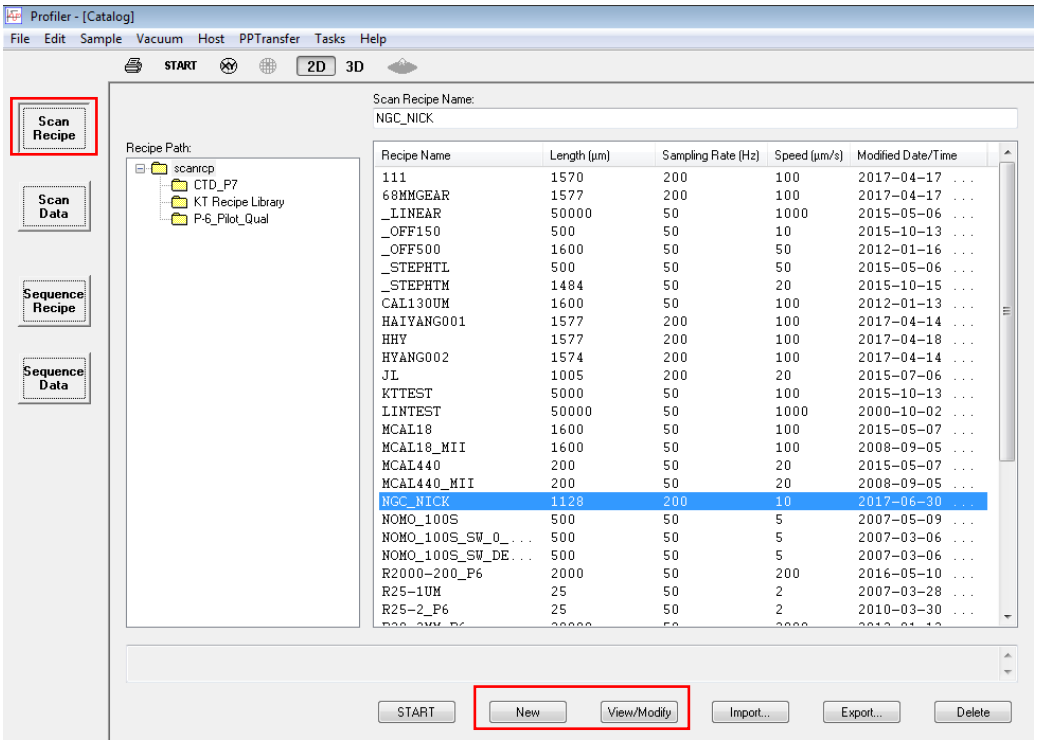
KLA Tencor P7 Stylus Profilometer Manual

Instrument Details

- Model: P7
- Vertical Range and Resolution:
  - 163.5 µm above/below contact point 0.1953 Å resolution
  - 32.5 µm above/below contact point 0.0391 Å resolution
  - 6.5 µm above/below contact point 0.0078 Å resolution
- Sampling Rate: 1 – 2000 Hz
- Speed: 2 – 25000 µm/sec
- Pressure: 0.5 – 2 mg

