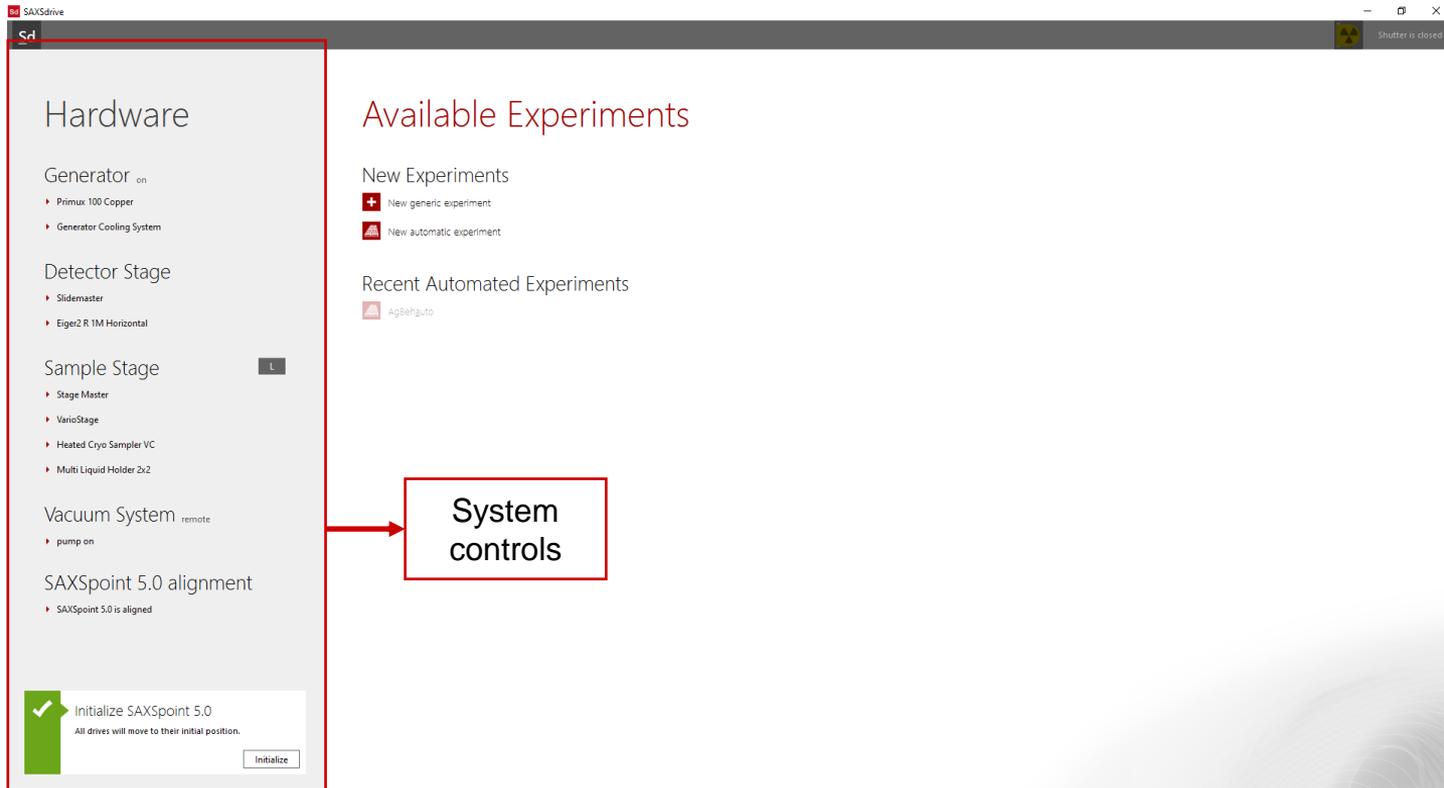


# SOP



SAXSdrive

Shutter is closed

## Hardware

Generator on

- ▶ Primux 100 Copper
- ▶ Generator Cooling System

## Detector Stage

- ▶ Slidemaster
- ▶ Eiger2 R 1M Horizontal

## Sample Stage

- ▶ Stage Master
- ▶ VarioStage
- ▶ Heated Cryo Sampler VC
- ▶ Multi Liquid Holder 2x2

## Vacuum System remote

- ▶ pump on

## SAXSpoint 5.0 alignment

- ▶ SAXSpoint 5.0 is aligned

Initialize SAXSpoint 5.0  
All drives will move to their initial position.

Initialize

## Available Experiments

### New Experiments

- ▶ New generic experiment
- ▶ New automatic experiment

### Recent Automated Experiments

- ▶ AgBeHauto

**System controls**

Open SAXSdrive software for system operation. Image right shows SAXSdrive main window

# Hardware

Generator on

Primux 100 Copper

Generator Cooling System

## Detector Stage

- ▶ Slidemaster
- ▶ Eiger2 R 1M Horizontal

## Sample Stage

- ▶ Stage Master
- ▶ VarioStage
- ▶ Heated Cryo Sampler VC
- ▶ Multi Liquid Holder 2x2

## Vacuum System remote

- ▶ pump on

## SAXSpoint 5.0 alignment

- ▶ SAXSpoint 5.0 is aligned



Initialize SAXSpoint 5.0

All drives will move to their initial position.

Click on Generator Tab: Switch On/OFF the X-ray tube from here by clicking: **“ON”/“OFF”**. Then click **OK**

# Hardware

## Generator on

- ▶ Primux 100 Copper
- ▶ Generator Cooling System

## Detector Stage

Slidemaster ▼

Eiger2 R 1M Horizontal ▼

OK

Cancel

## Sample Stage L

- ▶ Stage Master
- ▶ VarioStage
- ▶ Heated Cryo Sampler VC
- ▶ Multi Liquid Holder 2x2

## Vacuum System remote

- ▶ pump on

## SAXSpoint 5.0 alignment

- ▶ SAXSpoint 5.0 is aligned



Initialize SAXSpoint 5.0

All drives will move to their initial position.

