14 November 2022

FELIX Laboratory

Radboud University

(Safety) instructions for guest researchers, students and temporary personnel of the FELIX laboratory

This document consists of 6 parts:

1. How to respond to an emergency
2. General rules of conduct
3. Laser safety instructions
4. Handling of cryogenics
5. Handling of chemicals and chemical waste
6. Floor plan of the laboratory

Please familiarize yourself with its content and keep it at hand during your visit.

***Emergency numbers**:*

Fire or accidents:	(024-36) **55555**	Campus wide
Security guards:	(024-36) **19000**	Campus wide
Police, fire-brigade or ambulance:	**112**	Nation wide

Other useful contacts:

Giel Berden (laser safety)	(024-36) 53951
Rene van Buuren (cryogenics)	(024-36) 53945
Erna Gouwens (secretary)	(024-36) 53935
FELIX operator	(024-36) 53930
FLARE operator	(024-36) 53931
Britta Redlich (facility manager)	(024-36) 53947 (office) / 0622485830 (cell phone)

How to respond to an emergency

In case you cause or witness a fire:

- Always keep your own safety in mind.
- Immediately evacuate a smoke-filled area!
- Notify any colleagues on your way out.
- Activate a nearby manual fire alarm switch.

If still in an early stage, try to put out the fire using a nearby fire extinguisher, but only if you can do so without putting yourself at risk. Otherwise leave the building via the nearest (emergency) exit. Do not use an elevator!

In case you cause or witness an accident:

- Dial the emergency number (see below) and explain the situation
- Stay with the victim, if any, until the arrival of 'first-aid' personnel
- Please help out if your assistance is needed

In case you hear an alarm (slow-whoop): leave the building via the nearest (emergency) exit. Notify colleagues on your way out if any. Do not use an elevator!

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General rules of conduct

- Try to avoid situations that may bring harm to you, your colleagues or equipment.
- Identify emergency exits, emergency buttons and fire extinguishers before starting to work.
- Do not block escape routes.
- Experimental work is prohibited unless at least two persons are present in the FELIX laboratory. In the case of high-risk activities, a second person on the spot is always required.
- Take the necessary safety precautions when handling chemicals and dispose of chemical waste in a proper way.
- Follow good housekeeping practice: keep your working environment tidy and clean, return borrowed equipment, use the facilities in a proper manner, etc.
- Access to the fenced FELICE experimental area is limited to authorized persons only.
- Hoisting equipment may only be used by qualified personnel.
- If uncertain about the use of equipment / facilities or working procedures, ask your local contact person or one of the technicians.

Laser safety instructions

- Work with/on lasers may only be carried out with the consent of the FELIX facility manager/laser safety officer and by persons with sufficient laser experience or under supervision of qualified laser operators.

- New lasers from outside the FELIX lab that are to be (temporally) used for an experiment at the FELIX facility must be reported to the FELIX facility manager (Britta Redlich) and be classified by the laser safety officer (Giel Berden).

- New laser experiments may only be used after approval by the laser safety officer. Laser experiments may only be changed by or under direct supervision of the laser safety officer or persons with demonstrated relevant laser expertise.

- Information concerning the requirements of a laser setup can be obtained from the laser safety officer and a laser safety 'best practices' page can be found on the FELIX website.

- The local contact, the local safety supervisor and the qualified laser operator must ensure that work is performed in a safe manner. Unsafe behaviour should be corrected.

- The laser room should be kept tidy and safe, ensuring sufficient work space. Obstacles should be removed to reduce the chance of tripping.

- All reflections should be screened off using covers, screens and beam dumps. Jewellery and watches that can reflect a laser beam should not be worn. Care should be taken with tools and equipment: do not place these in the laser beam. Electronics, computers and computer screens should be located in a safe place.

- Laser beams passing above accessible floor space should be screened.

- While the laser is turned on:
  - the door(s) or curtains of the user station have to be closed
  - only authorized persons are allowed to enter the laser room
  - all persons in the room should wear the necessary eye protection

Information material can be obtained from the laser safety officer.

Handling of cryogenics

- Two classes of cryogenic equipment are defined: low risk equipment (such as small cryostats) and high risk equipment. High risk cryogenic equipment are registered and may be used and filled only by qualified cryogenic operators.

- Cryogenic equipment brought from outside the FELIX laboratory must be reported to the facility manager and may only be used after approval by the cryogenic safety officer.

- Cryogenic equipment may only be modified by or under direct supervision of a qualified cryogenic operator.

- Handling of cryogenics requires the consent of the FELIX facility manager/cryogenic safety officer and is restricted to persons with sufficient cryogenic experience or under supervision of a qualified cryogenic operator.

- **Ensure sufficient ventilation!** Cryogenic gases can displace oxygen in the air on evaporation. (Keep in mind: one litre of liquid is equivalent to about 700 litres of gas!)

- The local contact, the local safety supervisor and the qualified cryogenic operator must ensure that work involving the handling of cryogenics is performed in a safe manner.

