

Safety instruction for the PPMS/Squid laboratory P007/P008

This laboratory is equipped with two instruments (PPMS) to measure physical properties like specific heat, electrical conductivity etc. and a Squid magnetometer (MPMS). The use of these instruments, their regular cryogenic service and the handling of samples can bear health risks. Here we give rules for safe work to avoid such risks that arise specifically for this laboratory. The general safety instructions at HZB are not superseded by the assessment here and remain fully valid (<https://www.helmholtz-berlin.de//bin/unterweisungen>)

Eating, drinking smoking in any laboratory is not allowed to avoid any possible incorporation of potentially dangerous materials.

1. Handling of samples:
Samples can be dangerous e.g. toxic, or have sharp edges etc. Also some types of (quartz) sample holders can have sharp edges. There are gloves to be used, as well as protective eye glasses. If toxic samples are handled an instrument responsible person or the lab-responsible must be contacted.
2. There can be high magnetic fields present in the rooms. Persons with pacemakers are not allowed to work in that room.
3. Special risks arise from the handling of cryogenic liquids and gases:
The laboratory has a "low oxygen warning system". On that alarm – which cannot be overheard – the laboratory must be vented (windows fully open) and left immediately. The fire brigade or the HZB entrance gate must be informed.
In regular intervals, liq. Helium and Nitrogen must be refilled to the systems. These cryogenic liquids cause heavy burns on the skin, also the cold gas causes burns. Burns can also arise when cold tubes are touched without protection.
For any transfer of cryogenic liquids, protective gloves and a head protection must be used. Persons that have not been trained for such transfers must contact an instrument or lab responsible for assistance. For this action, they are not allowed to work alone.
In the lab and on the website (link) there is an instruction how to transfer cryogenic liquids.
4. The instrument software usually prevents sample changes at low or high temperature with the risk of skin burns. However, parts can still be cold or hot in part. Protective gloves must be used if uncertain.
5. When cryogenic ports to the cryostats or to storage vessels are opened the pressure on the container must be checked. Overpressure of more than 50 mb is dangerous and can cause skip burns. Gloves and head protection must be used. If uncertain, an instrument or lab responsible must be present.
6. The gas lines in the laboratory must always be kept closed, except when in use, e.g. for He transfers. In case permanent connections are needed for the experiment, the lab responsible must be contacted before setting up the connections.
7. If additional external pumps (leak testers etc.) are installed, the exhaust must be connected to the vacuum system. Mechanical pumps create toxic radicals that contaminate the laboratory air. The lab responsible must be contacted. These radicals also lead to the "strange" smell of an open cryostat or sample port. You should stay away from that and vent the laboratory (open windows).

I have read and understood the safety instructions for Laboratory P007/P008

Date, signature