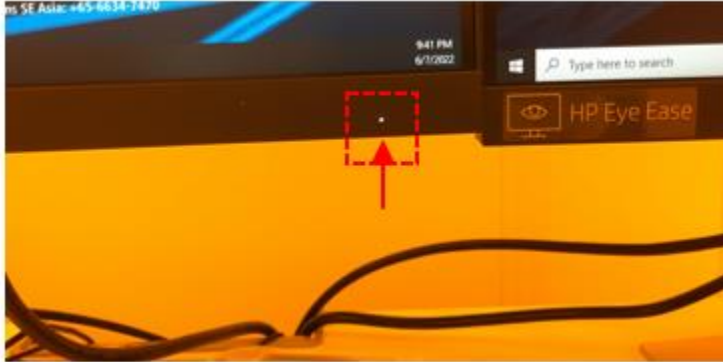


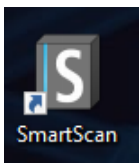
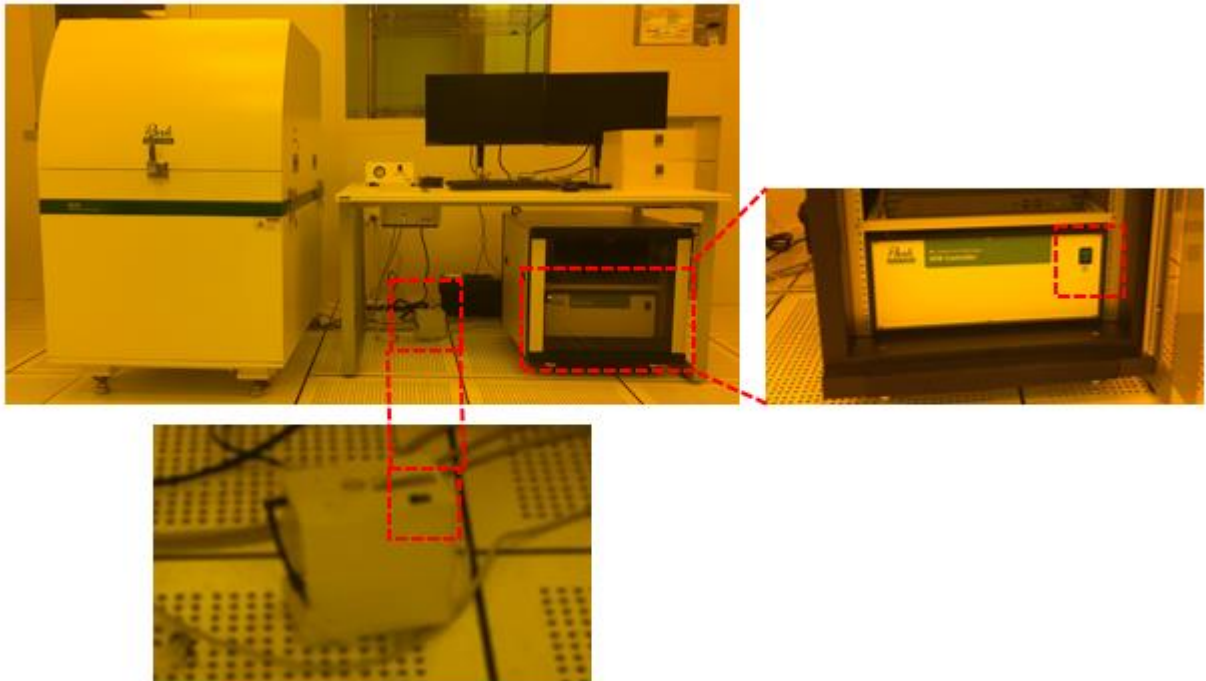
Park NX20 AFM SOP

