UCEM
Umeå Core Facility
Electron Microscopy

Welcome to UCEM

In order to work here at UCEM we want to make sure that you are aware of and abide by the rules and regulations of the UCEM facility.

General rules:

- Wear appropriate clothing for laboratory work.
- Wear protective clothing and gloves when working with dangerous chemicals.
- Use protective glasses when cutting glass or brittle materials.
- If you are handling liquid nitrogen, cryo-gloves, protective goggles or visor and enclosed shoes must be worn.
- Do not listen to music with headphones as you need to have your full attention to the surroundings.
- Ask us before you borrow any of our tools because they can easily break if not treated properly.
- If you took the last piece of an equipment/tool such as grid, razorblade or whatever, please tell us so we can make/order more before someone else needs using them.
- ALL diamond knifes are personal! We prefer that you buy your own but if you don't want to spend the money, we can section for you at a cost.
- Do not try to use any equipment that you have not been trained for.
- Return all tools to their original place after use.
- Do not bring any food or drinks into the laboratory.
- Prohibit unauthorized experiments in the laboratory.
- Make booking of the laboratory equipment and use only during authorized timeslots.
- Clean up after yourself!
- If you are unsure of how to do something safely, always ask (us)!
- Report all incidents to facility staff (no matter how minor you might think it is).

Liquid Nitrogen:

In these facilities we are handling large amounts of liquid nitrogen (LN2). Handling liquid nitrogen requires special precautions. If you are handling liquid nitrogen, cryo-gloves, protective goggles or visor and enclosed shoes must be worn.

Because of this, we have installed an oxygen alarm to carefully monitor the oxygen levels and to alarm us when the levels are getting too low. This alarm is not connected to any external securities and is only for internal use.

In case the alarm goes off and no one seem to have accidentally set it off, make sure everyone is ok and leave the facilities until the alarm goes off. If someone has fainted because of low oxygen levels, help the person to fresh air.

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Rules for handling our dangerous chemicals:

Most of the chemicals that we use are toxic; therefore, we absolutely need you to follow our rules for how to handle them to protect yourself and other people working at this facility.

Something else that can be good to think about is that there are no gloves that are completely protected against these chemicals so as soon as you get it on your hands, remove the gloves and take new ones.

Always be cautious when handling chemicals. Discard chemicals appropriately, as advised by facility staff. Do not leave chemicals unlabelled in fume hood, workbench or wash sink.

Glutaraldehyde:

- Glutaraldehyde is used to fix your sample in the stage you wish to study them. Since it is a fixative it can also fix your own cells.
- It is necessary to use EM-grade glutaraldehyde.
- Glutaraldehyde and all other fixatives + Sodium cacodylate waste goes into the designated waste bottle in the hood.
- Plastic ware that has been in contact with glutaraldehyde goes into the designated plastic bag in the hood.

Osmium Tetroxide:

Osmium acts as a secondary fixative for membranes and provides contrast to your membranes. Osmium should always be stored in darkness, in the drawer on the left side of the fume hood. This is also where your samples should be during osmification.

- When osmium reacts, it turns black so if your gloves turn black you have been contaminated, immediately change gloves!
- Osmium reacts very fast with phospholipids, especially with the lipids in your eyes, and could possibly blind you. ALWAYS keep osmium in the fume hood.

- Do not mix the osmium yourself, ask someone from the facility for help.
- Liquid osmium waste and all washes after osmification goes into the osmium waste bottle.
- Plastic that has been in contact with osmium goes into the designated plastic bag in the hood.

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Propylene oxide:

We use propylene oxide to completely dehydrate our samples and to mix the resin in.

- Propylene oxide is considered a carcinogen.
- Liquid waste goes into the designated bottle in the fume hood.
- Solid waste that has been in contact with the propylene oxide is thrown in the designated plastic bag in the hood.

Resin:

Resins are the plastic we use to embed our samples in. There are many different types of resins depending on your sample and what you wish to study, and they therefore come with different toxicity. But commonly they can be considered carcinogenic, allergenic, sensitizing and thus causes skin irritations. Before polymerization the resin is in the monomer stage and is therefore more toxic than as a polymerized resin.

- When taking a new vial from the freezer you must wait until the resin has reached room temperature before you open it, or you might get condensation water in the tube and destroy your sample.
- Resins can be viscous and difficult to handle, be careful not to spill anywhere.
- If you spill, dry it up with some paper and propylene oxide. Spilled resin that polymerizes glues everything together. It is therefore important to check so that you don't have resin outside of the tubes that you put in the oven otherwise they might be stuck there.
- If you get it on your hands, change gloves before touching anything else.
- All liquid resin waste goes into the brown bottles in the hood.
- All solid waste is collected in suitable containers and polymerized in the oven over night. Thereafter they are thrown in the risk disposal box.
- Unused resin can be stored in the hood if it will be used the next day, otherwise put it back in the freezer.
- To handle some of our resins, you need to have taken a special "plastic course" and can show a certificate.

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Uranyl acetate:

Uranyl acetate is added to your sample to provide contrast. Uranyl acetate is slightly radioactive.

- Always spin the tube at max speed for 10 min before using it.
- Incubations with UA should be done in darkness.
- Both liquid and solid waste should go into the designated metal buckets. Liquids should first be soaked with filter paper before thrown.

Reynold's lead citrate

- Always spin the tube at max speed for 10 min before using it.
- Do not breath on the lead when applying your grids on the drop, it reacts with the carbon dioxide and makes ugly spots on your sample.
- Liquid waste should go into the lead waste bottle.

I have read and fully understood these rules:

Name:

Date: