less than 50000 µm
If less is greater than 50000 µm go to next slide

More settings on left panel >> Measurement >> Standard Scan >> Profile: Hills/ Valleys/Hills and Valleys >> Stylus type: radius 12.5 µm >> **Stylus force = 7 – 10mg**(unless your samples are super sensitive, required n-lite mode)>> Length, Duration, and resolution adjusts quality of image

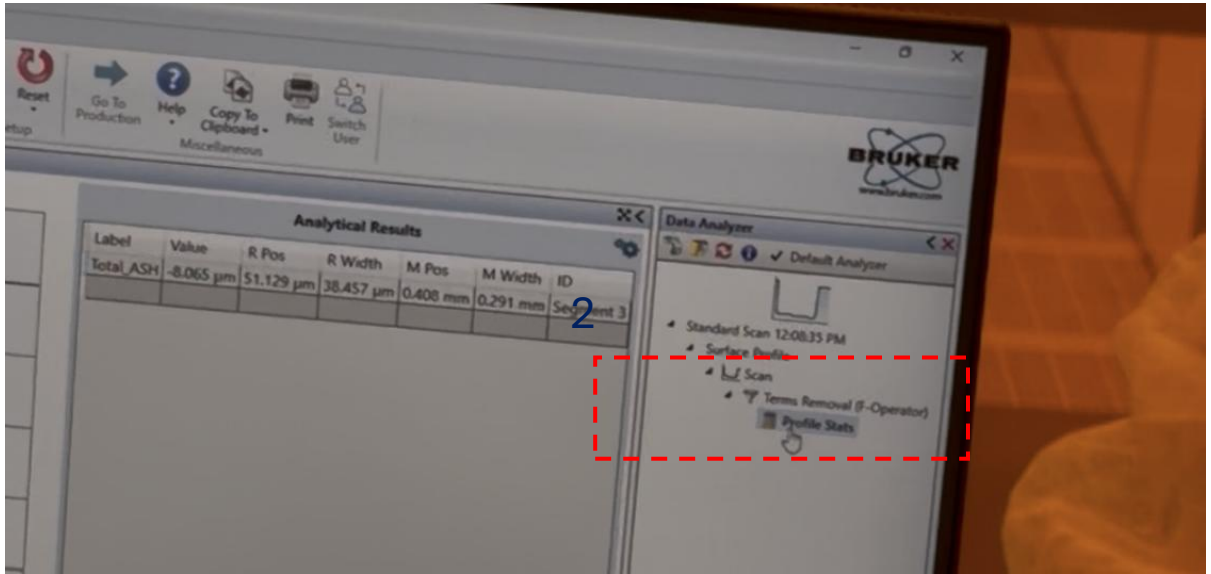
Length, Duration and Measurement

- The maximum length can be tested in single reading is 50000 micrometers/ 50mm, beyond that a stitching feature appears which uses overlap/replace to attach images together
- Click “measurement” to measure at required resolution