- The area around cryogenic equipment should be kept tidy and safe, ensuring sufficient work space. Obstacles should be removed to reduce the chance of tripping. Permanent pipes or hoses that may become cold should be covered or insulated.

- Clothing regulations when working with cryogenic gases:

  - Wear clothing that completely covers the arms and legs.
  - Footgear should be closed and in good condition with profiled soles.
  - When wearing boots, wear your pants over your boots.
  - Always wear safety goggles,- glasses or a facemask for eye protection.
  - Always wear appropriate gloves

- Make sure there is an overpressure safety valve, preferably also a back-up. Cryogenic gases evaporating in a closed system can cause (unexpected) pressure build up.

- In the case of high risk equipment and if parts of the set-up may become cold, other employees who enter the area should be warned by means of a warning sign: “Attention, danger of freezing”.

Handling of chemicals and chemical waste

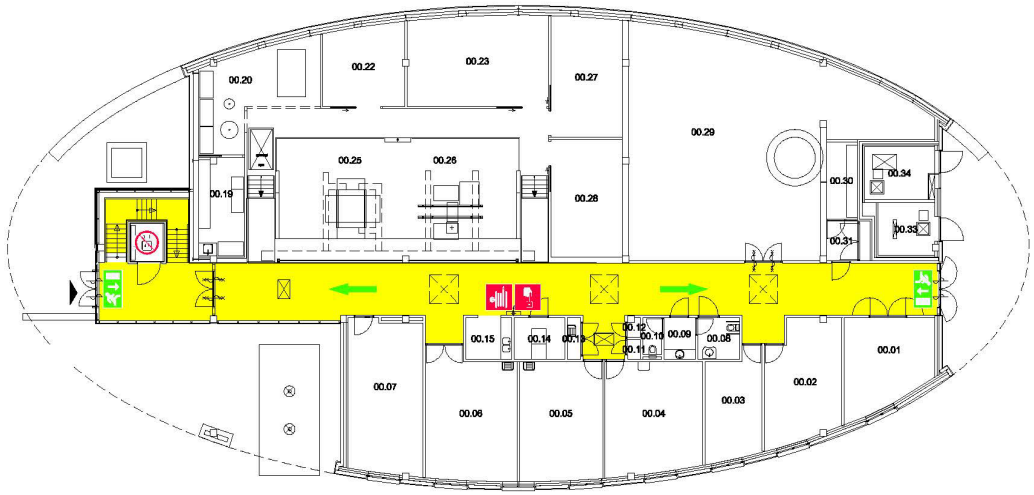
- Handling of chemicals is restricted to persons with sufficient training in chemical safety procedures.
- Before use, read the Materials Safety Data Sheet. *(If necessary find it at jr.chemwatch.net).*
- Be cautious.
- If in doubt, ask your local contact!
- As a rule, use gloves and goggles. When handling dangerous substances, such as concentrated strong acids and bases, strong oxidizing or reducing agents, etc., take extra precautions and discuss the procedure with your local contact.
- Keep the fume hood lowered as much as possible.
- Never leave any samples (even those organized in boxes, etc.) on the lab bench top or in the fume hood.
- Return chemicals to their storage location as soon as possible.
- Hazardous chemicals are to be stored in their own trays in the yellow cabinet.
- Always transport chemicals (solute or solids) in closed containers.
- Chemical waste should be disposed of in the designated container.

The chemical room at the FELIX laboratory is intended for very basic chemical handling only! In case a more advanced chemical workspace is required, ask your local contact or the facility management.

More extensive rules concerning the use of the chemical lab as well instructions for ordering or shipping chemicals to be used for experiments and the storage of unused chemicals at FELIX for future visits, can be obtained via your local contact.

