



Boston University Photonics Center Shared Laboratory Usage Policy

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Boston University's Photonics Center may at its option, change, delete, suspend, or discontinue parts or the policy in its entirety, at any time without prior notice. In the event of a policy change, users will be notified. Any such action shall apply to existing as well as to future users.

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1 INTRODUCTION

This document has been developed to explain the requirements of access and privileges to the shared laboratory facilities available at the Photonics Center. The document will describe what is expected of all members and the basic principles of practice and good workmanship standards that should be exercised at all time in the laboratory and cleanroom areas.

1.1 Mission Statement

The mission of the Boston University Photonics Center is dedicated to academic educational enrichment, development of enabling technology, and assistance in commercialization of incubator companies in the field of photonics.

1.2 Changes in Policy

This manual supersedes all previous user policies and memos.

While every effort is made to keep the contents of this document current, Boston University Photonics Center reserves the right to modify, suspend, or terminate any of the policies, procedures, and/or benefits described in the manual with or without prior notice to users of the facilities.



2 General Requirements for Lab Usage Agreements

2.1 Fundamental Research (on-campus faculty and student research, education, and development of enabling technology)

The shared laboratories support the research and education of the students and faculty members. Access to the shared facilities is open to all academic members of the Boston University community. Access is also open to incubator companies who have an association with Boston University's research and entrepreneurship programs.

Outside not for profit organizations are also eligible for access to use the shared laboratories and will be charged at an academic rate for use of equipment and supplies as stated in the rate schedules established by the laboratory managers.

2.2 Incubator Companies

The shared laboratories support the commercialization effort of incubator companies who have an association with Boston University's research and entrepreneurship programs.

Incubator companies housed at the University may use the shared laboratories at preferred internal rates. Once an incubator company leaves the University, they are still eligible to maintain rights of usage to the shared facilities at external rates.

2.3 Outside Commercial Entities

If an outside company shows an interest in using shared facilities, it must be clear that their use is research related. No production of manufactured products for sale is allowed using any University equipment or in any University facilities. Outside companies must have a linkage to a faculty member and a letter of support for such a company must originate from a faculty member for submittal to the Director of the Center. The Director will determine if there is a benefit to allowing the company use of the facilities and what connection or contribution to faculty research can be made. The rates for usage of the shared laboratories will be at external rates.

2.4 Research Grants with outside commercial entities

If an outside company shows an interest in collaborating with a faculty member at the Center, the outside company should submit a grant proposal to the Office of Sponsored Programs. It must be clear that no production of a manufactured product for sale is allowed on any university equipment or in any university facilities or by any university employees (including supported graduate students). If the grant is approved, the student being supported will have access to all shared facilities as in 2.1 Fundamental Research.

3 Use Policies for Shared Facilities

3.1 Safety

The safety and health of users is a priority. The Boston University Environmental Health and Safety Office (EHS) makes every effort to comply with all federal and state workplace safety requirements. The shared laboratory workplace safety rules and regulations are as follows:

- Adhere to the standard EHS protocols at all times
- Follow all manufacturer suggested safety protocols for equipment or chemicals
- Ensure user is fully informed and understands the safety requirements for their process
- Complete laboratory safety and/or laser safety training annually

Each user is expected to obey safety rules and exercise caution and common sense in all work activities. Failure to do so will result in revoking access to the facilities. Section 5: Appendix A includes a one-page summary of safety information and contact numbers for reference.

3.2 Building Security

All users must follow the building security rules and regulations listed here:

- Follow the regulations per Boston University EHS Office
- The lab manager must grant access to the shared laboratories through the electronic card key access. Failure to be authorized by the lab manager may result in revoking privileges in the facility

Users are not allowed on Boston University property after hours without prior authorization from their supervisor.

3.3 Personal Property

Any items that belong specifically to the user or the laboratory with which the user is associated must clearly be labeled with the name of the users association or affiliation. If items are not properly labeled, it is not the responsibility of the lab manager to ensure that they are returned or not used by other users.

An example of labeling personal property would be:

Sally Sells – Professor Starfish USE ONLY

Any materials or items that are labeled for shared laboratory use are assumed to be general use items and should be handled as such.

3.4 Chemical Labeling

Per the safety regulations set forth by EHS, all chemicals and their associated waste must be labeled properly by the user. Users should alert and request permission from lab managers before bringing any chemicals or materials into the shared laboratory facilities that are not common stock items for compatibility and suitability for use in the labs/equipment. Failure to alert the lab manager with ample time for investigation will result in a failure to comply warning, unless the chemical or materials are escalated to a safety violation, at which point access to the shared laboratories will be suspended immediately (see 3.6).