Start

1. Enable Park NX20 AFM in BRK Metrology Core Kiosk. Make sure that the displays are on after enabling the tool in iLab.

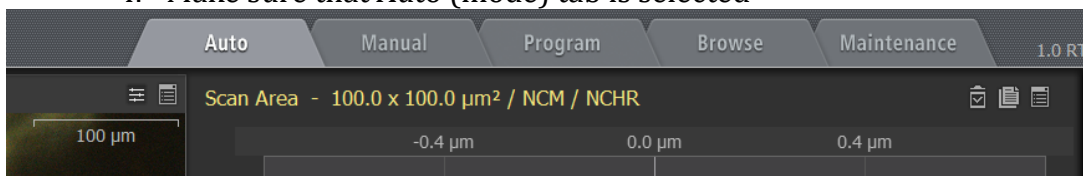


2. Turn on AFM controller and vacuum pump for stage.

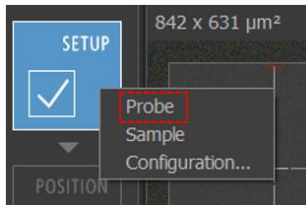


3. Start SmartScan software by double-clicking the icon. Wait until the initialization is complete.

4. Make sure that Auto (mode) tab is selected



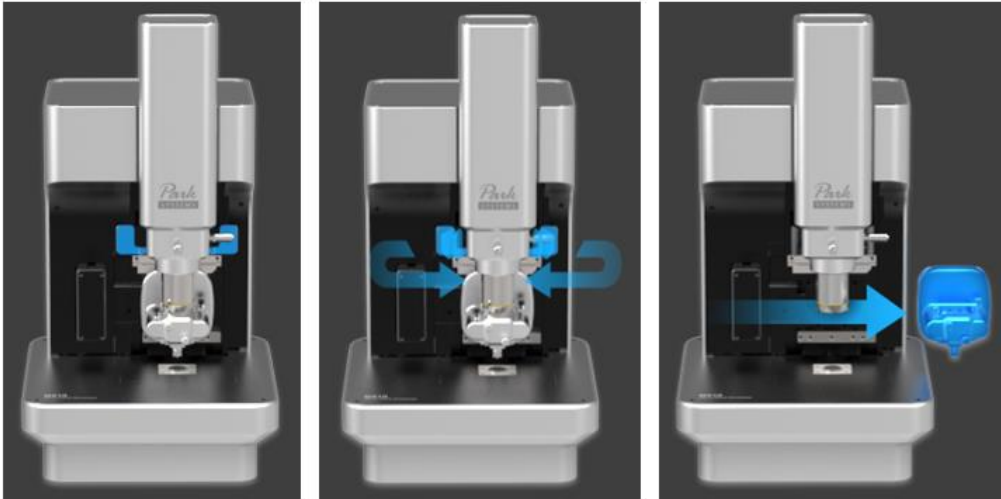
Cantilever Loading



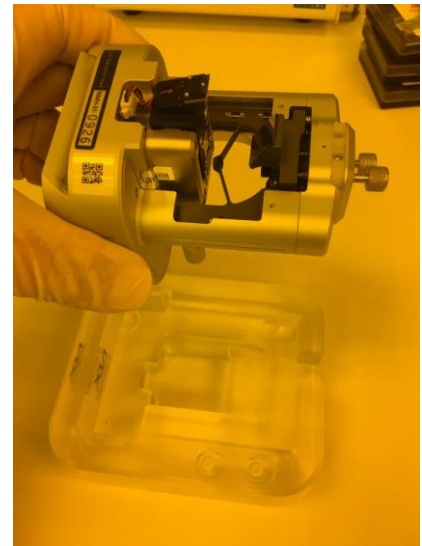
5. Choose Probe (setup) in SETUP (side menu button).
6. Open the AFM enclosure.



7. Follow the instruction to pull out the scanner head.

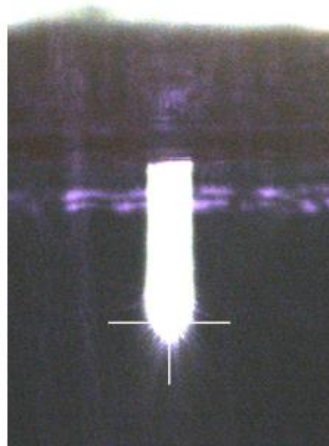


8. Rotate the scanner head upside down and place it on the holder.
9. Mount the probe with two alignment marks.
10. Put the scanner head back to the system.