Initialize

Shows detector mode: Always be in Eiger 1M Horizontal.  
Don't change anything here

# Hardware

## Generator on

- ▶ Primux 100 Copper
- ▶ Generator Cooling System

## Detector Stage

- ▶ Slidemaster
- ▶ Eiger2 R 1M Horizontal

## Sample Stage

Stage Master	▼
VarioStage	▼
Heated Cryo Sampler VC	▼
Multi Liquid Holder 2x2	▼

## Vacuum System remote

- ▶ pump on

## SAXSpoint 5.0 alignment

- ▶ SAXSpoint 5.0 is aligned



Initialize SAXSpoint 5.0

All drives will move to their initial position.

Do the correct stage and holder selection.  
Select the correct stage and holder combination as mounted  
Click "OK"

**Note: Always Turn OFF Stage Controller  
before Mounting/dismounting the stage**

# Hardware

## Generator on

- ▶ Primux 100 Copper
- ▶ Generator Cooling System

## Detector Stage

- ▶ Slidemaster
- ▶ Eiger2 R 1M Horizontal

## Sample Stage

L

- ▶ Stage Master
- ▶ VarioStage
- ▶ Heated Cryo Sampler VC
- ▶ Multi Liquid Holder 2x2

## Vacuum System remote

Vent Evac

OK

Turn **ON/OFF** the vacuum by clicking **Vent/Evac**  
Then click 'OK'

## SAXSpoint 5.0 alignment

- ▶ SAXSpoint 5.0 is aligned



Initialize SAXSpoint 5.0

All drives will move to their initial position.

Initialize

# Hardware

## Generator on

- ▶ Primux 100 Copper
- ▶ Generator Cooling System

## Detector Stage

- ▶ Slidemaster
- ▶ Eiger2 R 1M Horizontal

## Sample Stage

L

- ▶ Stage Master
- ▶ VarioStage
- ▶ Heated Cryo Sampler VC
- ▶ Multi Liquid Holder 2x2

## Vacuum System remote

- ▶ pump on

## SAXSpont 5.0 alignment

- ▶ SAXSpont 5.0 is aligned

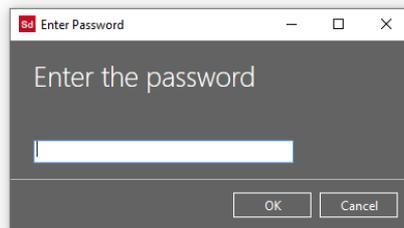
# Available Experiments

## New Experiments

-  New generic experiment
-  New automatic experiment

## Recent Automated Experiments

-  AgBehauto

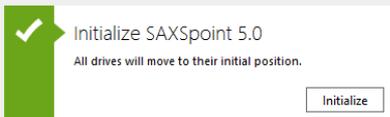


Click **“SAXSpont 5.0 alignment”** given **PO-UP** for password to enter alignment wizard.

Password: 2012

**Note:** Beamstop alignment will be only need to be done when beam size needs to be changed. Follow beam stop alignment process.

Quick Alignment in general will not required unless screw gauge of mirror optics disturbed.



## Hardware

### Generator on

- ▶ Primux 100 Copper
- ▶ Generator Cooling System

### Detector Stage

- ▶ Slidemaster
- ▶ Eiger2 R 1M Horizontal

### Sample Stage

L

- ▶ Stage Master
- ▶ VarioStage
- ▶ Heated Cryo Sampler VC
- ▶ Multi Liquid Holder 2x2

### Vacuum System remote

- ▶ pump on

### SAXSpoint 5.0 alignment

- ▶ SAXSpoint 5.0 is aligned

## Available Experiments

### New Experiments

-  New generic experiment
-  New automatic experiment

Select the experiment as required

### Recent Automated Experiments

-  AgBehauto

**New Generic experiment:** Single measurement at single SDD and temperature.  
**New Automatic experiment:** To do multiple measurement with autosampler/multiple temperature/multiple SDD/combinations



Initialize SAXSpoint 5.0

All drives will move to their initial position.

Initialize

Sample position

Unlock Forward

Forward 0 mm Roll 0

Height 33 mm

Distance 0 mm

Move Into Beam

Detector position

SPD 1.599.23 mm

Height 0 mm

10  
9  
8  
7

Single measurement Automatic measurement

Load Save

Trigger sequence External comma... Heated/ Cooled... Beam size profile s... Roll Sequence

ROI  
Fit Screen

Provide the required information to start an experiment

Experiment name

User name

Storage location  ...

Start Cancel

0.0 ct/s

Acquisition 30 s

Total intensity 0.0

Beam size Profile Ni 2mm

Absorber None

Move Into Beam

3  
2  
1  
0

0 1 2 3 4 5 6 7 8 9 10

Fill the section for new experiment and select the desired location for data save

START

### Sample position

Unlock Forward

Forward  mm

Height  mm

Sideways  mm

Roll

**Move Into Beam**

### Detector position

SDD  mm

Height  mm

Sideways  mm

SAXS   WAXS   Extreme WAXS

### Heated Cryo Sa...

Target temperature  °C

Temp. rate

Leave Temp. Ctrl. active

Current temperature  °C

### Multi Liquid Hol...

Position

### Sample Alignment

cts/s

### Detector Preview

Acquisitio...  s

Total Intensity  cts

### Beam size

Profile

**Move Into Beam**

### Absorber

Absorber

sop ready.



