

Regulation of the Electronic Microscopy Service

This regulation will be applied from 1st October 2023

1. Electronic Microscopy Service

1.1 General

Electron microscopy service of the University of Namur is a member of the MORPH-IM technological platform (Morphology and Imaging).

The electron microscopy service is an independent service. It is accessible to all researchers, members of the University, willing to use these microscopic techniques for their own research. **Access to the service for outside persons is prohibited**, even if they are accompanied by members of UNamur, without the express prior authorization of the staff of the Service.

This present regulation applies to any person, member of the UNamur, using the equipment of the Electronic Microscopy Service of the University of Namur (microscopes, computers, samples preparation devices (critical point dryer, cathode spray deposition...), software, others (glassware, chemical products...)). This person is hereafter called “the user”.

The Electronic microscopy Service is the place of work, meeting, idea’s exchange and information’s for the users of the electronic microscopy technique. His mission and his functioning are govern by the present regulations.

1.2 Missions

The service deploys its activities in first priority to the benefit of laboratories or unities of the University of Namur and in second priority to the benefit of research organisms of other faculties or private companies.

For this purpose, the service gathers together the technical infrastructure and the scientific ability linked to Electronic Microscopy and associated techniques such as micro-analysis by X-ray spectrometry (EDX).

The service must have a mission of education, research and information.

For this purpose, he deploys mainly its activities in:

1. The development of electronic microscopy within the University of Namur.
2. The preparation of samples to observe (ultra-microtomy,) and material needed for this observation (carbonated grids...)
3. The provision for the users of techniques, devices and analysis/interpretation methods of electronic microscopy and the training of users for their rational use.
4. The diffusion of the Know-How and theoretical and practical trainings.
5. Long or short term collaborations within projects needing observations/measures by electronic microscopy.

Services offered by the electronic microscopy department:

The service is dedicated to imagery of biological samples (cells...) or materials from micrometric to nanometric scale and the chemical analysis of the samples by EDX.

Available imagery and analysis techniques are:

- Transmission electronic microscope Tecnai 10 - 100kV (FEI);
- Transmission electronic microscope Tecnai T20 – 200kV (FEI) coupled with an EDX;
- Scanning electronic microscope JEOL 6010 LV coupled with an EDX/EBSD;
- Scanning electronic microscope JEOL 7500F coupled with an EDX.

The service disposes also of the following sample preparation devices:

- Ultra-microtome
- Two cathode spray deposition devices

2. Operation conditions

No one can use any equipment without being aware and having signed this regulation. Any user must also have received the adequate training given by a member of the service.

2.1 Access conditions

The electronic microscopy service is located on the ground floor of the biology-medicine office. It's open to all members of the University of Namur and to external people under scientific collaboration or services, within a framework strictly defined and governed by these regulations.

Users wishing to access the microscopy service are asked to fill in the information document necessary for the proper functioning of the Service. By signing this document, the user agrees to know and respect the rules in force in the service.

The service is open from Monday till Friday from 9 a.m. to 5 p.m. for users. It is closed on weekend and official holidays. For safety reason, no user is allowed to work in the service outside the opening hours. The opening and closing of the service is made by the members of the service. It is asked to **the last user to leave the service at 17h maximum.**

Access to the service is limited and regulated. Only the user who booked the session is accepted (no other person is tolerated) in the microscope room on which he is analyzing (**1 user = 1 microscope**). **The user agrees to analyze his own samples from his research.**

Microscopes and other sample preparation equipment are made available to users without assistance, if they have undergone sufficient technical training provided by the Service or after verification of technical skills by a member of the Service. An authorization to use the microscopes in autonomy will be issued to any new user having undergone training or having satisfied the requirements of the Service.

It is strictly forbidden for users to touch/modify the parameters of the air conditioning that regulates each room containing a microscope.

A booking table for training courses is available on-line as for the booking of microscopes (see the following page for the link). It allows the Service Engineer to plan his availability to do these training to the user.

Once trained, the user can work independently on the microscope on which he was formed. The service engineer is available to answer any specific questions the user may have and to

solve problems that could lead to damage to the microscope. He is not there to do the microscopy work of the users.

The persons who have visitor status in at UNamur laboratory will be considered as external users. In general, these visitors stay at UNamur for relatively short periods in a reception laboratory. The number of sessions per visitor will be limited according to the ranges available during their stay, UNamur members remaining priority. The Microscopy Service and its operation would not be impacted by the arrival of visitors to other University laboratories.

2.2 Booking of the microscope

The booking of a microscope is mandatory. A working day is divided in several slots, these slots have been modified (see table below) and are all equal in time (2h) except for Tecnai T20. For this one, the working day is divided in two sessions of 4 hours.