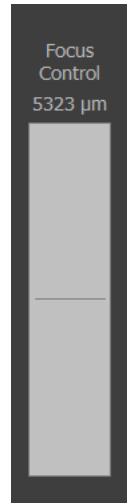
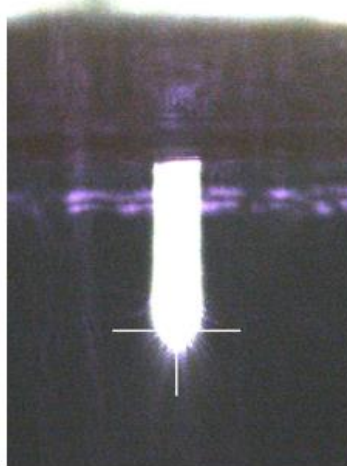


Alignment

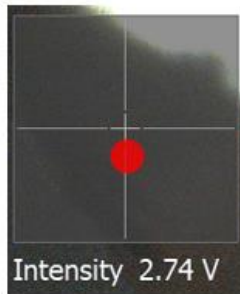
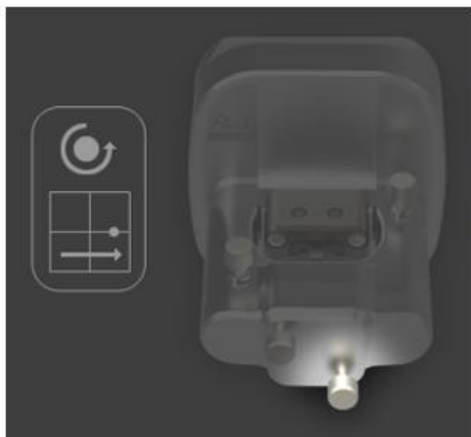
11. Adjust optical alignment knobs to locate the cantilever in vision. Place the expected sharp cone position on cross hair line.



- Adjust focus on cantilever, pressing Focus Control bar on the menu.
- Adjust screws to position beam on the cantilever end.



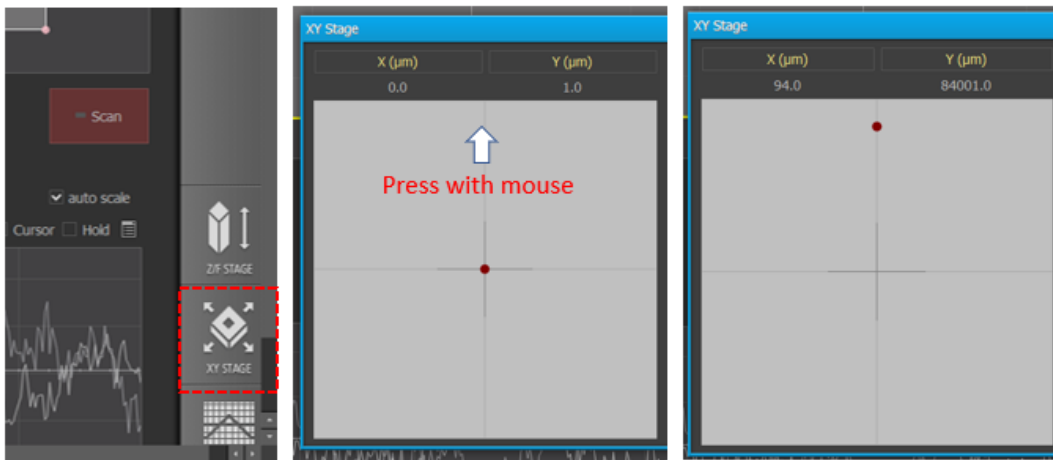
- Adjust screws to align photo detector (PSPD). Position the beam at the center until the beam color changed to green.



