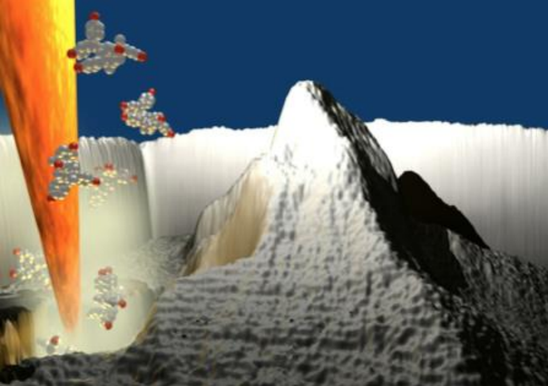
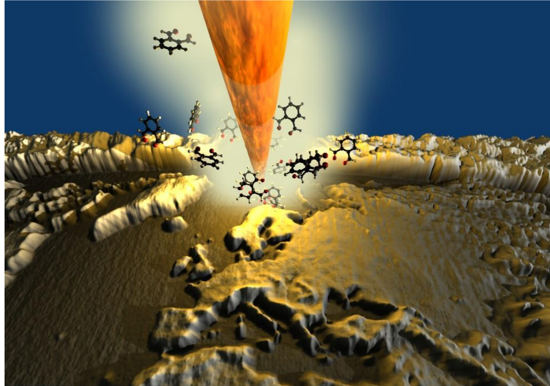


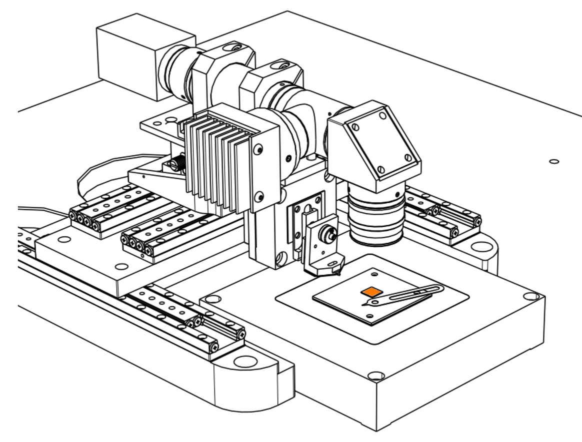


NanoFrazor Explore quick-start guide

Version 2016.07.01

Load sample

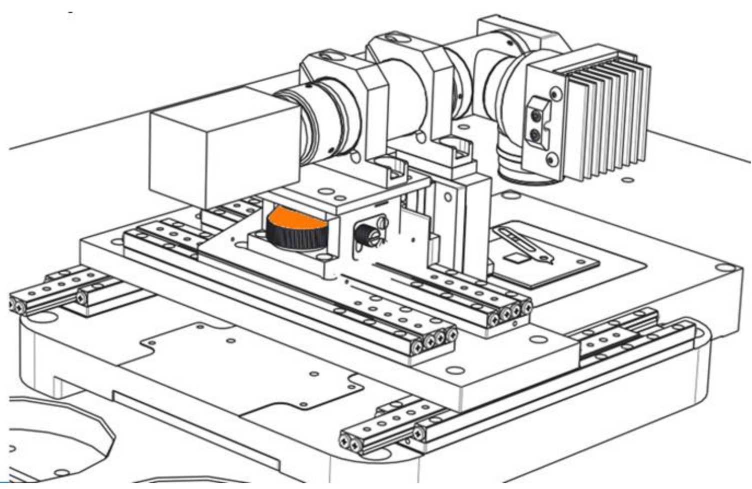
1) Cantilever should be raised well away from the sample (2 mm)
2) Remove cantilever holder (magnetically held)
3) Load the sample
4) Replace cantilever holder