Tecnai T10, JEOL7500F and JEOL 6010LV

	Monday	Tuesday	Wednesday	Thursday	Friday
9h-11h					
11h-13h					
13h-15h					
15h-17h					

Tecnai T20

	Monday	Tuesday	Wednesday	Thursday	Friday
9h-13h					
13-17h					

The reservation for SEM and TEM should now be made via an on-line calendar accessible via the reservation page of the Electronic Microscopy Service and this for facility for users and for a better control by the coordinator (https://www.unamur.be/services/microscopie/copy_of_Reservation%20ou%20formation).

As the demand for the use of electronic microscope is always increasing, the users are limited **to maximum 2 slots per week and per microscope**. By booking a microscope, the user agrees to use the microscope in the requested time slot. The reservation is made personally, a user does not reserve for another and does not give up his time slot.

Once a booking is made, cancellation can be done till the day before the reservation (24 hours in advance) and this in order to allow other users to book the free slot. An e-mail is automatically sent 24 hours before reservation in order to remind you your booking. Once this email has been received, the slot will be billed to the laboratory of the user. Any reserved microscope not used 1 hour after the start of the slot, and this without justification, will be available for other users.

Sanctions will be considered for user accumulating non used slots and frequent cancelations.

2.3 Support to the operating costs, billing and analysis beneficiary

As member of the University of Namur, you use microscope at an attractive status. The use of microscopes leads to a participation into operational costs that will be internally billed each trimester. The billing unity is a microscope session (2 hours).

Pricing depends on the status (contract) of the user carrying out the analyses. For any information on this subject, the user is invited to enquire before using the microscope.

Any reservation is due except if cancelled following the here above rules. Cancellation can be made till the reception of the confirmation e-mail (24 hours before booked session).

The use of microscope is limited to analysis for your own, done under your own research project ~~or under a laboratory project~~.

In no cases, analysis can be made for the benefit of a laboratory or a person external to the University (without a common research project officialised by a contract.)

If a user wants to proceed to such analysis, he must notify the director of the service, prior to any use of equipment, so that a solution including depreciation, use and maintenance costs can be proposed for the analysis.

The users must imperatively point out samples from outside the UNamur that they want to analyze, the microscopy service wanting to know in which framework the analyzes carried out within it are made.

It would be interesting for the microscopy service if the projects including an external collaboration involving analyzes within it are submitted to the person in charge of the service in order to budget the needs as well as possible (of course only the part relating to microscopy and possible external collaborations in arising).

All projects with external collaborations not defined and not budgeted beforehand with the person in charge of the service involving analyzes in the microscopy service may be invoiced as a service (external users).

In no cases, analysis can be made for the benefit of an industry without prior notification to the director of the service. The director of the service will propose a solution including depreciation, use, maintenance and personal costs for this specific analysis. This prohibition concerns as well remunerated analysis as free of charge analysis.

Regarding the spin-offs from UNamur that come to the Microscopy Service, users are generally members of Unamur. They must clearly indicate that the analysis they do is for **the benefit of a spin-off** using the information form.

2.4 Publications and others official's documents.

Let me remind you **it is mandatory** to acknowledge the Electron Microscopy Service in your papers/reports or during your oral presentations. Only the documents that explicitly acknowledge the Electron Microscopy Service the will be considered in the evaluation of the Unit for future funding to replace equipment, especially the microscopes.

Therefore, you are asked **to expressly thank** the Microscopy Service in your publications or presentations.

Example:

This research used resources of the Electron Microscopy Service located at the University of Namur. This Service is member of the “Plateforme Technologique Morphologie – Imagerie”

Moreover, **it is mandatory to** link your publications/research projects/activities/... with the Electron Microscopy Service in the PURE system (research database of the university): In the ”Relation” section, select “équipement” then “morphologie-imagerie” and finally “microscopie électronique” . Thank you to link all your publications and your on-going (and future) research projects with the Electron Microscopy Service in order to facilitate the reporting for both the Electron Microscopy Service and the “Plateforme Technologique Morphologie – Imagerie”

3. Request of ultrathin sections

For all sample preparation requests, the request must be filled in the preparation logbook. The user must fill in with precision the different boxes and don't forget to date and sign the book. For a good use of the preparation logbook, a user guide has been inserted so that the user can fill it in correctly. The user has also to fill in the date of preparation recovery. A box named “remarks on the cuts after analysis” has been added in order to obtain feedback on the sample preparation and improve it if necessary.

It is also asked to the user's preparing their samples within the service to note the different chemical products used (glutaraldehyde, osmium tetroxide) and amount on the dedicated sheet so that the Service can manage stocks.

Glutaraldehyde and osmium tetroxide are not charged for when they are used rationally to prepare samples for observation by transmission electron microscopy. A fee structure has been set up for sample preparation, including chemicals, grids, diamond wear, etc.... Prices are available on request.