ROI

**Fit Sree**

1D

Single measurement   **Automatic measurement**

Load

Save



Trigger sequence



External comma...

Heated/  
Cooled...Beam size  
profile s...Roll  
Sequence<  >

START

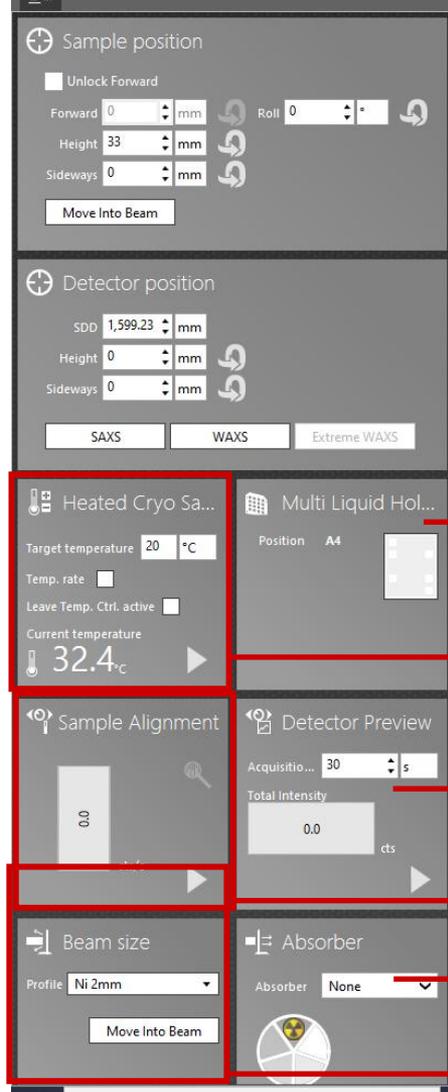
Change sample position in X,Y, Z (forward) direction.

**Note:** Autosampler don't click "Move into the beam"

AgBeh: Heigh: -20, Sideways: 10

Change detector position and SDD

Click "SAXS"/"WAXS" to move to "SAXS/WAXS" position



The screenshot displays the software interface with several panels highlighted by red boxes and arrows:

- Sample position:** Includes fields for Forward (0 mm), Height (33 mm), and Sideways (0 mm), along with a "Move Into Beam" button.
- Detector position:** Includes fields for SDD (1,599.23 mm), Height (0 mm), and Sideways (0 mm), with buttons for SAXS, WAXS, and Extreme WAXS.
- Heated Cryo Sa...:** Includes Target temperature (20 °C), Temp. rate, Leave Temp. Ctrl. active, and Current temperature (32.4 °C).
- Multi Liquid Hol...:** Includes Position (A4) and a grid of sample positions.
- Sample Alignment:** Includes a display showing 0.0 and a play button.
- Detector Preview:** Includes Acquisition time (30 s) and Total Intensity (0.0 cts).
- Beam size:** Includes Profile (Ni 2mm) and a "Move Into Beam" button.
- Absorber:** Includes Absorber (None) and a radiation warning icon.

To select desired sample position in multi-sample holder (A1/A2/...D5)

To set sample temperature

For seeing scattering preview

For doing sample alignment

Select absorber

Beam stop/size selection. Click "Move into beam" after selection

**Sample position**

Unlock Forward

Forward 0 mm Roll 0

Height 33 mm

Sideways 0 mm

Move Into Beam

---

**Detector position**

SDD 1,599.23 mm

Height 0 mm

Sideways 0 mm

SAXS WAXS Extreme WAXS

---

Heated Cryo Sa... Multi Liquid Hol...