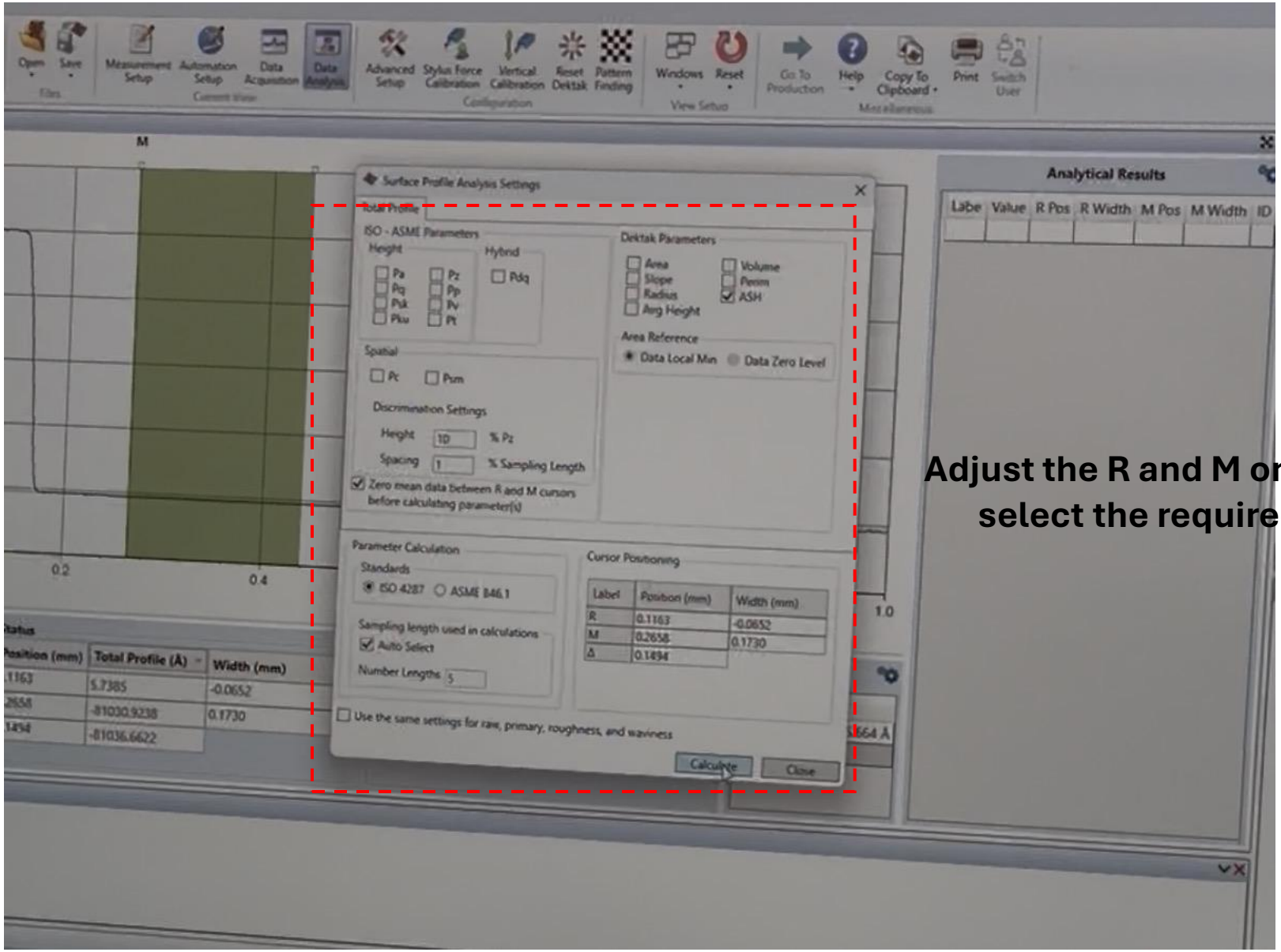
Overlap/Replace option

For Data Analysis



- For data analysis, go to the profile filter, and profile stats, right click, and edit setting to see a drop by menu
- Select required features and select calculate to obtain roughness/peak height
- The R and M should be on the right and left, to get exact values

