

# NanoFrazor Explore quick-start guide

#### Version 2016.07.01

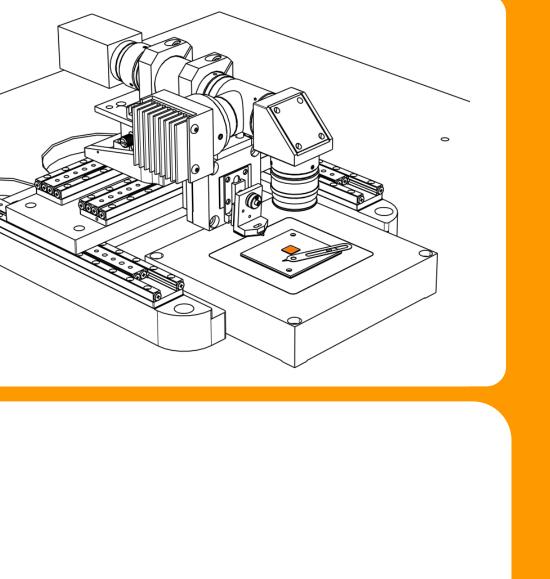
## Load sample

- 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**

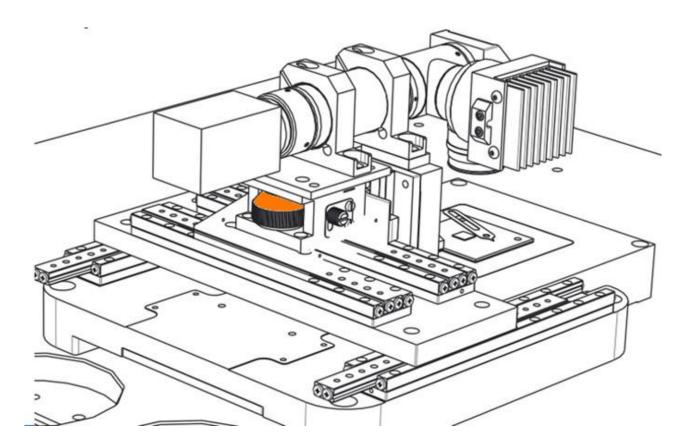
- 1) The camera focus wheel is behind the Z-stage.
- 2) Set the focus onto the sample so you can judge the cantilever height.

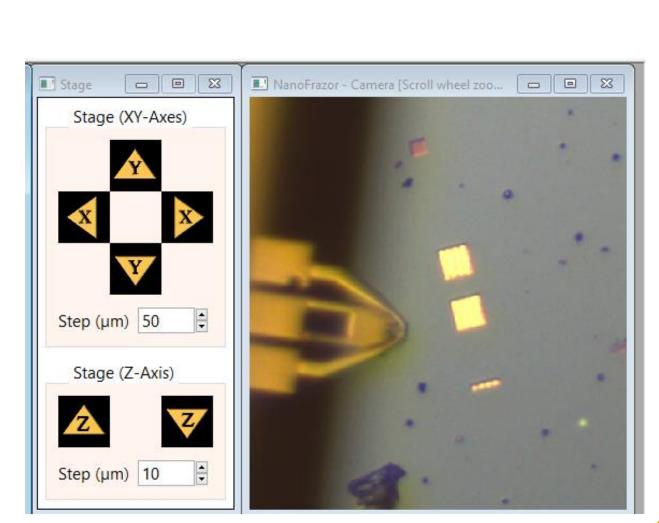


## Lithography Session

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	NanoFrazor - Workflow - Session - Floorplan							
	Ę	Configuration Layout		Session	Utilities			
		Floorplan						
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Move and rotate to		Session Mode: Write-Read V Layout Reference Field: Field 0 V	-120 –					
align the patterns		Floorplan Offsets & Angle $X_{off}$ (µm) -10 $\stackrel{\bullet}{\Rightarrow}$ $Y_{off}$ (µm) -10 $\stackrel{\bullet}{\Rightarrow}$ Angle (°) 0 $\stackrel{\bullet}{\Rightarrow}$ $\Box$ Fine Adjustment	-130 -					
		Read Field Settings						
Upsampling factor:		Upsampling Factors: X 2 V 2 V Read Margins (µm): X 2 V 1 V	-140 —					
read back more/finer		Read Field     dX (nm)   10     dY (nm)   10	Ê  ≻ -150 -		TR			
pixels than patterned		X (μm)         18.96         Y (μm)         11.2           X (px)         1896         Y (px)         1120	≻ -150 -		AV.			
		Hints						
Read margin:			-160 —					
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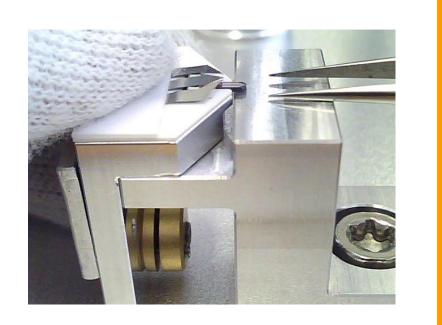
3) You can zoom (wheel) and scroll (drag) with the mouse