However, these products will be invoiced as soon as they are used for other applications, such as samples observed by scanning electron microscopy.

Dehydration and resin embedding of samples are not supported by the Service. Each user must therefore provide their samples at the end of these two steps. The Service is responsible for training users for these steps and remains at their disposal for any questions related to this sample preparation work. A protocol will also be provided to the users. The Service deals with the cutting of samples and their placement on grids of transmission electron microscopy.

4. Education

The service is involved in the training of students via practical tutorials. These can be directed by a member of the service or by a member of the unity/laboratory in the case of more specific training for their students.

The unity/laboratory organising their practical tutorials in the service are asked to send, at the beginning of the academic year, their needs in term of machine time for the year. This will allow the service to plan, as best as possible, the booking of the slots.

It is asked to external staff giving training to stay informed about modifications (or others) of the devices.

The service advises users who can, especially those who want to use the T20 transmission microscope, to take the optional course Master level entitled 'Electron Microscopy' (SPHYM112) which is given in the first semester every two year (30h -3 credits).

5. Elementary work rules to fulfil within the Electronic Microscope service

5.1 Generalities

- It is strictly forbidden to take out of the service any chemical product, device, tool, sample holder ... except former agreement with a member of the service.
- Internet access is available for the user as part of his work.
- The storage of samples in the service is strictly forbidden except specific cases with former agreement with a member of the service. In this case, all samples must have a label containing the following information: name of the product, name of the owner, name of the lab and date. The storage of these samples can not exceed the agreed time.
- Each user must clean up the workplace, glassware, devices sample holder... he has used.
- To avoid out of stock for any chemical or product, it is asked to the user to tell a member of the service that product will soon be empty.

5.2 Use of the electronic microscope

- The user must have followed an adequate training on the microscope he wants to use.
- The user commits to respect the foreseen schedules.
- The user commits to follow scrupulously the user guide. Each microscope has a guide reminding major rules to respect during use. This guide has been created in order to avoid any mistake resulting in bad performance of the microscope. This guide is available to each user but must stay in the microscope room. The user can ask for a copy of this guide.
- The user encountering a problem during the use of the microscope commits to mention it directly to the personnel of the service.
- The user commits to leave accessories and equipments clean and sorted after use.
- **The Tecnai 20** is a powerful and expensive tool **that is not open to all users**. Potential users must first request the authorization of use, which based on the knowledge of the user and the potential use of the microscope (type of analysis, frequency, etc ...). Service will allow access or not to the microscope.

5.3 Respect of the confidentiality of information

A file common for all users of a microscope allow the user to temporary store data and pictures acquired during the session.

- The user agrees not to modify or erase data on the computer when he is not the owner of theses.
- It is strictly forbidden to read or copy data of other users, seeing that they are not protected.
- The copyright of all acquired information and picture belongs to the user. The staff and other users commit themselves not to use, mention or show images of another user without his green light and without mentioning the origin of this.

5.4. Data storage and transfer

The free space on the hard disk of the service is not destined for the save of the data. However, an exception is accepted concerning data under treatment, reference and configuration images.

Therefore, the user are asked to transfer their data via the network one the acquisition is complete. **The use of USB keys directly on PC linked to Microscope is strictly forbidden.** Each user will place his data within his own subfolder in the common server of the service. Data will be recovered by user in order to stock them on one of his own storage devices. Data present on the drive of the service will be regularly deleted in order to maintain a sufficient hard disk space.

The service is not responsible in case of loss of data.

5.5. Health and Safety

All manipulations have to be done following 'good lab practices' in effect in laboratories. Samples bring by the user can not stay in the service after their observation.

The clean up of the workplace, glassware, devices and sample holder... is under user responsibility.

We remember to all users that it is forbidden to eat or drink in microscopy rooms.

6. Responsibility and Sanctions

1. **By using the Electron Microscopy Service, the user agrees to be familiar with and comply with these rules. Failure to comply with these rules may result in sanctions up to and including a ban on access to the service.**
2. The sanctions applied are at the discretion of the Service Manager, who will judge those best suited to the offence (fraud) committed. These sanctions may be of various kinds (financial, access blocked for a specified period until definitive exclusion).
3. If a fault is committed and the user's responsibility can be called into question, leading to additional operating costs (for example: intervention by the manufacturer's services, damage to the transfer tube leading to its replacement, etc.), the costs incurred will be charged to the user's laboratory account, in full transparency (actual costs, based on invoice).

If you encounter other problem inside the service, the director is available to all users in order to find appropriate solutions as fast as possible.

Furthermore, the service is not responsible regarding the obtained results.

The manager and the staff of the electronic microscope service are responsible for the observation of this present regulation.

Contact information.

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