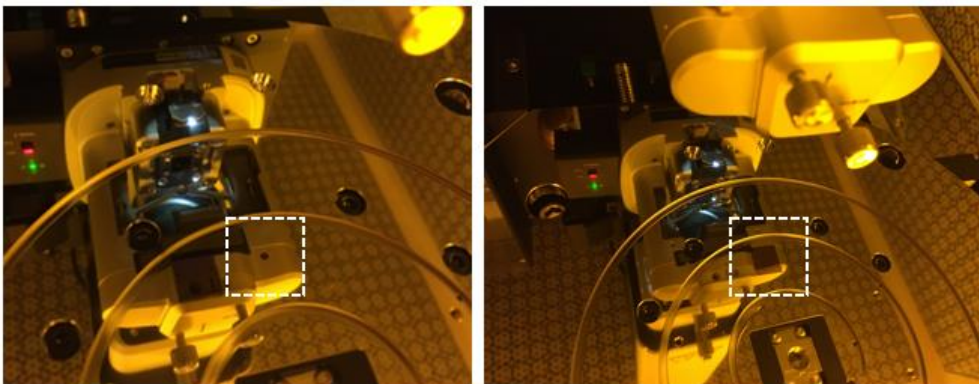
- Choose "Finish" and press "Close" at the end of Probe Change menu.
- When the software asks whether it is new type cantilever, answer with "Yes" and choose correct cantilever type. If the cantilever is non-contact mode cantilever mounted on plate from Park system, choose NCHR. If the cantilever is tapping mode cantilever from AppNano which was used for Nanoman AFM, choose ACTA.

Sample Loading

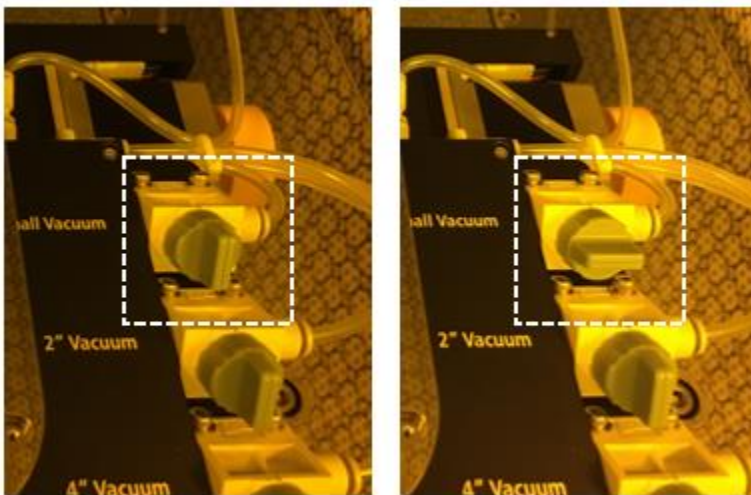
17. Open XY stage window from right bottom corner. Move the scanner head to the back to move the stage to the front for sample loading.



18. Place your sample on the proper position on the sample stage. For small piece sample, place the sample on the hold in the picture below.



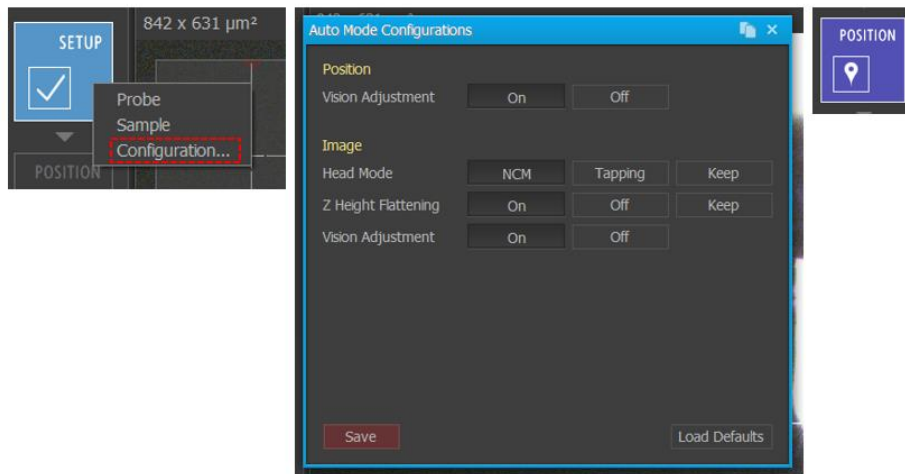
19. Find the proper vacuum valve on the right and turn on the vacuum by rotating the switch.



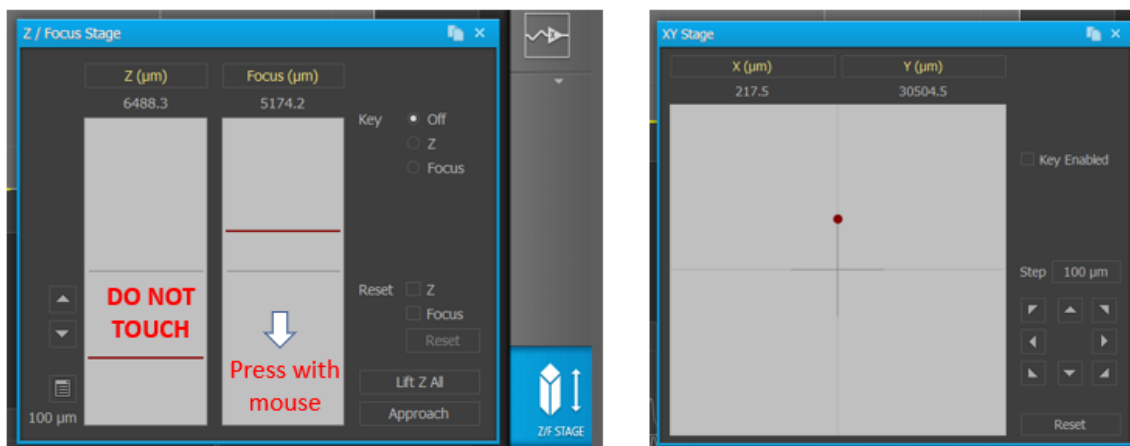
20. Move the scanner head on top of your sample. If your sample is small piece, place red dot on xy stage menu on top of cross hairline.



21. Choose Configuration... in SETUP (side menu button). Select the mode that you will use (Noncontact or Tapping), and click Save. Press POSITION icon. The system will tune cantilever, and the scanner head will approach to the sample.

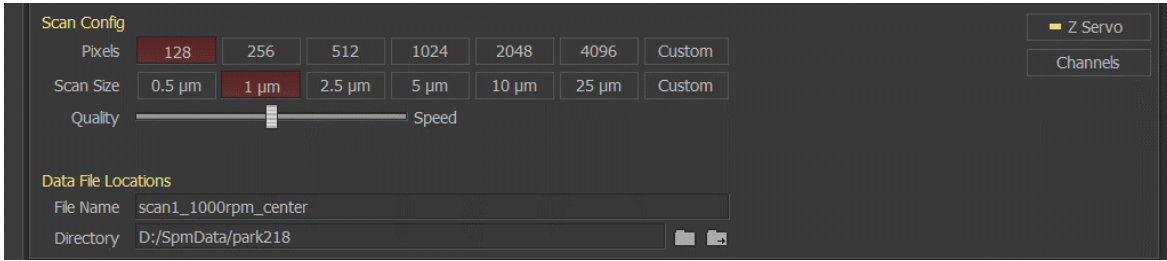


22. If you have specific area to scan on your sample, focus on your sample using Focus adjust bar on Z / Focus Stage menu with checking video. Please do not touch Z adjust bar. Once you focus on your sample, navigate the scan area on the sample in XY Stage.