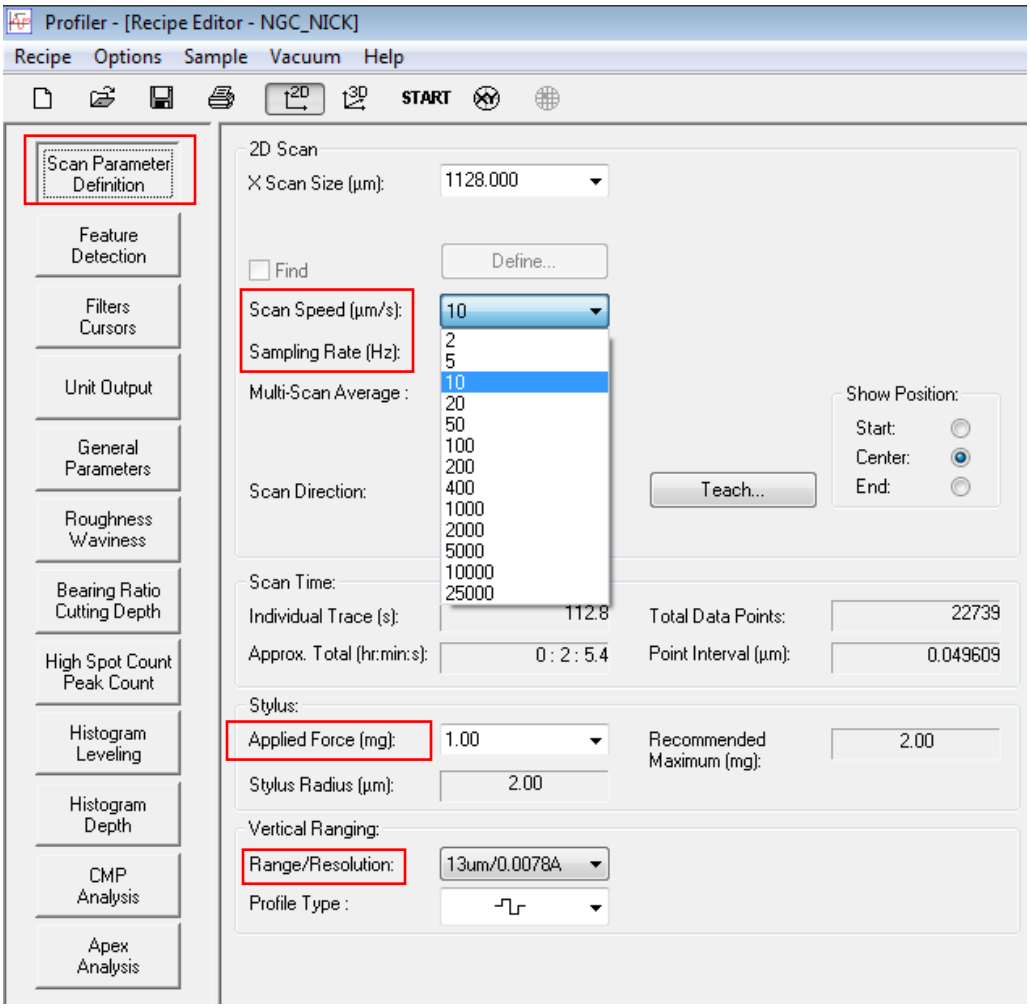
Startup

1. Sign into the logbook and record the time in,
2. Log onto the computer
3. Open the "**Profiler**" software
4. Click on "**Scan Recipe**"

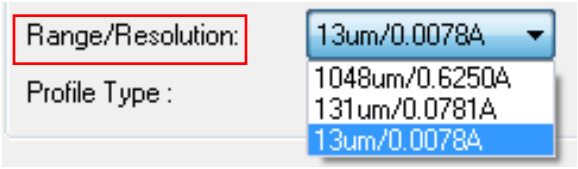


5. Either create a new recipe by clicking "**New**" or load an existing recipe by clicking "**View/Modify**"

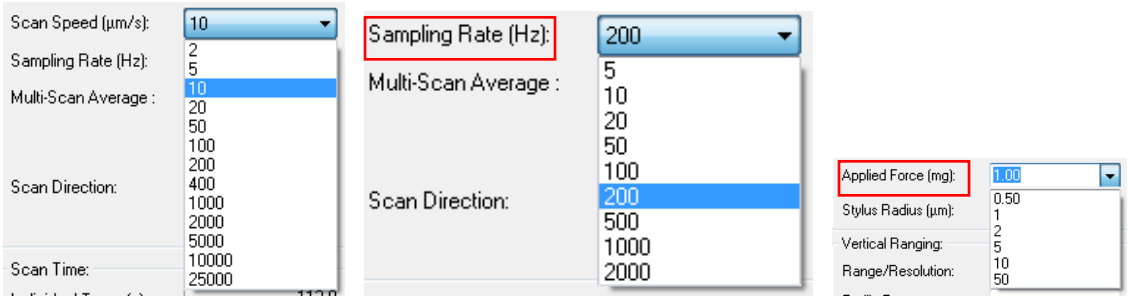
6. Click on the "**Scan Parameter Definitions**" tab