3.5 Visitors in the Workplace

For safety, insurance, and other business considerations, only authorized visitors are allowed in the workplace. When making arrangements for visitors, users should confirm with the laboratory manager that the visitors may enter the facility and understand the restrictions placed upon the visitor.

3.6 Failure to Comply with Policy

Failure to comply with listed regulations will result in a warning (verbal or written); a second offense will result in suspension of access to the laboratory for one week; a third offense will result in suspension of access for one month and until lab safety training and shared lab training requirements are completed in a timely fashion. If a user finds any offenses, they should report the violation to the lab manager. If the lab manager is unavailable, the user should report the incident to the main office of the Photonics Center.

NOTE: In case of a spill or emergency, if the EHS protocol is not properly followed, membership to all of the shared labs will be suspended until Laboratory Safety is completed as well as re-training for the lab in which the incident occurred.

4 STANDARDS OF CONDUCT

4.1 Work Schedule

All users of the shared facilities are required to work during regular University hours and schedules unless given permission to do otherwise by both their immediate supervisor and the laboratory manager.

NOTE: Supervision is required at all time for undergraduate students when using shared facility equipment.

4.2 Equipment Training and Access to Shared Laboratories

If you are interested in getting trained to use specific equipment in the shared laboratories: Integrated Optics Lab (IOL), Optoelectronic Processing Facility (OPF) and Precision Measurement Laboratory (PML) of the Photonics Center, please use the following procedure:

4.2.a Provide proof that you have taken General Lab Safety Training. The Office of Environmental Health and Safety offers this and it can be scheduled on their website. This training needs to be updated every 12 months.

4.2.b Contact the individual lab manager to arrange an initial consultation:

Shared Lab	Lab Manager	Email	Phone
IOL	Chad Demers	demers@bu.edu	617-353-8897
OPF	Paul Mak	pmak@bu.edu	617-353-8869
PML	Anlee Krupp	ahk@bu.edu	617-353-9044

4.2.c During this meeting, please provide information on:

- the nature and goal(s) of your research
- what you expect to gain from using the specific instrument
- the duration of your research/use of the instrument and how often you expect to use it

4.2.d After initial consultation, training by the lab manager, a qualified user of the instrument or video will be provided.

4.2.e During training, a qualified user must be with you, by the instrument, at all times while you are learning to operate it. You are not permitted to use the instrument alone before being officially qualified.

4.2.f After the training, you must demonstrate to the lab manager that you are confident in operating the instrument independently. You will then become a

qualified user of the instrument and room access will be granted to you through the on-line Zaius Room Access System.

NOTE: For specific instrument training policies and procedures, please see Section 5: Appendix B.

4.3 Equipment Scheduling

All equipment for use in the shared laboratories is available for on-line scheduling. It should be noted that only self-users are allowed to access these calendars with permissions granted from the lab managers. All equipment must be reserved online using the Google calendar. If the reserved user does not make their reserved time within 30 minutes of the scheduled time, that piece of equipment becomes available to other users.

- 4.3.a Be sure to use the Equipment Scheduling Procedure (can be found on <http://www.bu.edu/photonics/research/sharedfacilities.html>) as a reference on how to sign up for equipment time and how to be identified including the instrument of use, your identity and how to get in touch with you the user (email and phone).
- 4.3.b Advanced scheduling is allowed up to 14 days before your appointment. Appointments must be reserved between 9:00am and 5:00pm. Appointments made more than 14 days in advance WILL BE DELETED from the calendar. The laboratory manager must approve exceptions to this policy.
- 4.3.c On heavily utilized equipment, there is an established two hours maximum usage during 8 AM – 8 PM (M-F) with a maximum of six hours during the workweek (M-F) unless authorized by the laboratory manager of that shared lab. The Google calendar has this information posted on the equipment sign out. Please ensure you are selecting the appropriate time and allocated appointment length or shorter.
- 4.3.d If you cancel a scheduled appointment, send an email to the user group of the instrument and announce the time slot is now available. This is applicable until two hours prior to your scheduled appointment. Another user may schedule that cancelled appointment as soon as it is announced via email. If a user finishes their time earlier than expected, they should send an email to all users announcing the remaining time is available.
- 4.3.e Failure to delete a scheduled appointment within two hours of that appointment will be treated as a “no-show”. This will be considered a violation of the laboratory policy. The consequences are outlined in the one page Policy and Procedures for the shared laboratories (see Appendix A for details – this is also posted in the laboratories)
 - First violation – verbal or written warning.
 - Second violation – loss of room access for one week.
 - Third violation – loss of room access for one month and up to date lab safety training & equipment re-training is required.