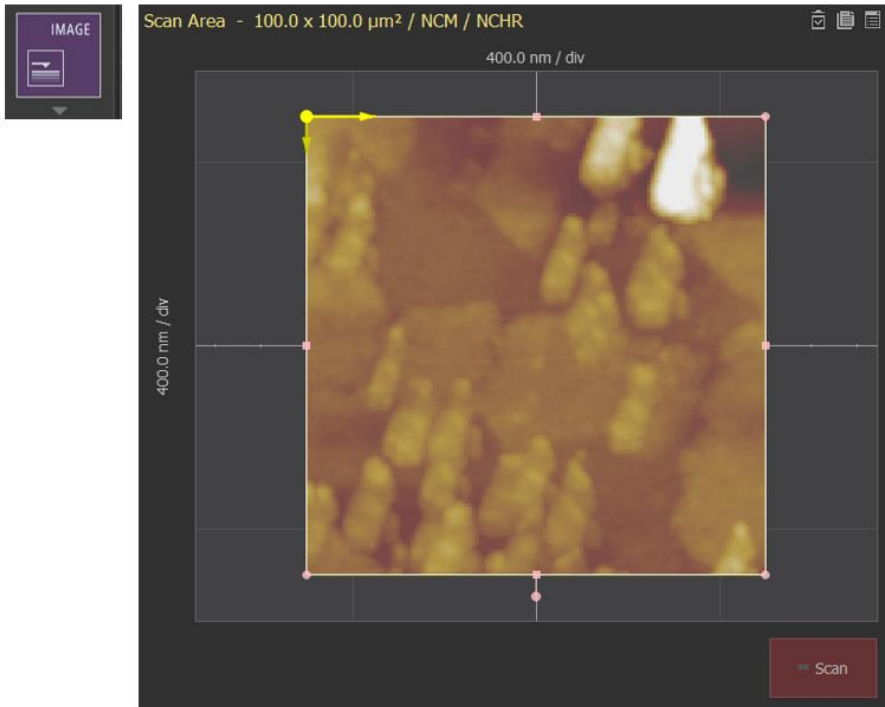


Scan Image

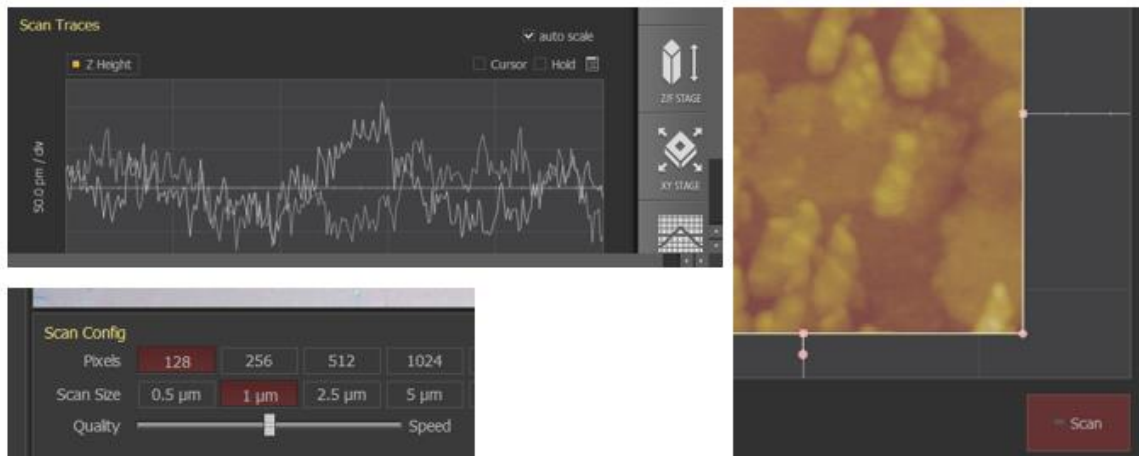
23. Choose the options in Pixels, Scan Size and Quality/Speed. Specify the filename and your folder location.



24. Press IMAGE on left side menu. The system will start scanning.

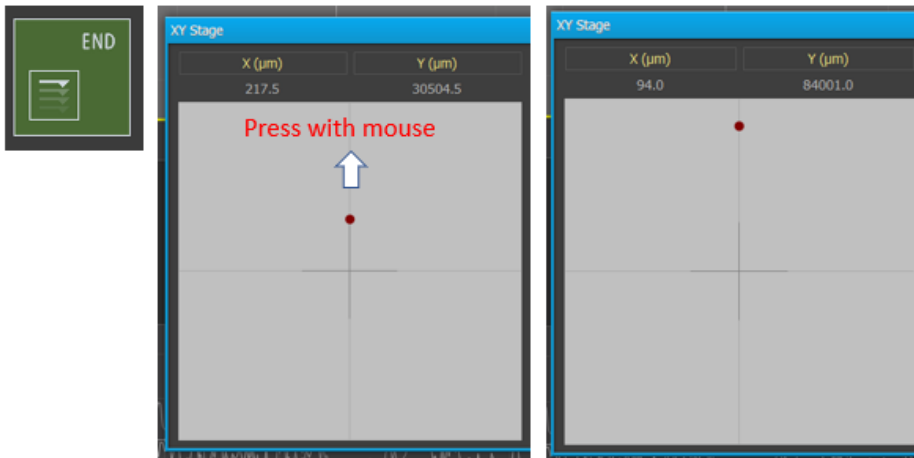


25. Check whether trace and retrace are synchronized or not in the scan traces. If they do not trace them each other, adjust the setting between Quality and Speed and press Scan on the right bottom corner on scan image.