Evacuation Floorplan

U015 - FEL
Ground floor



In case of fire

1. Notify or # (024) 36 55555
2. Put out
3. Do not use elevator
4. Follow instructions fire brigade

Manual fire alarm switch

Fire hose-reel

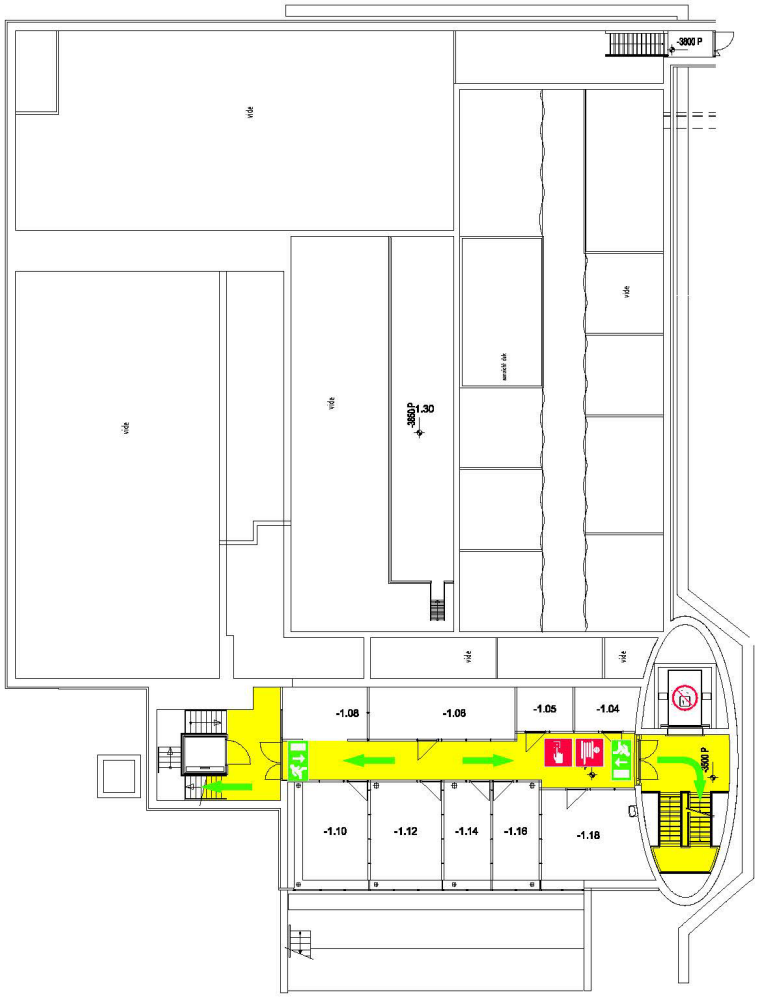
Emergency exit

Escape route

FELIX
Free Electron Lasers for Infrared eXperiments

Evacuation Floorplan

U015 - FEL
Basement level -1



In case of fire

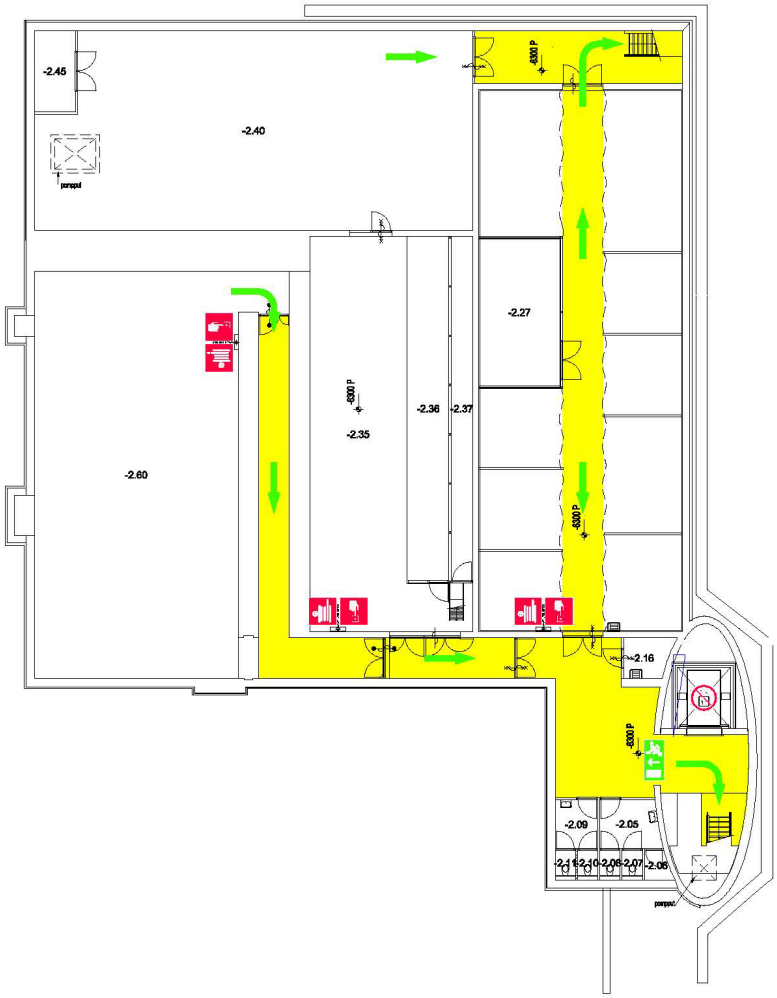
1. Notify or # (024) 38 55555
2. Put out
3. Do not use elevator
4. Follow instructions fire brigade

Manual fire alarm switch
Fire hose-reel
Emergency exit
Escape route

FELIX
Free Electron Lasers for Infrared eXperiments

Evacuation Floorplan

U015 - FEL
Basement level -2



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Safety Information for guest researchers, students and temporary personnel

By signing this form I declare that at the start of my visit of the FELIX Laboratory at the Radboud University in Nijmegen I have been introduced to the local safety regulations. I am aware that working in the laboratory is only permitted when at least two persons are present. Moreover I confirm that I took good notice of the safety instructions that included the paragraphs:

- How to respond to an emergency
- General rules of conduct
- Laser safety instructions
- Handling of cryogenics
- Handling of chemicals and chemical waste
- Floor plan of the laboratory

Date

Name

Signature