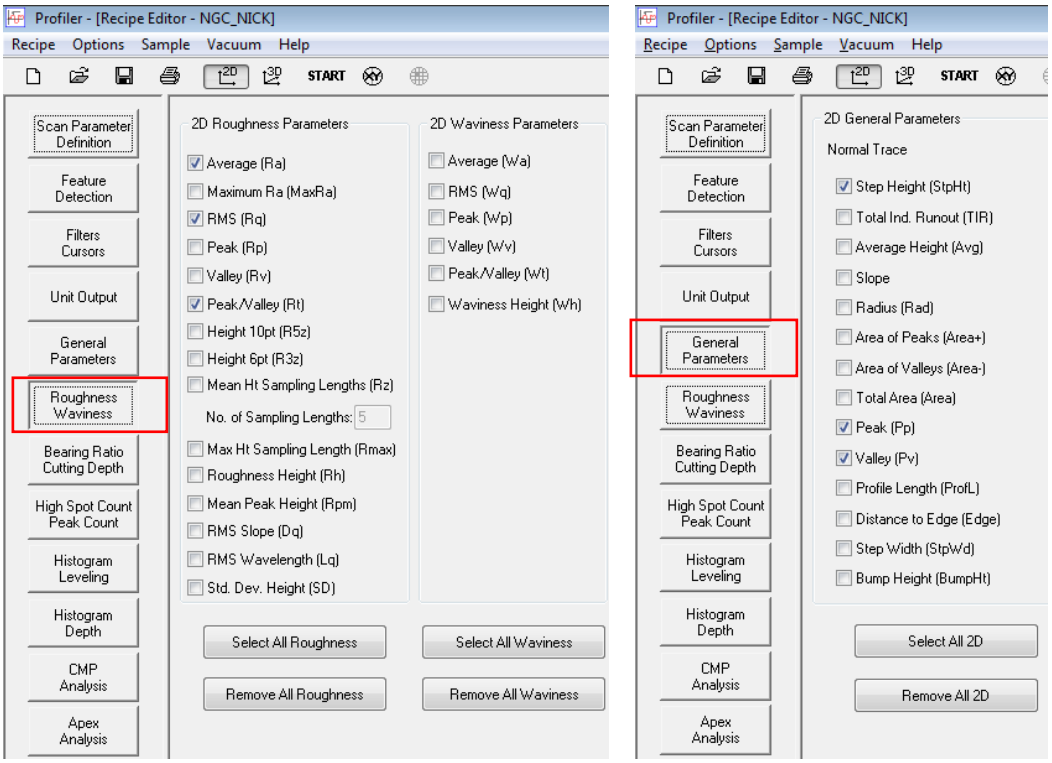
7. Enter the appropriate resolution for the sample/step height



8. Enter the desired speed, frequency, and applied force for the scan



9. To select parameters to measure such as roughness, waviness, step height, etc. click on the "Roughness Waviness" tab and/or "General Parameters" tab and select any desired parameters

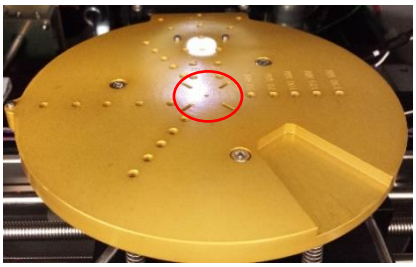


Operation:

10. Click on "**XY**"

11. Click on "**Man Load**" to move the stage to the load/unload position

12. **Wait for the stage to stop moving!**
13. Load the sample onto the center of the stage

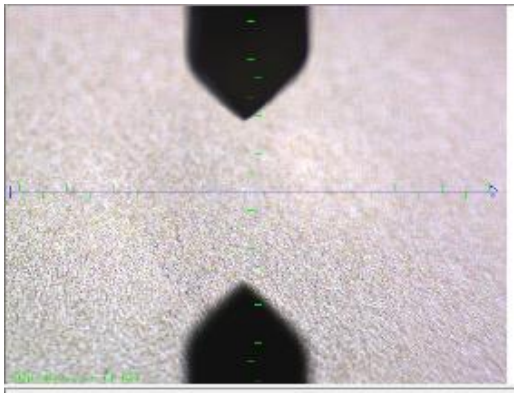


14. If the sample is less than 1” x 1”, turn on the stage vacuum by flipping the black vacuum switch to the left of the stage

15. Click on “**Man Load**” again to move the sample to the scan position.\
16. Click on “**Focus**” to automatically lower the stylus and focus the microscope on the sample surface.