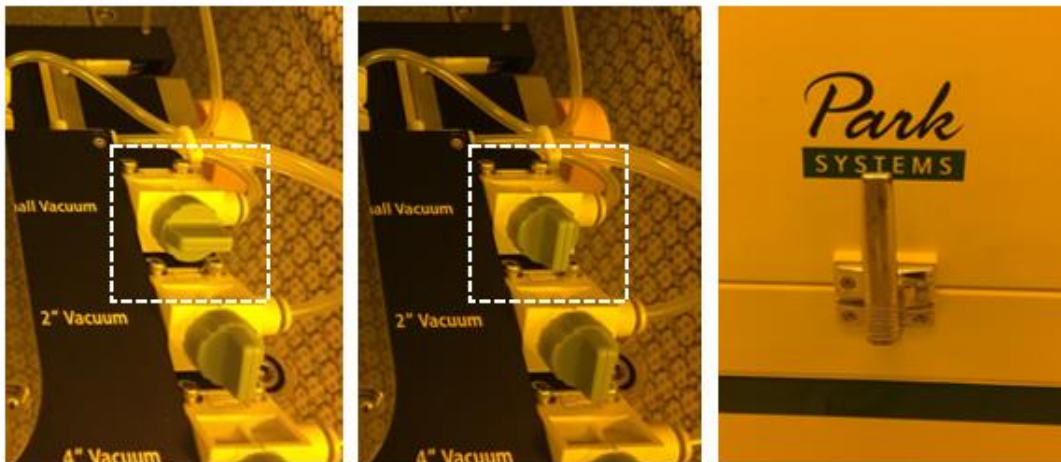


End

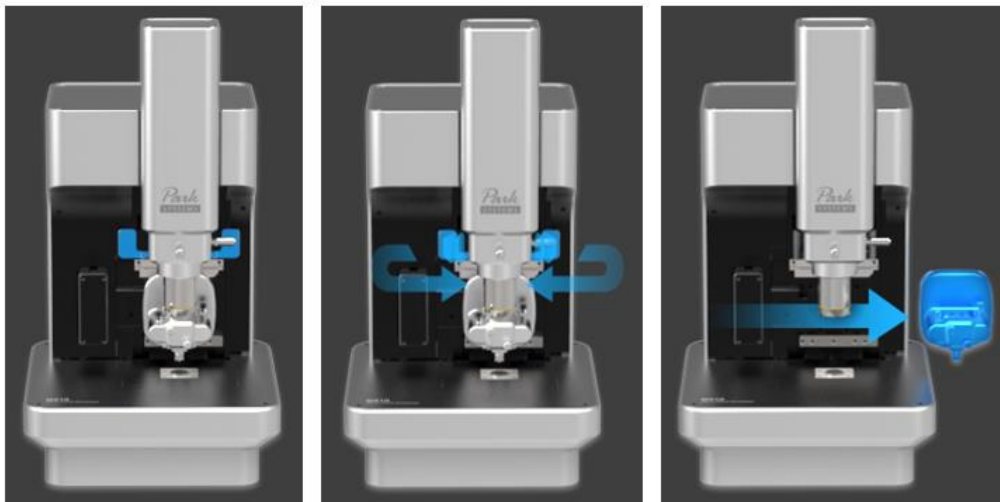
26. Press END in left side menu. Move the scanner head to the back to move the stage to the front for sample unloading.



