Essential safety rules for scientific users of the backscattering spectrometer SPHERES

Location: Neutron guide hall UYH
Instrument: SPHERES
Tasks: Routine scattering experiments
Responsibles: Dr. J. Wuttke (phone 10715), Dr. G. Schneider (deputy, 10718)

General rules for working in the guide hall

- No eating, drinking, smoking.
- Personal dosimeters must be worn.
- When leaving the hall, use the contamination monitor.
- All rules for accident prevention must be strictly followed.
- No unauthorized interventions.
- Cranes must only be operated by instructed personnel.
- Do not block escape routes (marked by green lines on the floor).
- Local contacts may give additional instructions.

General rules for working at SPHERES

- The access to the spectrometer housing and to the spectrometer platform is forbidden unless the beam is closed.
- No material must be stored unless arranged with an instrument responsible.
- Do not enter the spectrometer housing unless authorized by a local contact. Inside the housing, beware of high-voltage cables. Do not touch the analyzer crystals.

Samples

Samples and sample material must not be brought in the guide hall unless described in an approved proposal.
Independently, all collaborators must be informed if there is any danger associated with the sample, in particular if it is possible that the sample becomes significantly activated.
After taking a sample out of the spectrometer, radioactivity must be checked with a hand-held monitor.
If radioactivity is above 10 μSv/h, wait some 10 minutes. If the activity persists, inform an instrument responsible who will temporarily store the sample in a shielded locker.
Each experimentalist is responsible for disposing of his samples after the experiment. However, no sample must be brought out of the guide hall without consent of the radiation protection service.
Ask your local contact how to proceed.

Waste

By precaution, all waste in the guide hall is considered potentially radioactive. Therefore wastebaskets are marked „radioaktiver Abfall“. However, they must under no circumstances be used for waste that is really radioactive.
Objects that were exposed to neutrons must not be thrown into the wastebaskets. They must be handed over to the radiation protection service.
**Dangerous materials**

*Cadmium and lead are toxic.*

Minimize exposition. Wash your hands after working with these materials.

*Cadmium must only be stored in specially designated boxes.*

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**Operation of upstream shutters**

The instrument shutter of SPHERES can only be opened when the upstream shutters are open.

The shutters of beam tube SR1 and neutron guide NL6 can only be operated by authorized personnel. Their state is displayed in the huge panel in front of the gallery.

The shutter between MIRA and DNS must only be operated in agreement with DNS.

When an upstream shutter is unexpectedly closed, note the interruption in the experiment log, try to find out the reason, and in case of an unplanned prolonged shut-down, inform your local contact.

Useful phone numbers: DNS responsibles (see JCNS homepage), guide hall coordinator Harald Türck (14739), neutron guide coordinator Christian Breunig (14593, 12169, 929103), reactor switch room (14939).

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**Operation of the instrument shutter**

The secondary shutter can only be opened if
- the primary shutter is open,
- the spectrometer housing is closed and locked,
- the chain at the stairs of the spectrometer platform is closed,
- an instrument responsible has deblocked the key switch.

The experimentalist can then open the shutter with the red pushbutton and close it with the green pushbutton.

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**Radiation protection**

Yellow-black cordons mark temporary restricted-access areas. Do not trespass, and do not modify them.

Outside restricted-access areas, dose rates are below 3 µSv/h. Independent verification is welcome: there is a handheld γ dosimeter at the instrument.

The access to the spectrometer housing and to the spectrometer platform is forbidden unless the beam is closed.

Every experimentalist is responsible for risks (radiological or other) associated with his samples. Keep all collaborators informed. If in doubt, consult the radiation protection service:

Radiation protection office: phone 14955, 12148; beepers 929-025 to -030.
Department head Dr. Zeising 12117, beeper 929-082.
Deputies Ms. Wolff 12108, beeper 929-081, Ms. Dambeck 12108, beeper 929-080.
In case of danger
fire brigade: phone 112

Contribute to fire prevention:

- Do not bring unnecessary material (especially packages) into the guide hall.
- No smoking.
- Inflammable materials must be handled with special care.
- No unauthorized mechanical or electrical work.

Initial fire:

- Use a mobile extinguisher.
- Alert coworkers.
- If there is no German speaker around, alert the fire brigade in English.
- Leave the guide hall the normal way, using the contamination monitor.
- Follow instructions.

Alert the fire brigade (phone 112):

- What happened?
- Where did it happen?
- What is burning?
- How many people are concerned / injured?
- Who is calling?
- Do NOT hang up - wait for confirmation or queries.

Alert the reactor switch room (emergency phone 14800).

First aid
emergency call: phone 112

A first-aid kit can be found in the stinking-shoes room between the revolving door and the neutron guide hall.

First aid:

- Prevent others from running into a periculous environment.
- Help as you can.
- Several colleagues have had a first-aid training. Call one of them:
  Frau D. Lewin (12108, beeper 929-028), F. Gossen (10721), B. Krimmer (14683), D. Schrulle (14955, beeper 929-030), R. Schwikowski (14915), P. Stronciwilk (10713).

Emergency call to the fire brigade (phone 112):

- What happened?
- Where did it happen?
- How many people are concerned / injured?
- Who is calling?
- Do NOT hang up - wait for confirmation or queries.

Alert the reactor switch room (emergency phone 14800).

Emergency exits

Escape routes:

- the standard entrance of the guide hall,
- the revolving door at the opposite side of the guide hall,
- in case of emergency, the car doors.