Target temperature 20 °C

Temp. rate

Leave Temp. Ctrl. active

Current temperature 32.5 °C

Position A4

---

**Sample Alignment** **Detector Preview**

Acquisitio... 30 s

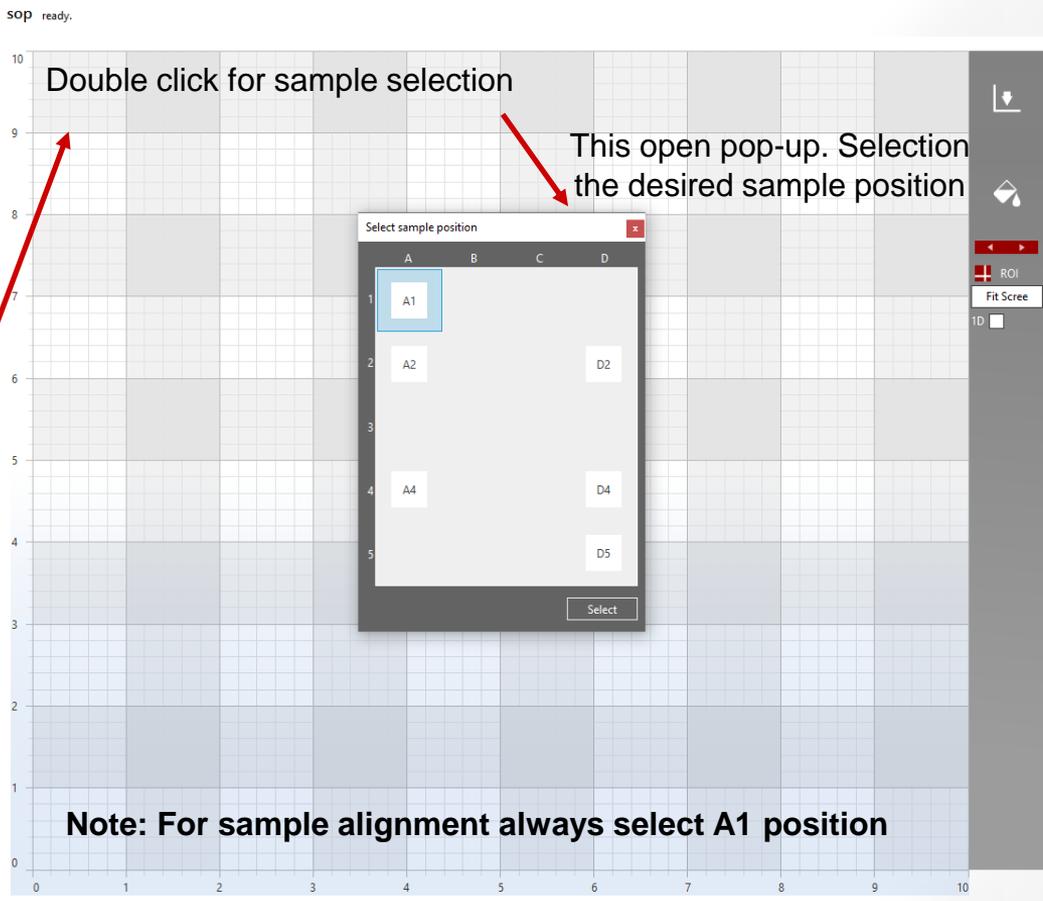
Total intensity 0.0 cts

---

**Beam size** **Absorber**

Profile Ni 2mm Absorber None

Move Into Beam



Single measurement Automatic measurement

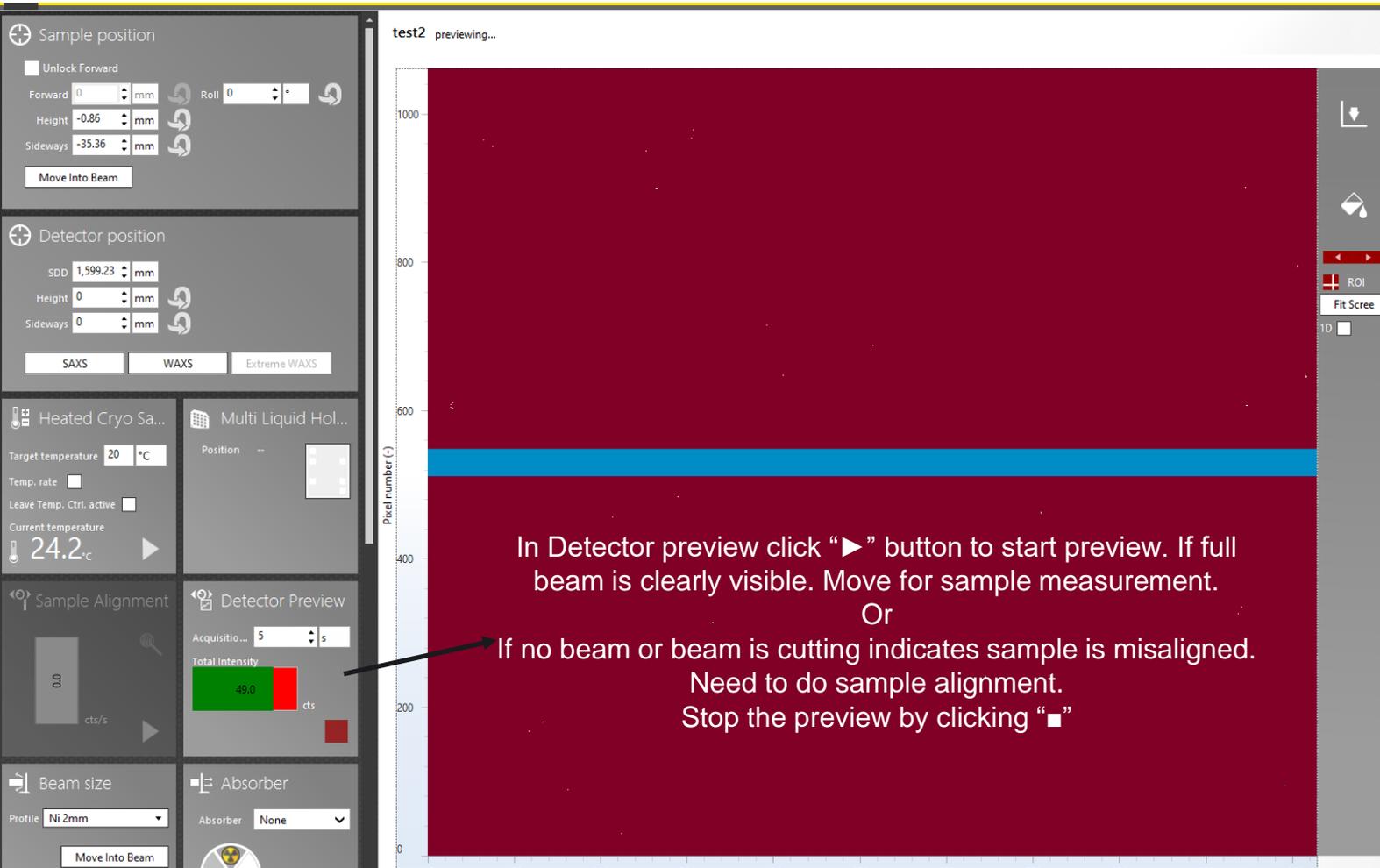
Load Save

Trigger sequence External comma... Heated/Cooled... Beam size profile s... Roll Sequence

ROI

Fit Screen





The screenshot displays the software interface for a detector. On the left, there are several control panels:

- Sample position:** Includes an "Unlock Forward" checkbox, and input fields for Forward (0 mm), Height (-0.86 mm), and Sideways (-35.36 mm). A "Roll" field is set to 0. A "Move Into Beam" button is present.
- Detector position:** Includes input fields for SDD (1,599.23 mm), Height (0 mm), and Sideways (0 mm). Below are buttons for "SAXS", "WAXS", and "Extreme WAXS".
- Heated Cryo Sa... / Multi Liquid Hol...:** Includes a "Target temperature" field set to 20 °C, a "Current temperature" field set to 24.2 °C, and a "Temp. rate" checkbox.
- Sample Alignment:** Includes a "Beam size" field set to "Ni 2mm" and a "Move Into Beam" button.
- Absorber:** Includes an "Absorber" dropdown menu set to "None".

