

The Chemistry Lab WSLA/028

-A User Manual-



1 The chemistry lab in general

1.1 Laboratory staff

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1.2 Target group

The chemistry lab in WSLA/028 can be employed by every SLS related person including temporary users or staff members. Main applications are the sample treatment like purifying procedures (e. g. distillation, extraction, filtration) or the synthesis of products that wanted to be measured in this facility. The lab provides the basic laboratory equipment, which is specified in chapter 2. This document is addressed to all chemistry lab users.

1.3 Access to the chemistry lab

External users can book the access in the DUO System of the PSI (<https://duo.psi.ch/>). They are kindly asked to talk with their local beamline contact to clarify what they intend to do in the chemistry lab. The Swiss Light Source staff can use the chemistry lab, when it is needed for preparing their experiments/samples. The lab is open 24 hours, but it is not recommended to handle dangerous goods during the night. Please note, that the declaration at the end of this document has to be signed and forwarded to the laboratory staff. In order to give people enough space for their experiments the admission is linked to the beamtime. Permanent access to the lab is also possible, but has to be discussed.

2 Equipment

A printed manual of most of the laboratory equipment can be found on the table next to the balances. In the following section the lab apparatuses are listed and their location is indicated in figure 2.1.

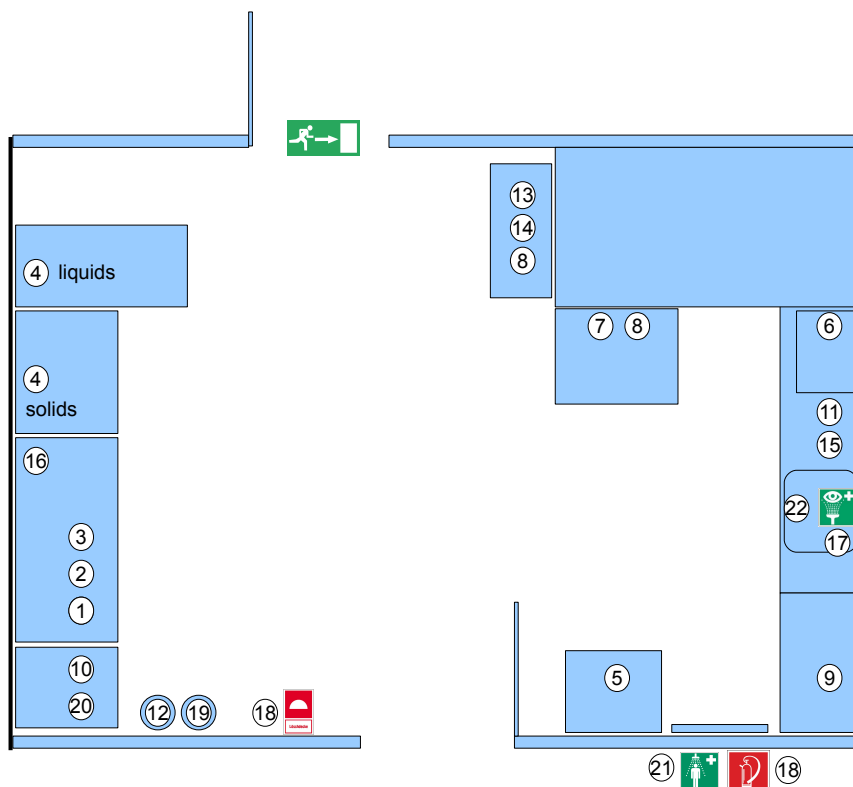


Figure 2.1: Schematic view of the chemistry lab in WLSA/028

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|---|------------------------------------|
| 1. Magnetic stirrers with heater | 12. Water purifier (ion exchanger) |
| 2. Ultrasonic bath | 13. Separating funnels |
| 3. Fume hood | 14. Devices for filtration |
| 4. Ventilated cupboards | 15. Exsiccator |
| 5. Explosion-protected freezer | 16. Schlenkline |
| 6. Vacuum oven | 17. Eye shower |
| 7. Balances | 18. Fire extinguisher / sand |
| 8. Glassware (bulbs, condensers) | 19. Argon bottle |
| 9. Laboratory dishwasher | 20. Waste disposal system |
| 10. Ice maker | 21. Emergency shower |
| 11. Pipettes (glass and Eppendorf-type) | 22. Sink, purified water |

3 Safety instructions

3.1 In general

Eating, drinking, smoking is strictly forbidden in the chemistry lab. It is prohibited to store food in the lab freezer or to wash dishes in the sink. Before leaving make sure, that your workspace is clean to avoid endangerment of other users. Store your chemicals in the ventilated cupboards near the fume hood. Dispose your waste in the designated bins (see section 3.7). When handling dangerous substances, never work alone in a chemistry lab.

3.2 Special COVID-19 measures

In addition to the standard user guidelines from PSI the following measures should be maintained in the chemistry lab (WSLA/028):

- Maximum of **2 people** working in the lab at the same time.
- The minimum distance must be **2 meters**. If this cannot be maintained (setting up equipment etc.), face masks must be worn, which can be found on the computer desk.
- All chemical safety measures are still in place. Working alone in the lab is not permitted.
- If possible use your own personal protective equipment (safety goggles), for hygienic reasons.