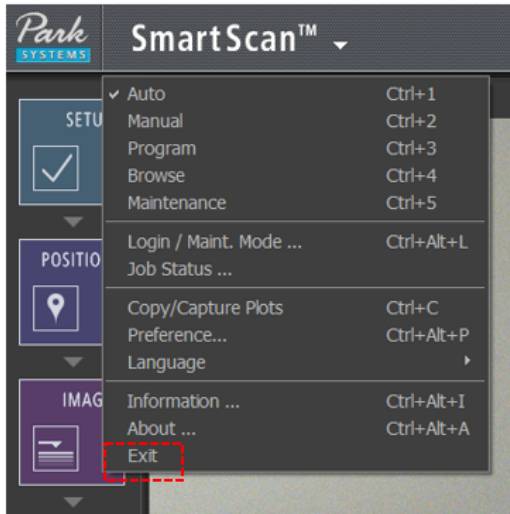
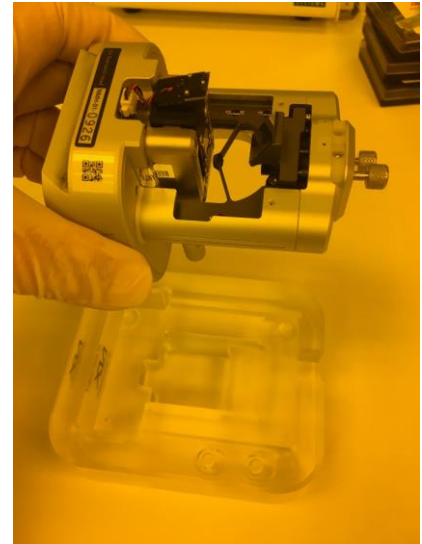
27. Turn off vacuum and unload the sample from stage. Close the AFM enclosure.



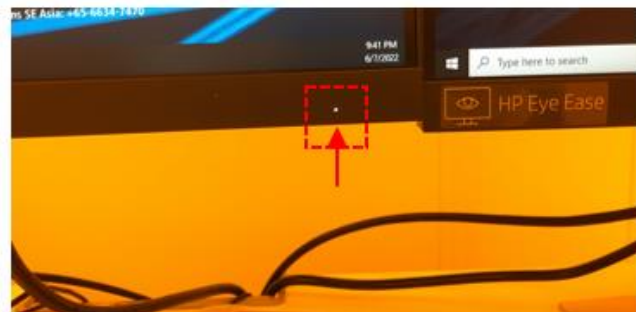
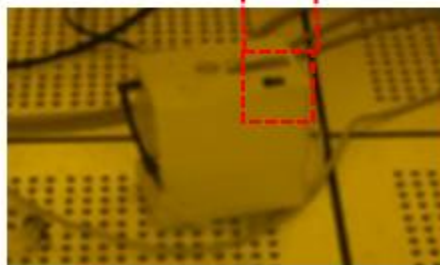
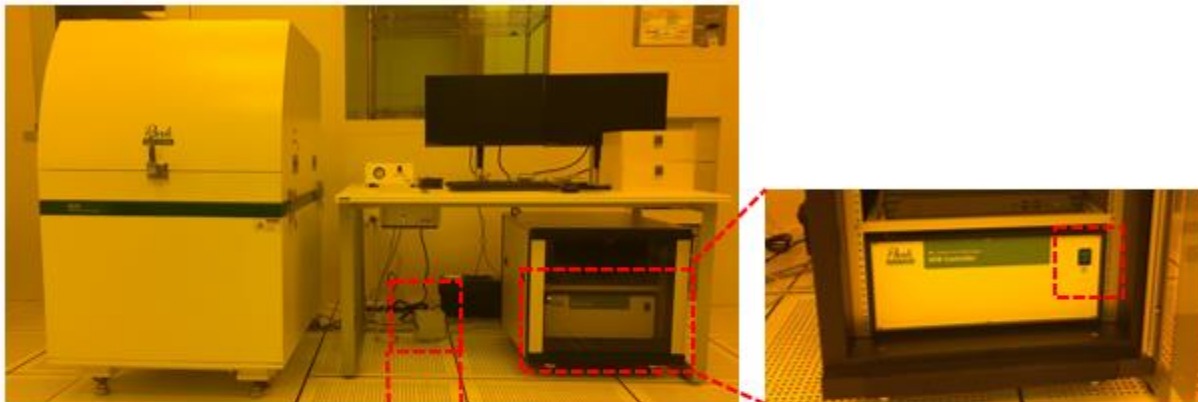
28. Remove scanner head from the system.



29. Rotate the scanner head upside down and place it on the holder.
30. Unmount the probe from scanner head.
31. Put the scanner head back to the system.
32. End SmartScan software by clicking Exit on top menu. Copy the scan data to your USB drive.



33. Turn off vacuum pump for stage and AFM controller.



34. Disable Park NX20 AFM in BRK Metrology Core Kiosk. Make sure that the displays are off after enabling the tool in iLab