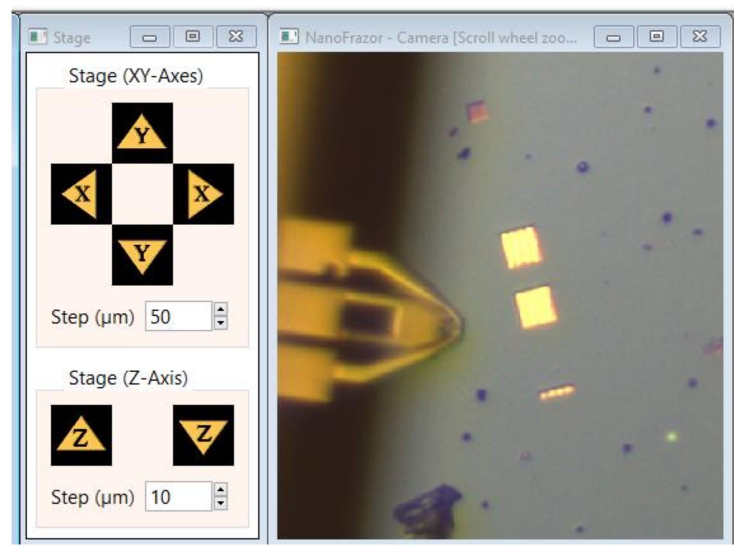


Version 2016.07.01

Focus Camera

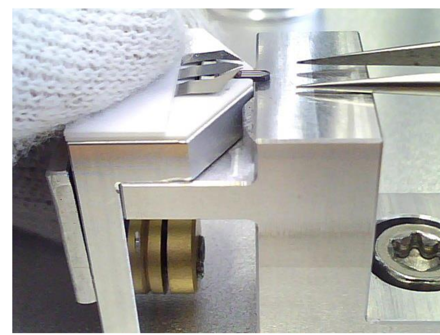
1) The camera focus wheel is behind the Z-stage.
2) Set the focus onto the sample so you can judge the cantilever height.
3) You can zoom (wheel) and scroll (drag) with the mouse





Replace Cantilever

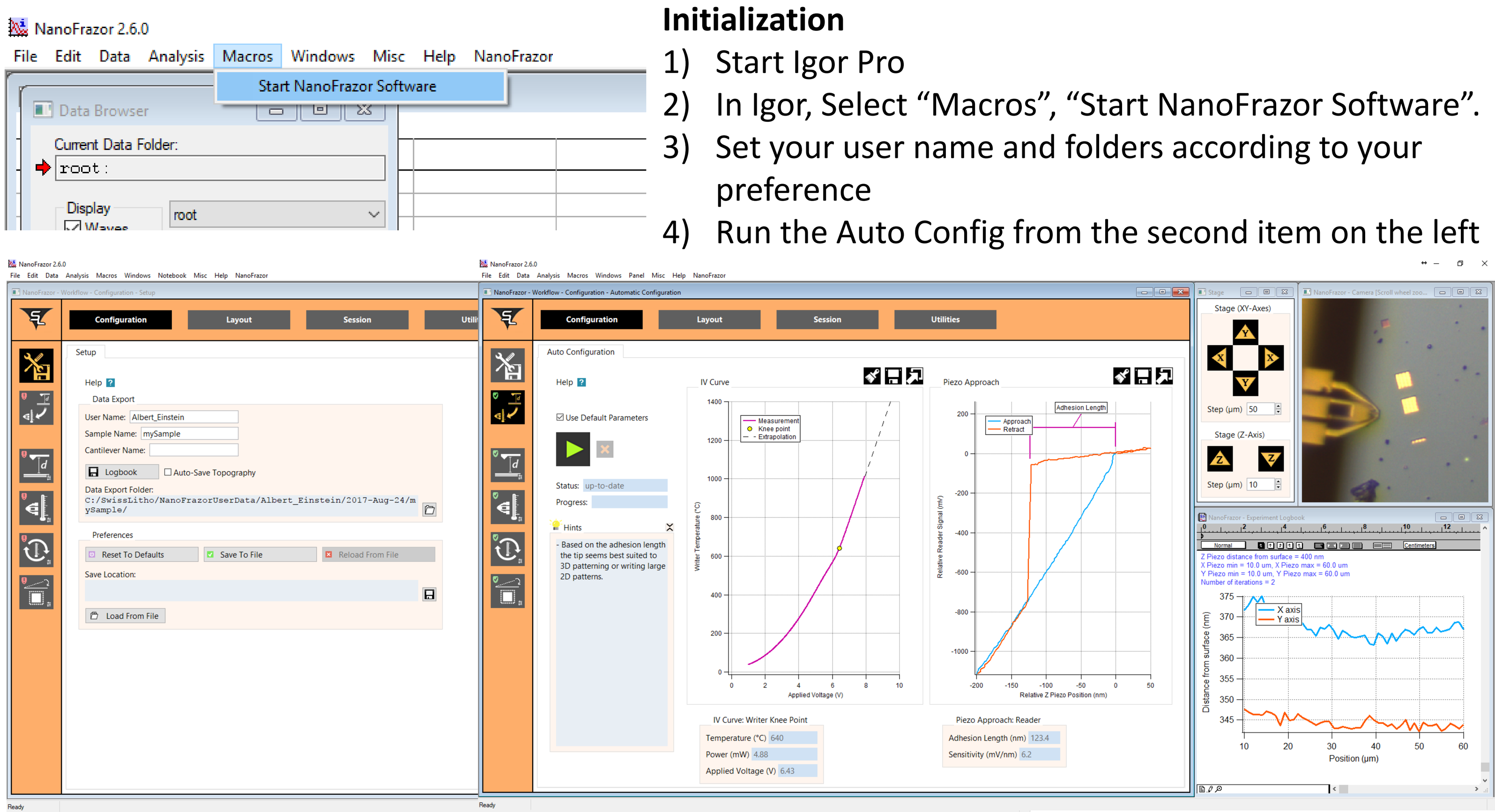
1) Cantilever should be raised well away from the sample (2mm)
2) Remove cantilever holder (magnetically held)
3) Place the tip holder into the cantilever exchange tool
4) Carefully press the ceramic plate of the cantilever holder. This will open the spring contacts which hold the cantilever chip
5) Remove the cantilever chip from the holder using tweezers
6) Open the spring contacts again to slide the new cantilever chip into the slot.
7) Make sure that the cantilever lies flat on the tip holder.
8) Re-place the cantilever holder in the NanoFrazor. It should slot into a defined position



