

Photonics Instrument Specific Training Policies and Procedures

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 some in person training, it is encouraged that all BU affiliated users take their safety training online via RIMS.
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 training on 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 or Zeiss Supra 55 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 or Zeiss Supra 55 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-8P.
8. Once you have accumulated a minimum of 10 hours of writing experience, and have shown improvement in e-beam writing to staff, you could have the privilege of using the Zeiss instruments for EBL 24 hours a day, 7 days a week.

* 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 a 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 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.) unless your laboratory group has approved scheduling per the laboratory manager. 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 Imaging and EBL. Users need to specify if the Zeiss Supra 40/55 will be used for Imaging or EBL.
6. When scheduling, users need to provide either a valid phone number and/or an e-mail address where the user can be reached.

For example:

Zeiss 40_Imaging_John Doe, jdoe@bu.edu

Zeiss 40_EBL_Jane Doe, 617-353-8899

Zeiss 55_Imaging_John Doe, jdoe@bu.edu

Zeiss 55_EDS_Jane Doe, 617-353-8899

Zeiss 55_EBL_Sally Sells, sally@bu.edu

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. Once 10 hours of EBL experience was fulfilled, the user could have the privilege of using both Zeiss instruments for EBL on 24/7 basis. **If you cancel a scheduled appointment, please remove your reservation from the Google calendar at least two hours prior to reserved time.**
8. 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 tools at reserved times (“no- show”) is considered a violation of the Shared Laboratory Usage Policy.**
9. 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.

APPENDIX D – FEI Focused Ion Beam (FIB) Training Policy*

All users interested in training on the FIB system must complete steps 1 – 7. Please contact the lab manager, Alexey Nikiforov (alnik@bu.edu, 617-353-9045) for initial consultation. **Potential FIB users need to provide a concise and clear description of the intended FIB application.**

Note: Self-user status on SEM or a prior SEM experience is a prerequisite to initiating FIB training.

1. Your General Laboratory Safety Training must be up to date. The Office of Environmental Health and Safety offers some in person training, it is encouraged that all BU affiliated users take their safety training online via RIMS.
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 discuss with the laboratory manager to become a certified self-user prior to FIB training.
 - c. If you have not used a SEM previously, you must complete full training for the Zeiss imaging prior to use of the FIB system.
3. Once you are a certified self-user of the Zeiss imaging, you can view the initial FIB introduction video for the FIB system available at the following web address that requires Kerberos log in: www.bu.edu/photonics/sharedfacilities/fibtem-facility-fff/.
4. After completion of the video, contact the lab manager to arrange for training on the FIB.
5. During the training period, a **certified self-user of the FEI FIB must be present at all times**. You are not permitted to use the instrument alone before official certification.
6. After training, you must demonstrate a confident and independent operation of the FIB system to the lab staff using a user's sample. The lab manager will then certify the user (as a FIB self-user) or recommend more training, especially for advanced techniques. Depending on the demonstrated proficiency with FIB, a user may be granted Limited Hours Access to FIB. Description of user samples and, if applicable, their preparation protocol needs to be provided.
7. Once certified as a self-user of FIB, you will be allowed to schedule using the Google calendar for FIB usage.

NEW SAMPLE TYPES/SAMPLE PREPARATION PROTOCOL CHANGES: If the user's FIB samples and/or their sample preparation protocol change, the user should notify the laboratory manager prior to using new samples in the FIB system.

APPENDIX E – FEI Transmission Electron Microscope (TEM) training policy

All users interested in training for TEM use must complete steps 1 - 7. Please contact the lab manager, Alexey Nikiforov (alnik@bu.edu, 617-353-9045) for initial consultation.

Note: Potential TEM users need to provide a clear and concise description of the intended TEM application.

1. Your General Laboratory Safety Training must be up to date. The Office of Environmental Health and Safety offers some in person training, it is encouraged that all BU affiliated users take their safety training online via RIMS.
2. Upon initial contact with the lab manager, level of training will be determined based on the following criteria:
 - a. If you have experience using a TEM at another location, you will need to learn the operating procedures for using FEI TEM in order to become a certified self-user.
 - b. If you have not used a TEM previously, you must complete full training for the FEI TEM.
3. You can view the initial FEI TEM introduction video available at the following web address that requires Kerberos log in: www.bu.edu/photonics/sharedfacilities/fibtem-facility-fft/.
4. After completion of the video, contact the lab manager to arrange for training on the TEM. (2).
5. During the training period, a **certified self-user of the FEI TEM must be present at all times**. You are not permitted to use the instrument alone before official certification.
6. After training, you must demonstrate a confident and independent operation of the TEM system to the lab staff using either a user prepared TEM sample (preferred) or a standard TEM gold on carbon sample. The lab manager will then certify the user (as a TEM self-user) or recommend more training, especially for advanced techniques. Depending on the demonstrated proficiency the user may be granted a Limited Hours Access to TEM. Description of user samples and, if applicable, their preparation protocol needs to be provided.
7. Once certified as a self-user of TEM, you will be allowed to schedule using the Google calendar for TEM usage.

NEW SAMPLE TYPES/SAMPLE PREPARATION PROTOCOL CHANGES: If the user's TEM samples and/or their sample preparation protocol change, the user should notify the laboratory manager prior to using new samples in TEM.