The main area is a "test2 previewing..." window showing a detector preview. The vertical axis is labeled "Pixel number (-)" and ranges from 0 to 1000. A horizontal blue line is visible at approximately pixel 500. A red vertical bar is visible on the right side of the preview. A "Fit Screenshot" button is located in the top right corner of the preview window.

In Detector preview click "▶" button to start preview. If full beam is clearly visible. Move for sample measurement.  
Or  
If no beam or beam is cutting indicates sample is misaligned.  
Need to do sample alignment.  
Stop the preview by clicking "■"

# Sample Alignment

Sd Close shutter

### Sample position

Unlock Forward

Forward 0 mm Roll 0

Height 0 mm

Sideways 0 mm

**Move Into Beam**

---

### Detector position

SDD 1,599.23 mm

Height 0 mm

Sideways 0 mm

SAXS WAXS Extreme WAXS

---

### Heated Cryo Sa...

Multi Liquid Hol...

Target temperature 20 °C

Temp. rate

Leave Temp. Ctrl. active

Current temperature 33.0 °C

---

### Sample Alignment

Acquisitio... 30 s

Total Intensity 4,980,224.0 cts

---

### Beam size

Profile Ni 2mm

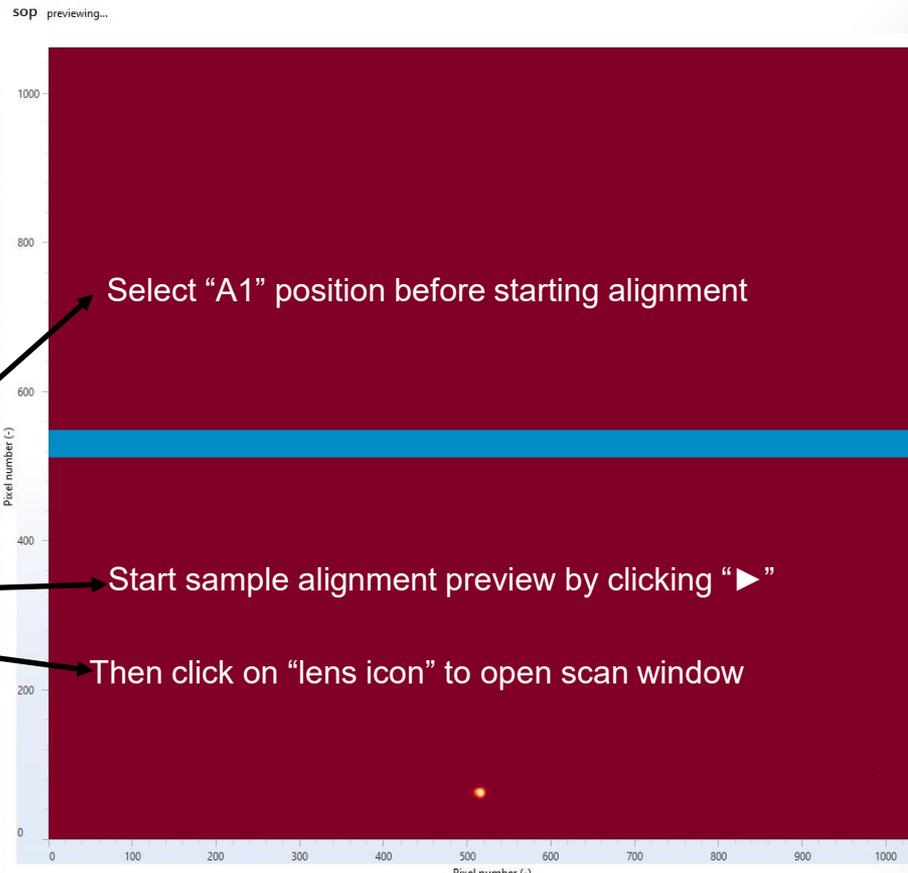
**Move Into Beam**

---

### Absorber

Absorber None

sop previewing...



Select "A1" position before starting alignment

Start sample alignment preview by clicking "▶"

Then click on "lens icon" to open scan window

Single measurement Automatic measurement

Load Save

Trigger sequence External comma... Heated/ Cooled... Beam size profile s... Roll Sequence XY posi sequen

---

Sampler

SDD 1,599.225mm

---

Finally

Leave generator in current state Turn off the temperature c...

START 

14/41



## Sample position

Unlock Forward

Forward 0 mm Roll 0

Height 0 mm

Sideways -5 mm

Move Into Beam

## Detector position

SDD 1,599.23 mm

Height 0 mm

Sideways 0 mm

SAXS WAXS Extreme WAXS

## Heated Cryo Sa...

Multi Liquid Hol...