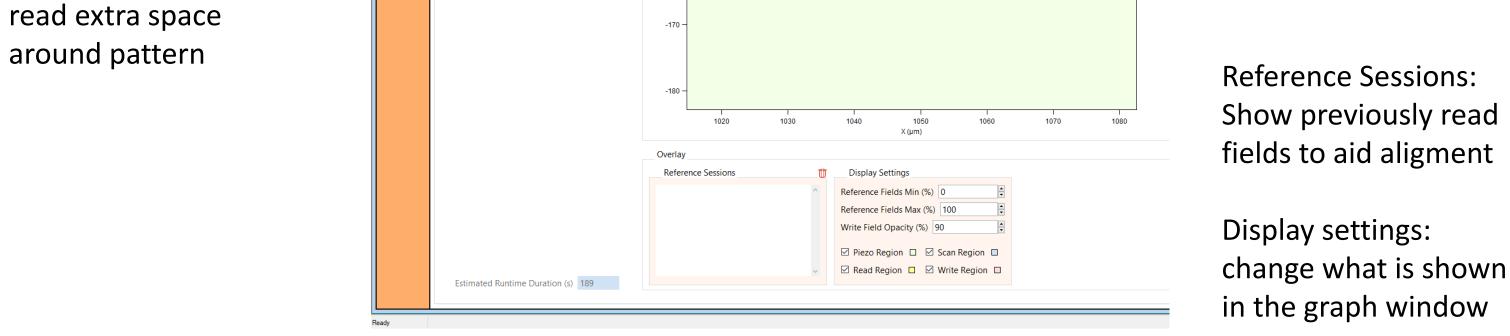


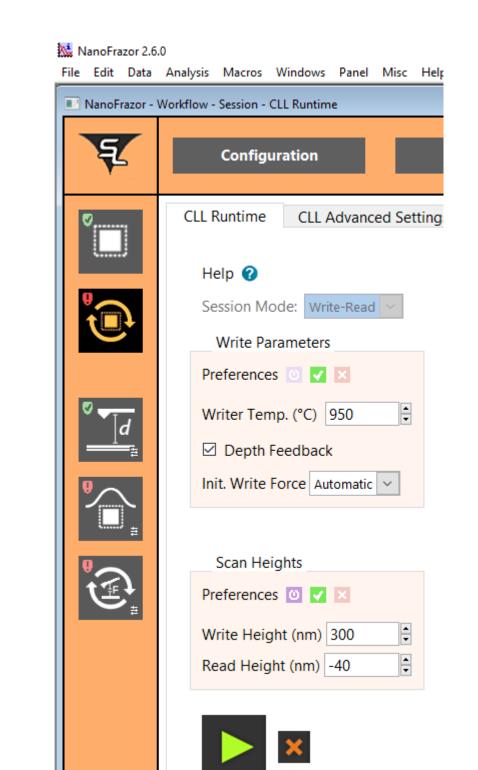


### **Replace Cantilever**

- 1) Cantilever should be raised well away from the sample (2mm)
- Remove cantilever holder (magnetically held) 2)
- Place the tip holder into the cantilever exchange tool 3)
- 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