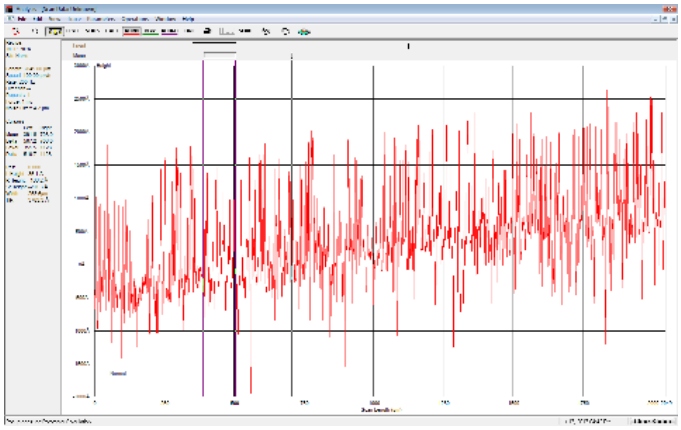
17. Move to the desired measurement location by using the arrows in the top of the user interface or by clicking on the circle map. You can also use the arrow keys on the keyboard.

18. Click on “**Focus**” again to focus the microscope on the surface of the sample.
19. Repeat steps 17 and 18 to locate the feature to be measured
20. Left click and drag the blue arrow to draw a line that designates the scan location and length
    a. When measuring a step height, it is best to measure from the top of the step to the bottom

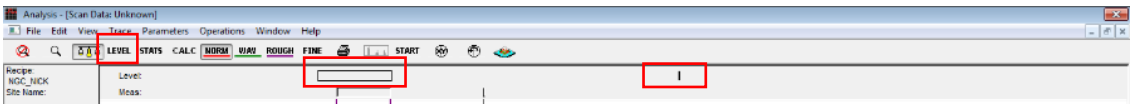


21. Click "**Start**" to start the scan

22. After the scan is finished, click on "**View**" → "**Scan**" to show a height vs. scan location plot for the sample (as shown below)



23. To adjust the zero point and level the plot, click on "**Level**", drag the two bars above the plot such that they are over two areas of equal height, expand the legs of the bars as needed, and click on "**Level**" again.



24. To measure step height, adjust the "**Meas**" bars such that one is above the bottom of the step and one is above the top of the step, expanding the width of the bar if necessary. The measured step height is visible on the left side of the user interface.
25. Expand the legs of the two measurement bars to cover the entire plot

26. Click on "**Calc**" to recalculate the parameters that were selected based on the measurement bar locations

27. Click on "**Stats**" to see the values for the measurement parameters selected

28. To save scan data, click on "**File**" → "**Save**"

    a. For details on how to export data, please see the **Appendix**

29. To save the plot, click on "File" → "**Export Graph**"
30. Click on "**XY**" to return to the microscope view of the sample
31. Repeat steps 18-30 for any additional measurements of the sample
32. Click on "**Man Load**" to raise the stylus and microscope and move the stage to the load/unload position
33. Wait for the stage to stop moving
34. Turn the vacuum off and unload the sample
35. Repeat steps 13-34 for any additional samples

Shutdown:

36. Close the software and wait for the instrument to shutdown
37. Log off of the computer
38. Sign out of the logbook

Appendix

Exporting Data:

1. In the software click on "**Scan Data**"
2. Navigate to the saved data
3. Click on the "**Import Export**" tab on the right side
4. Select the file to export and then select "**Export**" at the bottom
5. Save the exported file as ASCII

6. Data can then be opened using Excel using the Tab Delimited format