Position

Target temperature 20 °C

Temp. rate

Leave Temp. Ctrl. active

Current temperature 33.0 °C

## Sample Alignment

14.0 cts/s

## Detector Preview

Acquisitio... 5 s

Total Intensity 7.0 cts

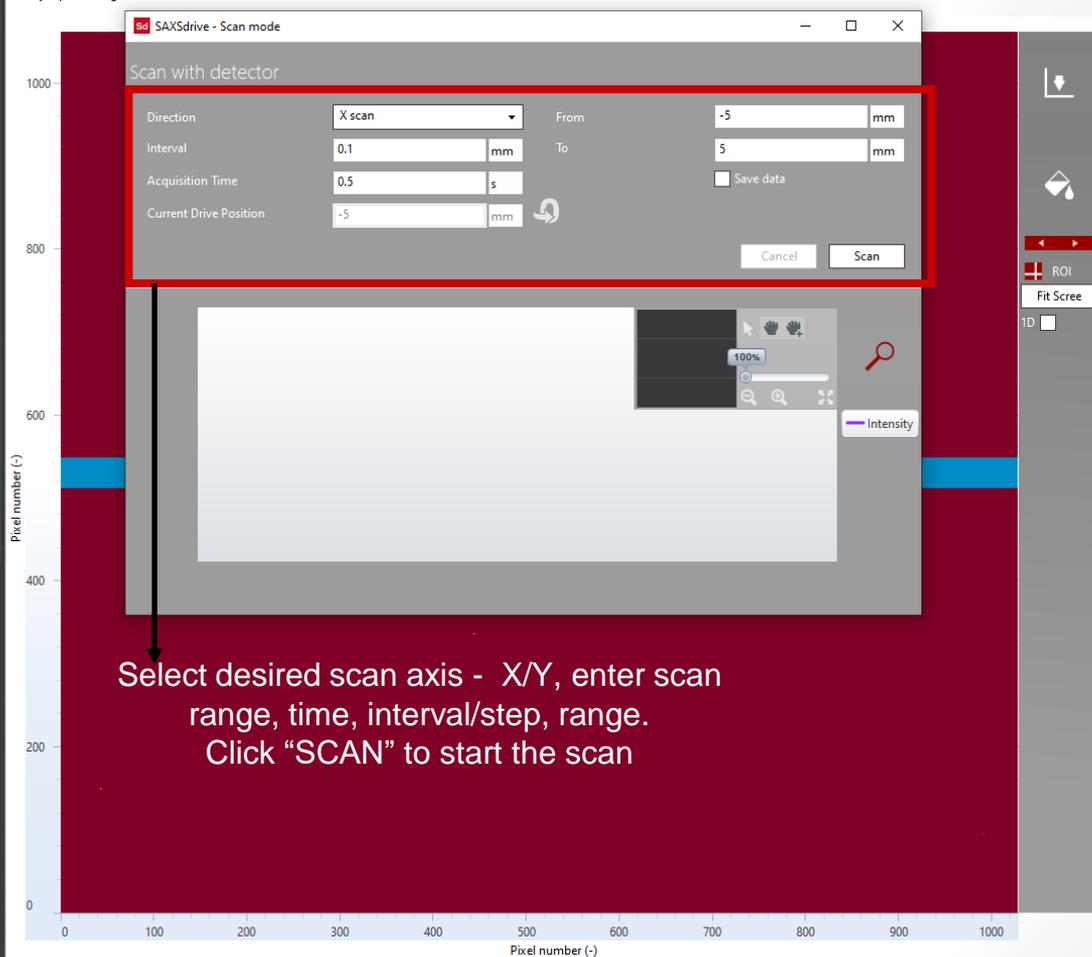
## Beam size

Profile Ni 2mm

Move Into Beam

Absorber None

sop previewing...



Single measurement

Automatic measurement

Load Save



Trigger sequence



External comma...



Heated/ Cooled...



Beam size profile s...



Roll Sequence



XY position sequence

Sampler



Fit Screenshot



SDD

1,599.225mm

Finally

Leave generator in current state

Turn off the temperature...

START



Sample position

Unlock Forward

Forward 0

Height 0

Sideways 1.78

Move Into Beam

Detector position

SDD 1,599.23

Height 0

Sideways 0

SAXS

Heated Cry

Target temperature 25

Temp. rate

Leave Temp. Ctrl. active

Current temperature 29.1 °C

Sample Align

Beam size

Profile Ni 2mm

Absorber

Absorber None

TIO2\_PDMS previewing...