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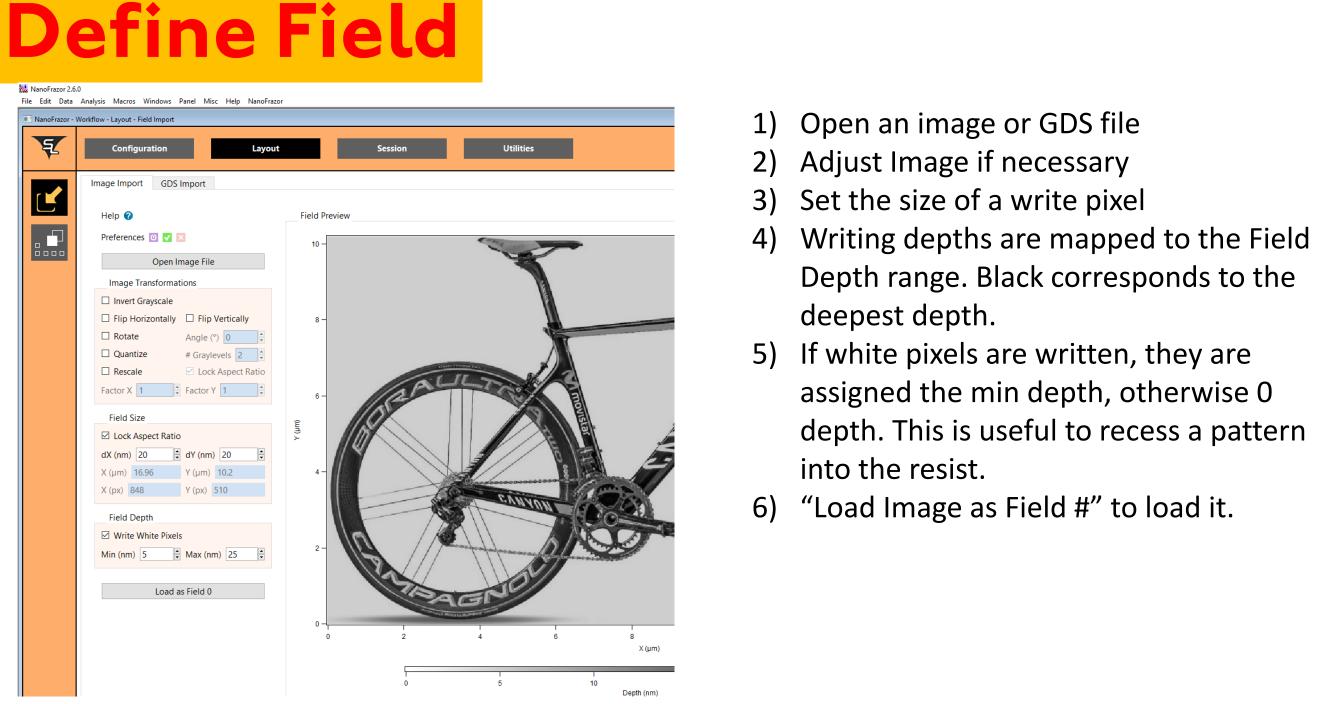
#### NanoFrazor 2.6.0 File Edit Data Analysis Macros Windows Panel Misc Help NanoFrazo NanoFrazor - Workflow - Session - CLL Runtime Ę Configuratio CLL Runtime CLL Advanced Settings CLL R ♥..... Help 🕜 CLL Offsets X<sub>w</sub> (nm) 0 🗘 Y<sub>w</sub> (nm) 0 **Display Attributes** <sup>©</sup> <u>[</u>d Preferences 🔟 🗸 🔀 Read Field Min (%) 0 Read Field Max (%) 0 Write Field Opacity (%) 0

Estimate Offsets

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

#### **Configure system**

File Edit Data Analysis Macros Windows Misc Help          Start NanoFrazor Software         Data Browser         Current Data Folder:         proot :         Display         root		<ol> <li>Start Igor Pro</li> <li>In Igor, Select "Macros", "Start NanoFrazor Software".</li> <li>Set your user name and folders according to your preference</li> <li>Run the Auto Config from the second item on the left</li> </ol>
The Sit base Analysis Macros Windows Notebook Miss Help NanoFrazor     The Sit base Analysis Macros Windows Notebook Miss Help NanoFrazor     The Sit Defaults     Setup     Help @     Data Export     User Name: Abbert_Einstein     Sample Name: mySample     Configuration     Layout     Setup     Help @     Data Export     User Name: impSample     Configuration     Layout     Setup     Help @     Data Export     User Name: impSample        C: /SwissEltho/NanoFrazorUserData/Albert_Einstein/2017-Aug-24/m                 Preferences	NanoFrazer 2.6.0     File Edit Data Analysis Macros Windows Panel     NanoFrazer - Workflow - Configuration     Auto Configuration     Auto Configuration     Auto Configuration     Auto Configuration     Help ?     Use Default Parameter     Configuration     Help ?     Use Default Parameter     This     Based on the adhesion I   the tip seems best suited   3D patterning or writing   2D patterns.     Progress:     Patterning or writing     Pady	Configuration     I stage     I stage       Layout     Session     Utilities       rs     I voure     I main       1000-face- clames     I main       1000-face- c



Increase writer temperature for deep Line flattening uses both margins, writing, decrease for higher resolution disable if there is topography which

Init write force "automatic" re-uses previous values, manual allows the user constant

to set a range

interferes.

Z Drift correction keeps tip height

Thermal conductance correction removes artefacts from topography

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.

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)

colours splay

tool uo ction

K-Layout to topography

separate view σ to aph

- 5) If white pixels are written, they are assigned the min depth, otherwise 0 depth. This is useful to recess a pattern
- 6) "Load Image as Field #" to load it.