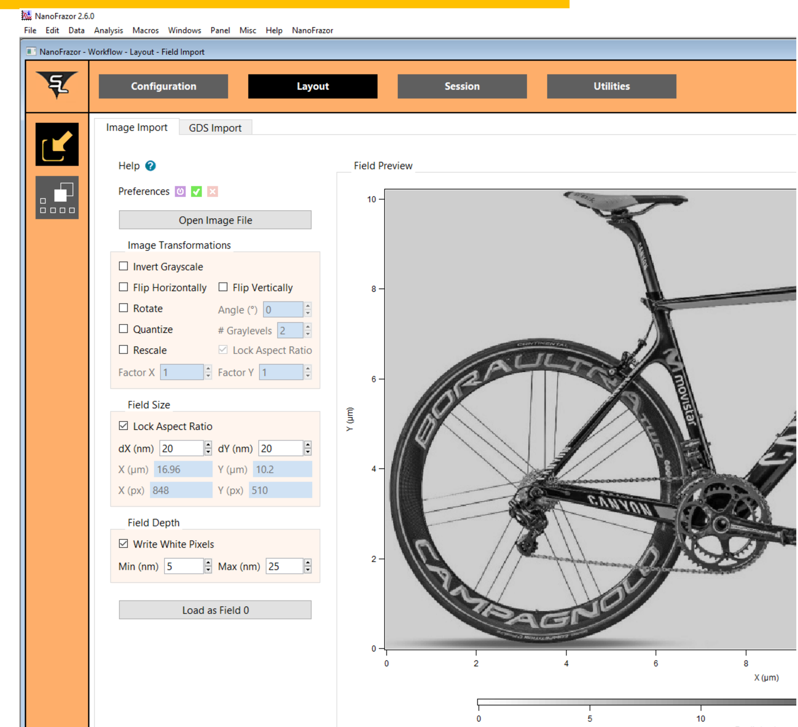
Configure system

Initialization

1) Start Igor Pro
2) In Igor, Select "Macros", "Start NanoFrazor Software".
3) Set your user name and folders according to your preference
4) Run the Auto Config from the second item on the left