SAXSdrive - Scan mode

Scan with detector

Direction X scan

From -5 mm

Interval 0.1 mm

To 5 mm

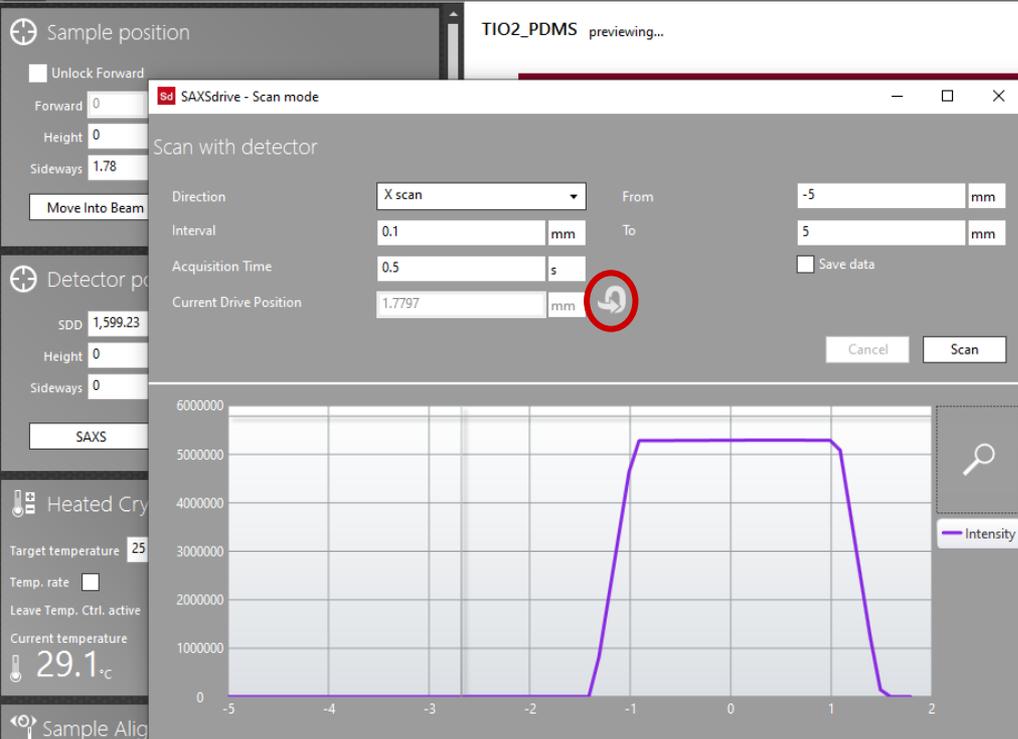
Acquisition Time 0.5 s

Current Drive Position 1.7797 mm

Save data

Cancel Scan

Intensity



Click in the “Center” of intensity plateau to move to the position. The click on “0” (red circled). Do this for both X and Y axis to set correct position.

**Note: Sample position zero should be done for A1 sample position only.**

### Sample position

Unlock Forward

Forward  mm  Roll  

Height  mm 

Sideways  mm 

### Detector position

SDD  mm

Height  mm 

Sideways  mm 

### Heated Cryo Sa...

Target temperature  °C

Temp. rate

Leave Temp. Ctrl. active

Current temperature  °C 

### Multi Liquid Hol...

Position



### Sample Alignment

cts/s 

### Detector Preview

Acquisitio...  s

Total Intensity  cts



### Beam size

Profile



### Absorber

Absorber

test2 previewing...




ROI  
 ID

Sd

Sample position

Unlock Forward

Forward 0 mm Roll 0

Height 33 mm

Sideways 0 mm

Move Into Beam

Detector position

SDD 1,599.23 mm

Height 0 mm

Sideways 0 mm

SAXS WAXS Extreme WAXS

Heated Cryo Sa... Multi Liquid Hol...

Target temperature 20 °C

Temp. rate

Leave Temp. Ctrl. active

Current temperature 32.4 °C

Sample Alignment

Detector Preview

Acquisitio... 30 s

Total Intensity 0.0 cts

Beam size

Profile Ni 2mm

Absorber

Absorber None

Move Into Beam

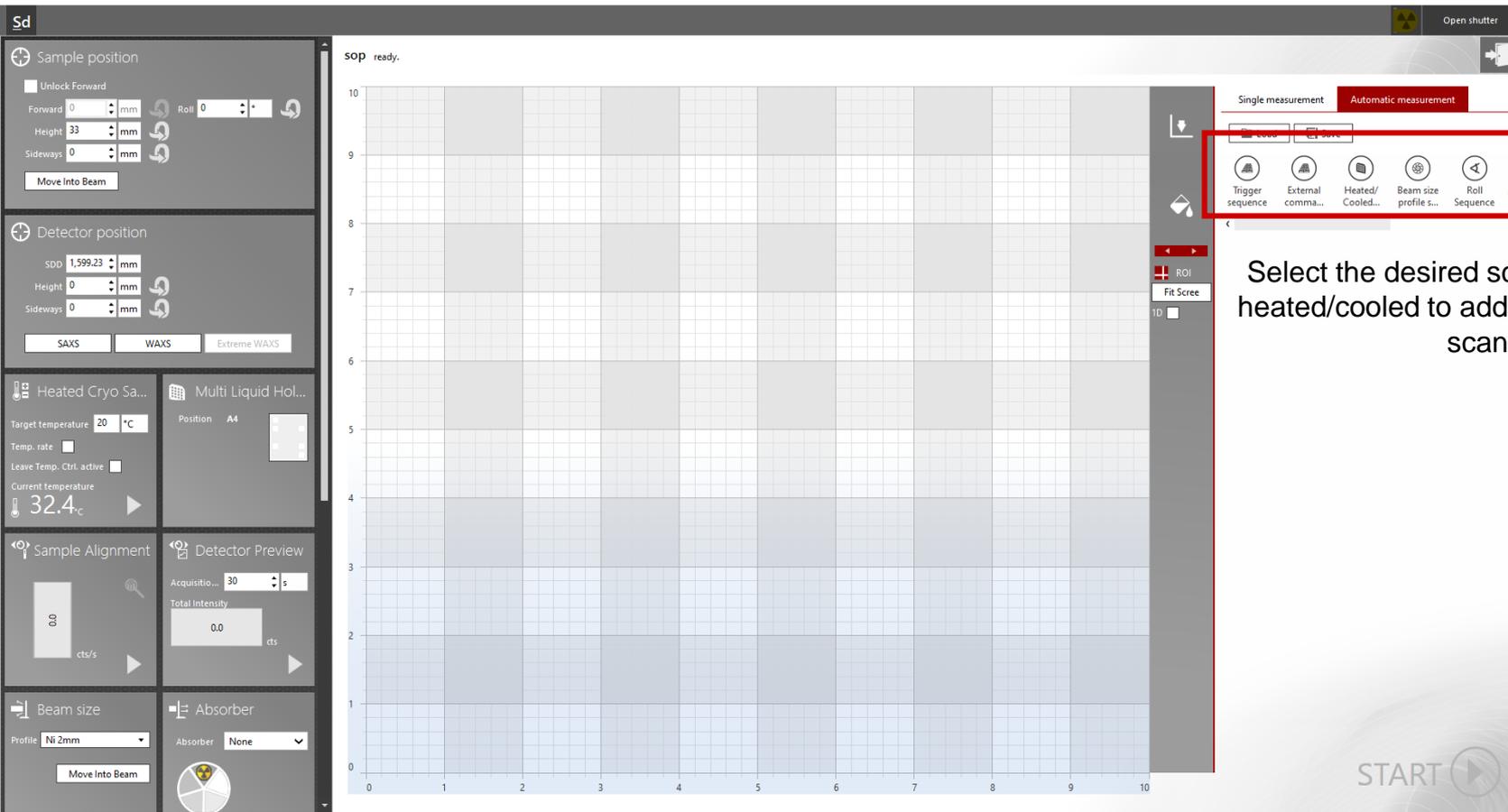
sop ready.