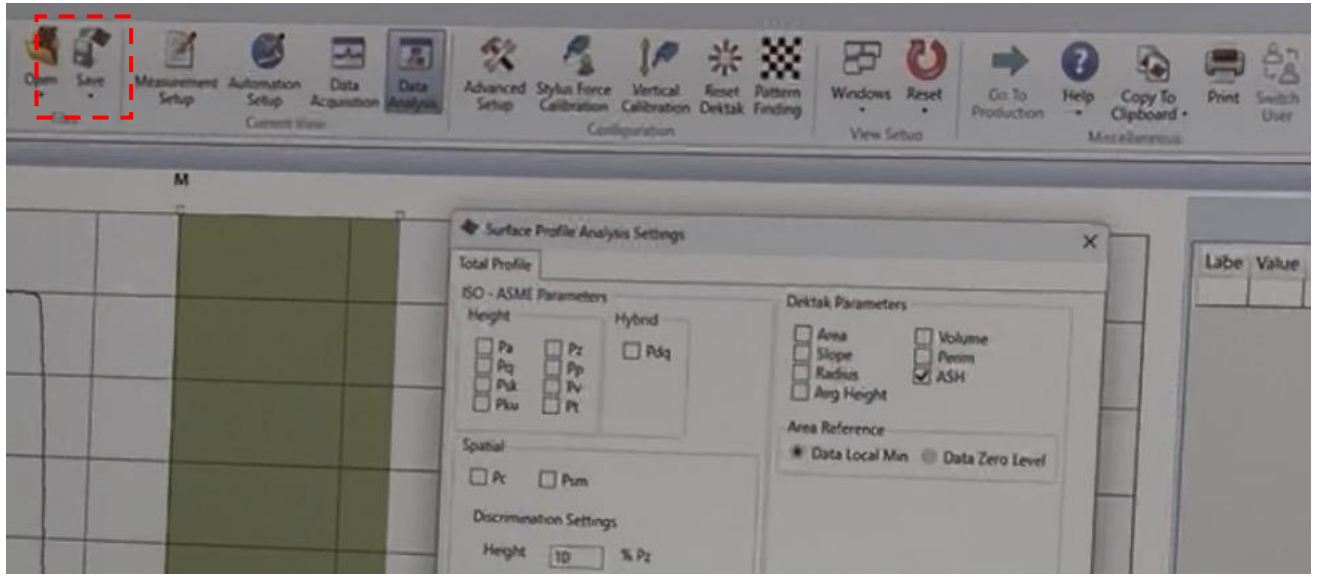
Right click, go to edit settings



Adjust the R and M on the screen and select the required features

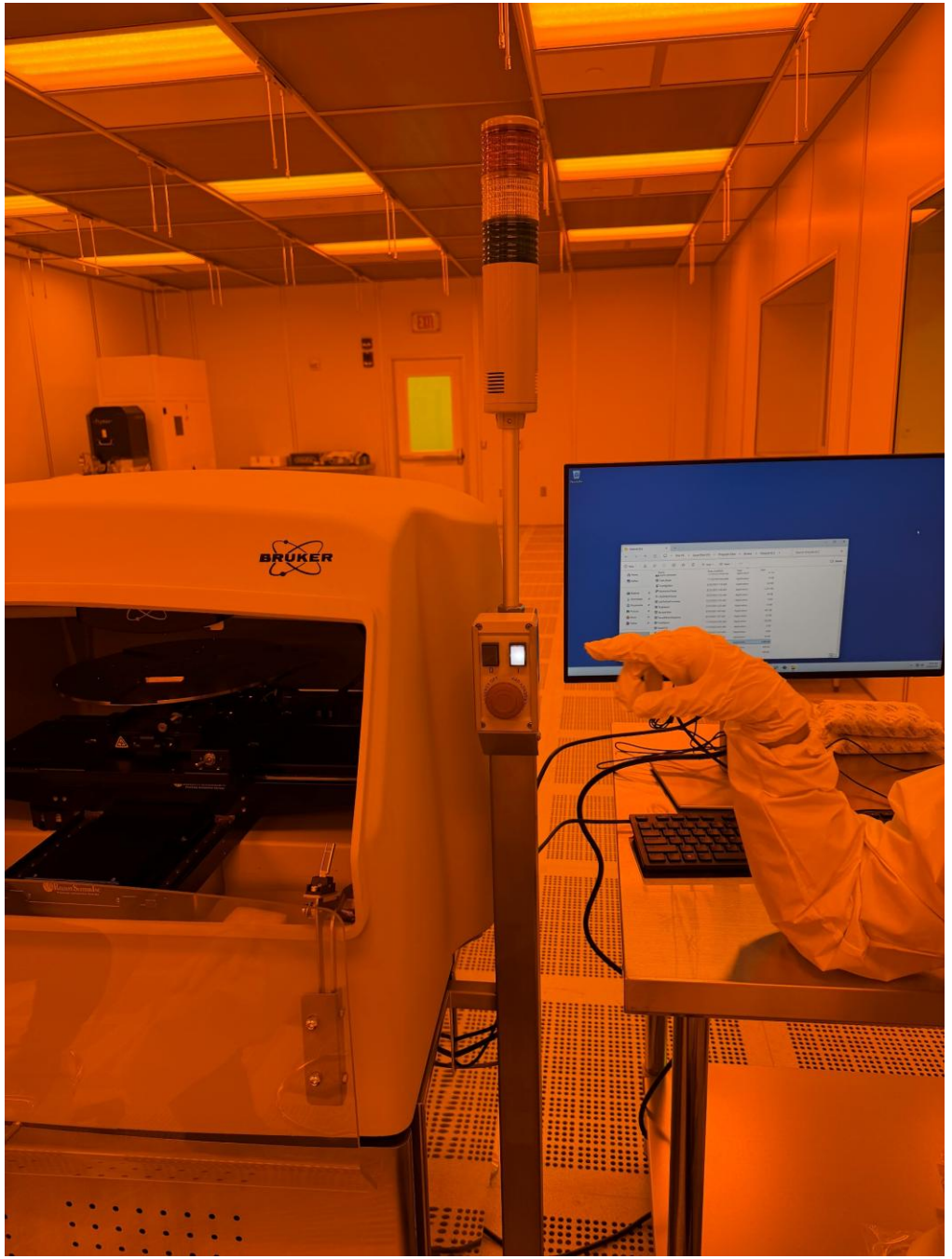
Save your Data

- Go to the save option on the main screen to save your data



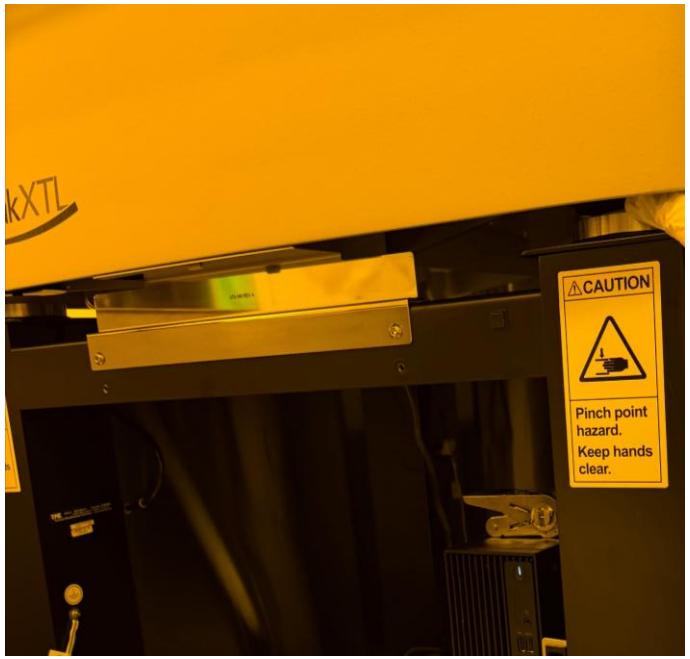
Shut down procedure

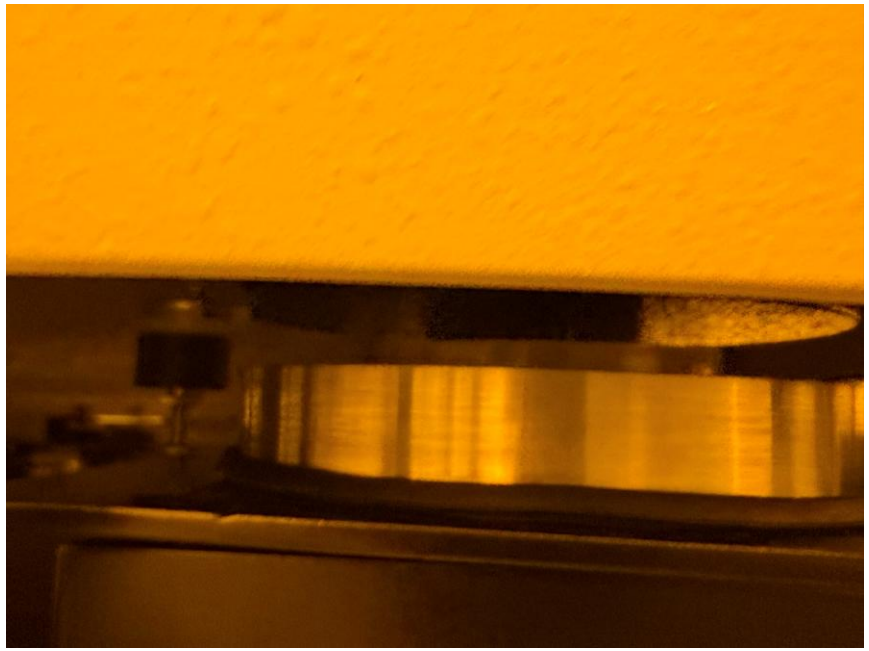
- Collect your data
- close the software and
- turn off the switch on the machine



If there is a Noise on the profilometer/ Contact lab facility engineer

- If there is a noise in the data, before going ahead make sure there is space between the pistons, the equipment should float in air as shown in picture below





Calibration and Stylus change

- Calibration and stylus change is done only by the lab incharges/TA