Define Field



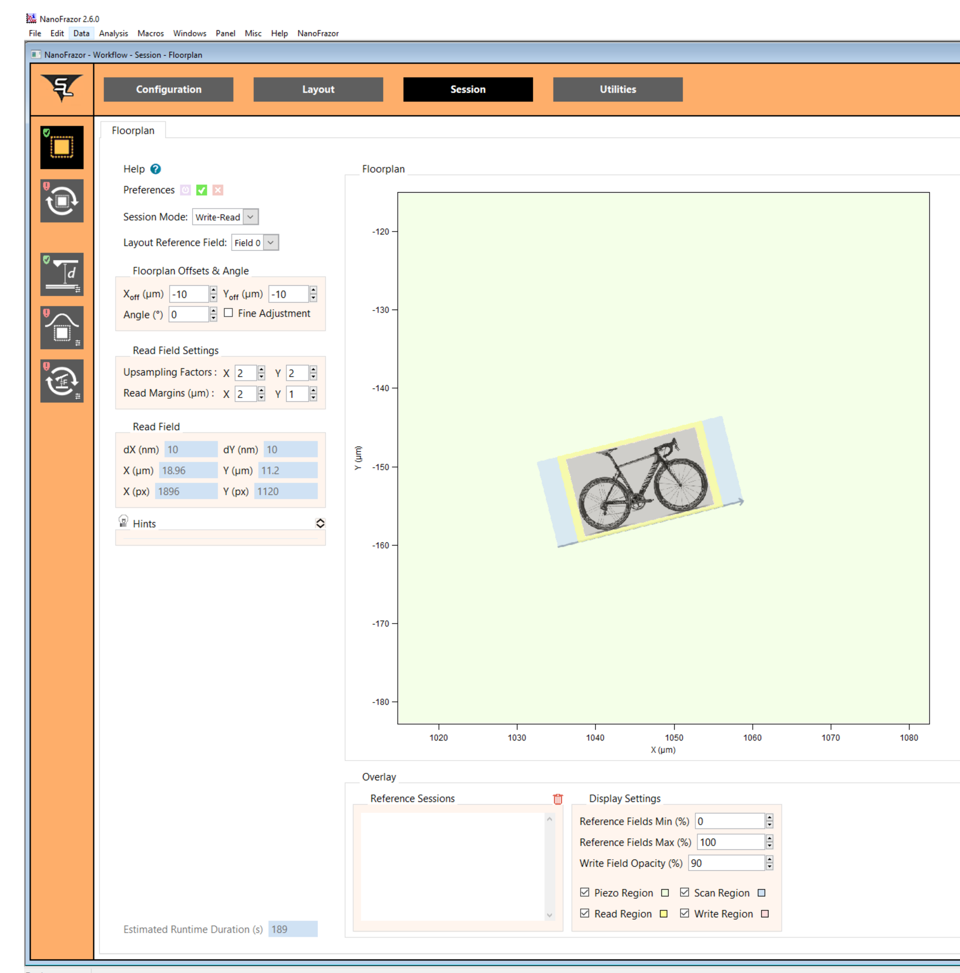
1) Open an image or GDS file
2) Adjust Image if necessary
3) Set the size of a write pixel
4) Writing depths are mapped to the Field Depth range. Black corresponds to the deepest depth.
5) If white pixels are written, they are assigned the min depth, otherwise 0 depth. This is useful to recess a pattern into the resist.
6) "Load Image as Field #" to load it.

Lithography Session

Move and rotate to align the patterns

Upsampling factor: read back more/finer pixels than patterned

Read margin: read extra space around pattern



Reference Sessions: Show previously read fields to aid aligment

Display settings: change what is shown in the graph window

Increase writer temperature for deep writing, decrease for higher resolution

Init write force "automatic" re-uses previous values, manual allows the user to set a range

Write height sets height from which tip is pulled into contact. Increase if tip writes where it shouldn't, decrease if forces top out above 8 V.

Line flattening uses both margins, disable if there is topography which interferes.

Z Drift correction keeps tip height constant

Thermal conductance correction removes artefacts from topography

Relative Edge mask width controls areas ignored in depth feedback

Pre-tension force improves patterning depth without adhesion problems

Timing parameters can be changed if required by application (longer contact times)

The Offsets help the alignment between write and read field. "Estimate offsets" uses a correlation algorithm to help the user.