Single measurement Automatic measurement

Trigger sequence External comma... Heated/ Cooled... Beam size profile ... Roll Sequence XY

ROI Fit Screen

START



Select the desired scan for example heated/cooled to add multiple sample scan

## Sample position

Unlock Forward  
 Forward  mm  
 Height  mm  
 Sideways  mm

## Detector position

SDD  mm  
 Height  mm  
 Sideways  mm



## Heated Cryo Sa...

Temp. rate  
 Leave Temp. Ctrl. active  
 Current temperature  
 °C

## Sample Alignment

cts/s

## Beam size

## Absorber

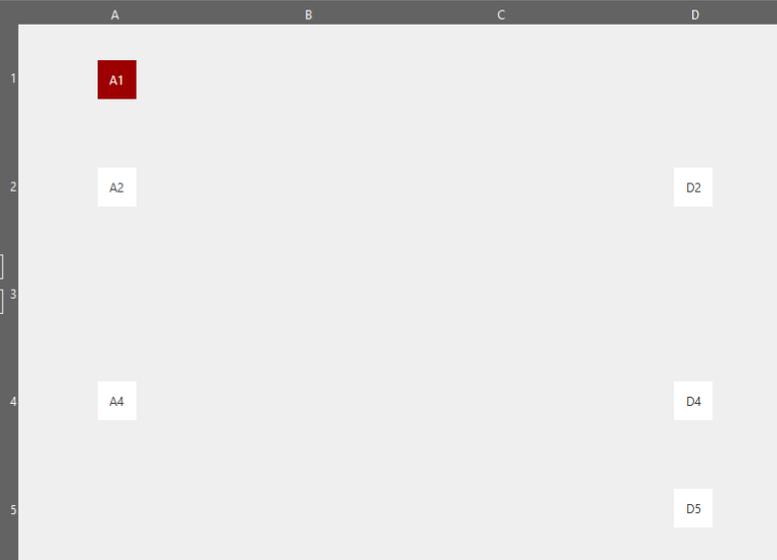


TIO2\_PDMS ready.

## Select sample processing order

## Sample processing list





Done

Single measurement

Automatic measurement


 Heated/Cooled...  
 Beam size profile s...  
 Roll Sequence  
 XY position sequence  
 Temperature sequence  
 SDD sequen...

## Sampler



SDD

1,599.225mm

## Finally

 Leave generator in current state  
 Turn off the temperature c...

Here "Heated/cooled sampler is used". Select/remove the sample position by using insert/remove button. Insert sample name. More sample metadata insertion option can be accessed by clicking funnel icon

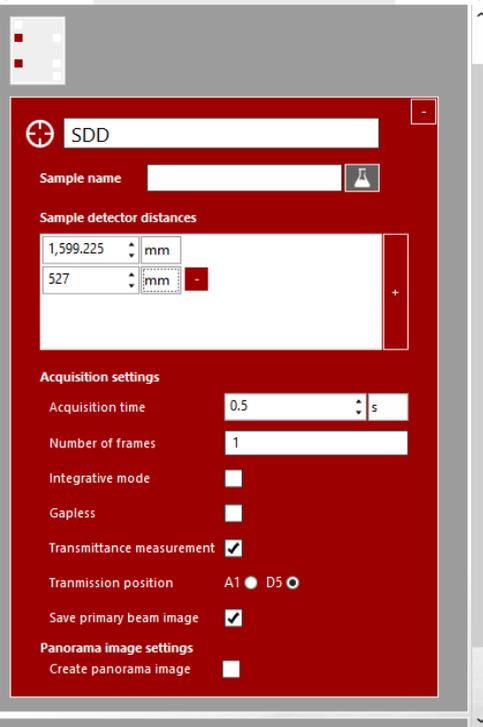
  


Pixel number (-)

START 

Load Save

nal  
na...  
Heated/  
Cooled...  
Beam size  
profile s...  
Roll  
Sequence  
XY position  
sequence  
Temperatur  
e sequence  
SI  
sequ



SDD

Sample name

Sample detector distances

1,599.225 mm

527 mm

Acquisition settings

Acquisition time 0.5 s

Number of frames 1

Integrative mode

Gapless

Transmittance measurement

Transmission position A1  D5

Save primary beam image

Panorama image settings

Create panorama image

After sample selection. Click parameter. In this example it is SDD. Insert desired SDD values. One can do multiple SDD scan one go using this.

Insert other parameters such as acquisition time, number of frames etc.

Insert more measurement options for doing all type of measurements in one measurement plan. Note: measurement tree follows from top to down so correct sequence should be inserted.

START 

Click **“START”** to begin the measurement