

HRXRD SOP

1. Switch on the chiller and system mains on the wall
2. Turn on the MCB knob at the back side of the system
3. Switch on the green button at the front side of the system
4. Switch on the MCB on the white switch board for pc
5. Switch on the pc
6. Open the software "smart lab guidance"
7. Go to control → XG control → X ray ON
8. Check chiller flow rate and temperature which should be 5 and ~20 °C respectively
9. Go to control → aging
10. Check log book to determine the aging period
11. After aging wait 30 min to make the x ray stable

For Θ - 2 Θ measurement:

1. Go to package option (at right top corner) in the " smartLab guidance " software
2. Click on 'preinstalled' to select your preferred recipe (general (Medium resolution PB) for this Θ - 2 Θ measurement
3. Put your sample on the sample holder inside. For loading the sample press yellow button on the door. Wait for the blinking light and sound and then only open the door
4. Look into the process flow chart at the left of the window
5. Don't do optical alignment
6. Go to sample alignment; give the thickness, height, width of your sample
7. Execute sample alignment
8. Go to general measurement tab
9. Go to 'save measurement data' section in general measurement window
10. Create a folder of yours in the D drive and specify the file name and the sample name there.
11. Check the 'slit conditions' whether it matches with the installed set
12. Check the first row of the 'measurement conditions' section
13. Select theta/2-theta scan

14. Select start and stop angle
15. Select the check box corresponding to axes initialization statement in the left bottom corner of the measurement window
16. Click execute

XRR measurement:

1. Go to package option (at right top corner) in the “ smartLab guidance “ software
2. Click on ‘preinstalled’ to select your preferred recipe (reflectivity (Medium resolution PB) for this XRR measurement)
3. Put your sample on the sample holder inside. For loading the sample press yellow button on the door. Wait for the blinking light and sound and then only open the door
4. Look into the process flow chart at the left of the window
5. Don’t do optical alignment
6. Go to sample alignment; give the thickness, height, width of your sample
7. Execute sample alignment
8. Go to reflectivity measurement tab
9. Go to ‘save measurement data’ section in general measurement window
10. Create a folder of yours in the D drive and specify the file name and the sample name there.
11. Click execute

Data collection:

1. Open Binary → ASCII conversion software from desktop
2. Give your input file path; it will save your data in *.txt format in the same folder

3. Execute
4. Write your data in CD

System shut down:

1. Check whether there is any user on the same day , if not shut down the system
2. Go to control→ XG control
3. Gradually decrease the tube voltage and current as per the following table
4. Put the voltage and current value and click 'set'
5. Wait for the value to be stable before going to the next set of values

Voltage (kV)	Current (mA)
40	30
40	20
40	10
30	10
20	10
20	2

6. After manually decreasing the tube voltage and current to 20 kV and 2 mA, switch off X ray
7. Wait for the flow to be stopped
8. Close the software
9. Switch off the pc
10. Switch off the MCB on the white switch board for pc
11. Switch off the white button in the front side of the system
12. Turn off the MCB knob at the back side of the system
13. Switch off the chiller and system mains.