4.4 Personal Productivity and Protection

As a common rule, users of the laboratories should never work alone. There must be at least one other person in the laboratory beside you at all times in OPF. For IOL and PML, as a general rule someone else in your group should know that you are in the laboratory working on measurements.

Safety glasses and gloves are provided in all of the shared laboratories. Be familiar with the chemicals and materials that users are using and be sure to follow the recommended guidelines set by EHS, the shared laboratories, and OSHA guidelines. Approved safety glasses must be worn at all times in the OPF and IOL labs, except during microscope viewing. For PML safety glasses should be worn while using solvents and when completing any scribing/cleaving and hood work.

4.5 Suggestions for Improvement

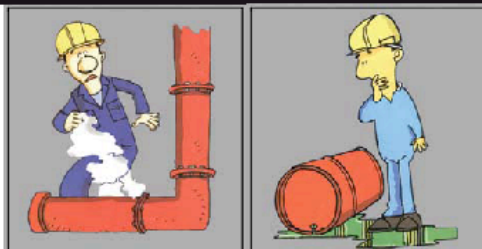
It is encouraged to add suggestions to the logbook or to communicate suggested improvements directly to the laboratory manager either in person or via email. The concept is to provide an environment conducive to enhancing educational and research areas of interest through continuous improvement.

5 APPENDIX A – Posted Policy and Procedures one-page summary



Shared Laboratory Facility Policies and Procedures

In case of EMERGENCY contact the following offices.



Gas Leak/Chemical Spill Contact:

24-Hour EHS Emergency Line:

3-7233 (617.353.7233)



Fire/Medical Situation Contact:

24-Hour BU Police Emergency Line:

3-2121 (617.353.2121)

In addition to EMERGENCY calls, contact the appropriate lab manager:

Paul Mak – *Lab Manager, OPF*: 3-8869 (617.353.8869)

Anlee Krupp – *Lab Manager, PML*: 3-9044 (617.353.9044)

Chad Demers – *Lab Manager, IOL*: 3-8997 (617.353.8997)

All emergency calls must be followed up with a call to BU Photonics Center Offices:

3-8899 (617.353.8899)

****For other emergencies, consult the EHS safety and emergency instruction flip chart for the appropriate action and contact information.**

Policies and Procedures:

- Never work alone. There must be at least one other person in the laboratory beside you at all times in OPF. For IOL and PML, as a general rule someone else in your group should know that you are in the laboratory.
- Approved safety glasses must be worn at all times in the OPF and IOL labs, except during microscope viewing. For PML, safety glasses should be worn while using solvents and when completing any scribing/cleaving and hood work.
- Equipment scheduling:
 - a. All equipment must be reserved online using the Google calendar.
 - b. If the reserved user does not make their reserved time within 30 minutes of the scheduled time, that piece of equipment becomes available to other users.
- Policy and Procedures are intended to create a safe and orderly work environment for everyone and will be strictly enforced. Repeated violations may result in the loss of room access, as follows:
 - a. First violation – verbal or written warning.
 - b. Second violation – loss of room access for one week.
 - c. Third violation – loss of room access for one month and up-to-date lab safety training & equipment re-training is required.

NOTE: In case of a spill or emergency, if the EHS protocol is **NOT** properly followed, membership to all of the shared labs will be suspended until Laboratory Safety training is completed as well as re-training for the lab in which the incident occurred.

Safety is our first line of defense.

APPENDIX B – Zeiss Ebeam Writing Training Policy*

All users interested in training for e-beam writing must complete steps 1 - 8. Please contact the lab manager, Anlee Krupp (ahk@bu.edu, 617-353-9044) for initial consultation.

