1 Objective:

This Standard Operation Procedure states how to use 20 deg beam line for fabricating micro/nano structures on resists.

2 Responsibilities:

2.1 Director / HOD / PI

The Director/HOD/PI has overall responsibility for ensuring a process is designed for the safe to fabricate micro/nano structures at 20 deg beam line.

2.2 Designated Person

There shall be a designated person to oversee the correct procedures of fabrication micro/nano structures at 20 deg beam line.

2.3 Staff/ Research personnel

a. Users shall attend appropriate training on the safe use of 20 deg beam line.
b. Users shall report any injuries, defects or breakdowns to their supervisor.

3 Personal Protection Equipment

When handling samples during operation at 20 deg beam line requires special protection equipment including: rubber gloves.

4 Procedures

4.1. Sample exchange in 20 deg chamber

4.1.1. Switch off the power supply for the CEM. Reduce RBS and or PIN bias gradually to 0V. Switch off the target stage.

4.1.2. Close the gate valve and the beam line valve to separate the sample chamber from the beam line and the accelerator and vent the chamber.

4.1.3. Take out the sample holder from the chamber.

4.1.4. **Wear gloves while handling samples and sample holder!**

4.1.5. Transfer the sample holder in the chamber.

4.1.6. Close the venting valve and start roughing the chamber.

4.1.7. Wait until the chamber pressure is lower than 2*10e-1 mbar, close the roughing valve and open the gate valve to the TMP.

4.1.8. Switch off the roughing-pump.

4.2. Running experiment

4.2.1. Bias the required detectors with the relevant voltages (as given by the manufacturer): RBS <20V, PIN =10V, CEM extra Bias <250V.

4.2.2. Make sure when the beam is transferred to the chamber, no detector is in line with the beam, or detector damage can occur.

4.2.3. When using CEM keep the current below 1 pA

4.3. Shutting down process

~~4.2.4.~~4.3.1. Put in Faraday Cup 2.

~~4.2.5.~~4.3.2. Turn off Blanking Power Suppler and terminate connections.

~~4.2.6.~~4.3.3. Follow 4.1.1 – 4.1.4 and take out your sample.

~~4.2.7.~~4.3.4. Follow 4.1.6 – 4.1.8 and pump down the chamber

~~4.2.8.~~4.3.5. Close the 20 deg beam line valve