



IIT Bombay Nanofabrication Facility

Tool Name: Raith Short (RAITH 150 Two)

Training and Usage Policy

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Getting Trained for EBL on RAITH 150Two

Instructions for the trainee

1. Log into your account on the Equipment Usage Request Management system (http://www.cen.iitb.ac.in/equipment_usage/index.php) and fill out the Equipment Usage Request form. Please select “Training Request” in the field “Type of Request”. An AU will be assigned against your training request by the SO. **A slot will be booked for your first training session with 48 hours. The whole training session has to be completed within 30 working days.**
2. It is recommended that you bring your own sample for training. By default, the EBL training is for both first and second level patterning. It is also expected/ advisable that you will have generated a pattern file for the training sessions. If you do not have a sample/pattern, training will be conducted on a dummy sample, making use of some pre-existing pattern. This will be applicable for both categories: (a) users who do not have pre-existing pattern (b) users who need training for only first level lithography.
3. The training session involves (a) watching the AU perform first and second level patterning in the first two sessions (demo sessions), (b) performing the EBL with the AUs guidance in the third and fourth sessions (hands-on sessions) and (c) demonstrating the capability of running the process

on your own (with minimal guidance of the AU) in the fifth and sixth sessions (practice sessions). Finally, you are required to take the authorization test (written and practical). You are required to send an email to the SO for the date of your authorization test(s).

4. On the first day of the training (and if required, on subsequent days), read the SOP and usage policy (kept near the tool) thoroughly. Take detailed notes in the demo sessions. At the end of the second session, you get the notes (neatly typed in A4 sheet) checked by the AU (outside the cleanroom). Based on your notes, the AU decides whether you are ready for the subsequent hands-on sessions.
5. Follow AU's instructions meticulously. The AU reserves all rights to cancel your training, if deemed necessary. Fill in the training log sheet after every session.
6. Note that a no-show or delay of more than 30 min (without prior intimation) on any of the training days will attract cancellation of your training request, and de-prioritization of any subsequent request within the next three months.
7. All costs associated with the training sessions will be borne by the trainee's research group/institution/organization.

Instructions for the AU

1. Once a training session is assigned to you by the SO, **you are required to book the earliest available RaithEBL_short slot (for the first training session), within 24 hours.**
It is also recommended to have a meeting with the prospective trainee, to give her/him an overview of the EBL process and to understand the general nature of the trainee's EBL requirements. **In case you are unavailable for a training session assigned to you, it is solely your responsibility to find a replacement for yourself.**
2. You will conduct all the steps related to EBL during the demo sessions (sessions 1 and 2). You will encourage the trainee to get all doubts clarified, and help her/him take detailed notes. At the end of the first two sessions, you will check the notes prepared by the trainee and email a pdf copy of the same to the SO (with your name and comments mentioned on it).
3. You will ensure that the trainee strictly adheres to the training policy, maintains punctuality, and correctly uses the tool in sessions 3 – 6.
4. You will sign the session log after each session and inform the SO after completion of six sessions.
5. You will reserve the right to cancel the training session at any stage, if deemed necessary. If such an action is taken, you will send an email to the SOs and the FIC, with the trainee in cc, immediately after the cancellation.

Instructions for the SO

1. You will assign an AU against a training request within 24 hours (after due checks and assessments) of receiving the request. You are required to ensure that the training assignments are uniformly distributed within the pool of AUs. You will also send an email to the prospective trainee, requesting her/him to read the policy document carefully, before the training process commences.
2. You will ensure that the **training process is completed within 30 working days** from the day the request is placed.
3. You will arrange for the authorization test of the trainee, once six sessions are completed and the AU has notified of the same.

Usage for RAITH 150Two for EBL

Instructions for AUs

1. In the slot booking module, an EBL slot can be booked either under RaithEBL_short or RaithEBL_long, while a SEM slot can also be booked under RaithEBL_short. As an AU, you will have to fill out the usage request form but your request will be auto-approved (no SO approval needed). However, for RaithEBL_long, the usage request has to be approved by the SO for every user, While filling out the request form mention reasons for requesting the longer slot. The SO will review the request and approve, if deemed appropriate.
2. While you can book your slots for EBL and SEM by yourself, you are required to declare to the SO/Lab engineer/FIC, if you are planning to work on a new material (system), or samples which have been processed completely/partially outside CEN. This step is required to ensure that the contamination policy is not violated. Any lapse in this regard will attract heavy disciplinary action/penalties, amounting to de- authorization for up to 3 months.
3. Regular EBL/SEM slots are restricted to a maximum duration of **three hours**. You can book **up to 9 hours** of EBL/SEM time through the RaithEBL_short virtual equipment (no restriction on the number of slots booked). Slot booking can only be done **at most three days in advance**.
4. In case the user requires an EBL slot for more than 3 hours, a request may be placed through the virtual equipment RaithEBL_Long (created for this purpose). The request will be reviewed by the system owner (SO) and a slot will be booked for the user by the SO. Please note that these slots are more likely to be provided outside the usual working hours (08:00 a.m. to 23:00 p.m.)
5. The 3-hour slot, from 10:00 hours to 13:00 hours, Monday to Friday, is blocked for INUP users. However, these slots will be made available to general users, as and when available.
6. More than **five** auto-cancellations (for reasons which are not due to technical/administrative faults) in a month will attract disciplinary action (amounting to cancellation of authorization for at least one week). Consideration may be given to compelling reasons for auto- cancellation, if an email is sent on the same day with necessary explanation.
7. Self-cancellations should be done 12 hrs. before the actual slot. More than **five** self- cancellations a month will attract disciplinary action (amounting to at least 1- week of de- authorization).

Consideration may be given to compelling reasons for self-cancellation, if an email is sent on the day/time of cancellation, with necessary explanation.

Instructions for non-AU users (INUP users included) and AUs assisting non-AU users.

1. A non-AUser is required to fill out the usage request form, available on the CEN website. The request needs the approval of your guide and lab manager/FIC (INUP co-coordinator, for INUPusers).
2. Provided all the required information are clearly mentioned, the SO assigns the EBL session to one of the AUs.
3. The AU is required to make the slot booking within 24 hours of being assigned the EBL session.
4. The AU will book the earliest available slot. While it is strongly recommended that the non- AUser accepts the earliest available slot, if this slot is not acceptable to the non-AUser, an alternative slot has to be booked as per the convenience of both the AU and the non-AUser.

Maintenance of the RAITH 150Two and associated tools

1. The FIC, along with the SO(s), is primarily responsible for keeping the RAITH 150Two in a running condition.
2. The SO(s) are responsible for maintaining stock of spare parts and performing periodic health-check of the RAITH tool and associated facilities (UPS, chiller, N2 – supply).
3. The SO will act as the SPOC for all communications with the RAITH engineers, during equipment maintenance. S/he will communicate all maintenance and purchase requirements to the FIC.
4. The SO(s) will take the lead during in-house maintenance of the RAITH tool. They will be assisted by operators (if any) and members from the “Equipment Maintenance Team” in maintenance operations. When further assistance is required, the SO may involve AUs.