1. Your General Laboratory Safety Training must be up to date. The Office of Environmental Health and Safety offers this, sign up and information can be found on their website.
2. Upon initial contact with the lab manager, level of training will be determined based on the following criteria:
 - a. If you are a certified self-user of Zeiss imaging, proceed to step 3
 - b. If you are not a certified self-user but have experience using SEM at another location, you will need to learn the operating procedures for using Zeiss imaging in order to become a certified self-user prior to e-beam training.
 - c. If you have not used a SEM previously, you must complete full training for the Zeiss imaging prior to use of the e-beam system.
3. Once you are a certified self-user of the Zeiss imaging, and have had 10 hours of active usage on the instrument, you can view the training video for the e-beam writing tool at the following web address that requires Kerberos log in: www.bu.edu/photonics/pml
4. After completion of the video, contact the lab manager to arrange for training on the e-beam writing tool.
5. During the training period, a **certified self-user of the Zeiss Supra 40 for e-beam writing must be present at all times**. You are not permitted to use the instrument alone before official certification. Each time you are using the Zeiss Supra 40 for e-beam writing you must place the EBL in-use sign on the desktop to indicate the system is in use at that time.
6. After training, you must demonstrate confident and independent operation of the e-beam system to the lab staff. The lab manager will then certify the user (as an EBL self-user) or recommend more training.
7. Once certified as a self-user of e-beam writing, you will be allowed to schedule using the Google calendar for e-beam writing during M-F 8AM-8PM

NOTE: there is one calendar for Zeiss Supra 40 usage (green code), you must indicate ZEISS_IMAGE for imaging or ZEISS_EBL for e-beam writing.

8. Once you have accumulated a minimum of 10 hours of writing experience, and have shown proficiency in e-beam writing to the staff, you will be identified as a super user of the Zeiss e-beam writing. This will give you the additional privilege

of using Zeiss for e-beam writing in the evenings (M-F, 8PM-8AM) and weekends (Saturdays & Sundays).

* NOTE: It is expected that all users requesting training on the e-beam system have experience in creating design files for writing. This will not be covered as part of the e-beam writing training.

APPENDIX C – Scheduling Policy for Zeiss Imaging and E-Beam Lithography (EBL) Posted in PML

The following is the policy for scheduling the Zeiss instruments to perform imaging and/or EBL within the Google Calendar.

- 1) Only a qualified self-user can make reservation using Google Calendar
- 2) Advanced scheduling is allowed up to 14 days before your appointment. Appointments must be reserved between 9:00am and 5:00pm. Appointments made more than 14 days in advance WILL BE DELETED from the calendar. The laboratory manager must approve exceptions to this policy
- 3) No repetitive reservations (i.e. Every Monday, 1 p.m. to 3 p.m.) Staff members are exempt from this requirement.
- 4) During 8 a.m. and 8 p.m. Monday through Friday, the maximum time slot allowed per day per user is 2 hours, with a max of 6 hours/week/user.
- 5) There is a color code on the PML Google Calendar: green for scheduling both Zeiss 40 Imaging and EBL and blue for scheduling the Zeiss Supra 55. Users need to specify if the Zeiss Supra 40 will be used for Imaging or EBL.
- 6) When scheduling, users need to provide either a valid phone number or an e-mail address where the user can be reached.

For example:

Zeiss 40_Imaging_John Doe, jdoe@bu.edu (for imaging)
Zeiss 40_EBL_Jane Doe, 617-353-8899 (for EBL)
Zeiss 55_Imaging_John Doe, jdoe@bu.edu
Zeiss 55_EDS_Jane Doe, 617-353-8899

- 7) Hours of operation: Both Zeiss instruments are open for use 24/7, with exception of EBL use. New EBL users can only use prime time (Monday-Friday 8AM-8PM) for EBL purposes. "EBL Super Users" (defined as a self-user who has demonstrated successful writing during 8AM-8PM with a minimum of 10 hours) can use the Zeiss Supra 40 for EBL purposes on 24/7 basis. Please contact Lab Manager Anlee Krupp if you would like to become "EBL Super User".
- 8) If you cancel a scheduled appointment, send an email to the user group of the instrument and announce the time slot is now available - this is applicable until two hours prior to your scheduled appointment. Another user may schedule that cancelled appointment as soon as it is announced via email. If a user finishes their time earlier than expected, they should send an email to all users announcing the remaining time is available.
- 9) Users will be considered a "no-show" 30 minutes after their scheduled start time, and the timeslot will become available for other users. **Failure to use the Zeiss at reserved times ("no-show") is considered a violation of the Shared Laboratory Usage Policy.**
- 10) Each user is to sign in to the logbook after each usage. The "EBL in use" sign should be placed on the table next to the Zeiss during the appointment. The Zeiss instrument is closely monitored by surveillance camera. The sign provides recognition of usage.

NOTE: Scheduling by non-qualified user or improper format will be deleted without notice from the Google Calendar.

Violations of this and/or the Shared Laboratory Usage Policy are subject to:

First violation – verbal or written warning.

Second violation – loss of room access for one week.

Third violation – loss of room access for one month and up to date lab safety training & equipment re-training are required.