3.3 Before doing experiments

Make yourself familiar with the lab and the neighborhood.

- **Emergency exits?** In case of an alarm keep calm and follow the instructions on the alarm sheet. When the evacuation alarm resound, leave the lab through its emergency exit (inner yard), follow the signs and reach the gathering point near the time-out cafeteria (WBGB).
- **Fire extinguishing equipment?** Next to the entrance a CO₂ extinguisher, a fire blanket and sand can be found
- **Emergency shower, Eye shower?** The latter is mounted on the water tap. An emergency shower is between the chemistry and the cell biology lab.
- **First aid box?** Is placed in every staircase.
- **Alarm telephone number? 3333** Use the following phrases: Who is calling? Where and what has happened? How many injured person?

3.4 Basic protection

The wearing of lab coats and safety glasses are mandatory. Gloves should be worn when dealing with irritant, toxic substances or organic solvents. Please make sure the substance you are dealing with is not absorbed by the glove. This information may be found in the material safety data sheet (MSDS). Gloves must be removed, when touching the phone, the door, using computers, books etc. For handling of dusty solids a dust mask is also provided.

3.5 Handling of chemicals

Handle dangerous chemicals in the fume hood. Make yourself familiar with the risk of your substances, by using its MSDS. Flammable substances must not be handled near heat sources. Carcinogenic, mutagenic and reprotoxic chemicals must be kept in the fume hood during treatment (use the double weighing technique). Avoid inhalation of dusts, and vapors. When chemicals got spilled use the Rensch-Rapid to absorb. Amounts of chemicals being handled should be as small as possible. After working with chemicals bring them back to their designated cupboard. Use the laboratory dishwasher only for laboratory glassware and equipment.

3.6 Storage

Keep the substances in a proper container with a label showing the name, the danger symbol, your name and your telephone number (local contact at the beamline). Bottles > 1 L must be labeled with risk and safety statements. Label templates and danger symbols can be found on the table at the window. Non-labeled chemicals will be removed. Store the chemicals as recommended in the MSDS. You can find ventilated cupboards (2.1 ④) and an explosion-protected freezer (2.1 ⑤) in the chemistry lab. Make sure that acids and bases are not stored close to each other (separate cupboards). Carcinogenic, mutagenic and reprotoxic products must be stored in double packet flasks. External users are asked to remove their chemicals, when their beamtime has finished. If you would like to store chemicals please print out the MSDS and put them in the file on the desk near the window.

3.7 Disposal system

Do not mix substances that could react with each other.

- Syringes must be collected in a separate container (fume hood).
- For paper towels and filters the white waste container has to be used. Make sure that there is no solvent or oxidizer left.
- Clean breakage of glass should be placed in the red bucket.
- Reactive substances like metal hydrides and acid chlorides must be decomposed with the help of their MSDS.
- Solvents have to be collected either in the bottle for halogenated or non-halogenated solvents.

In case of an exothermic reaction, put the open bin in the fume hood. All liquid substances have to be neutralized. pH paper can be found in the drawer near the sink.

3.8 Laboratory journal

All users are kindly asked to leave a minimum of information, what was done in the lab. Your name, date, beamline and a short summary (one sentence) is enough. This information is useful in case of an fire alarm.

3.9 Schlenkline

The employment of the Schlenkline, including the vacuum pump in the hood is only allowed after being instructed by the lab staff. Always use a additional cooling trap, when evaporating solvents.

3.10 Conditions of work

In order to keep the quality of the laboratory equipment, cleaning and tidying up the lab is obligatory for every user. Especially when the experiments are finished everything has to be setup in the state it was found before beginning. Counteraction could lead to access restrictions.

4 In case of an incident

4.1 Injured persons

- Call the emergency number **3333** and use the following phrases: Who is calling? Where and what has happened? How many injured persons?
- Help injured persons, and look out for self-protection.
- For burns (thermally or chemicals) use the emergency and/or the eye shower (remove contaminated clothes).
- Consult a doctor in every case.

4.2 Fire

- Call the emergency number **3333** and use the following phrases: Who is calling? Where and what has happened? How many injured persons?
- Help injured persons, close windows and doors.
- Use the designated extinguishing device (sand, CO₂, foam extinguisher or blanket).
- Look out for self-protection.

4.3 Alarm

- Evacuation alarm: close windows, switch off all electronic devices and bring the experiment in a safe state, follow the “Emergency Exit” signs and gather at the assembly point.
- Emergency alarm: Stay where you are, close windows and doors and bring your experiment in a safe state.

4.4 Spilled chemicals

- Small amounts can be absorbed with papers towels, when the substance is not dangerous.
- In other cases use the absorbent material, which can be found under the sink.

5 Declaration

I acknowledge, that I have fully understood the chemistry lab manual. I am aware of the hazards of chemicals I am working with and the normal security measures in a chemistry lab.

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date signature