

Request 100 kV electron-beam lithography service

 To supplement our current 30kV Electron-beam lithography (EBL) capabilities, exposure at 100 kV is now available as a service to nanoFAB academic users. In partnership with the [Quantum-Nano Fabrication and Characterization Facility](#) (QNFCF) at the University of Waterloo, we are offering this service to any academic groups who would benefit from the higher throughput, higher resolution, and improved stitching and overlay precision that is possible with a 100 kV [JEOL JBX-6300FS](#) EBL tool, as compared with our current [RAITH150 Two](#) EBL system. Only the exposure step will be performed at QNFCF: resist-coating and development are to be done at the nanoFAB by the user.

 As a pilot project, this service will be offered to our academic users **at no cost** until Fall 2019. Upon completion of this initial evaluation period, this service will be charged to nanoFAB users' projects on a cost-recovery basis (rate to be determined).

Step-by-step guide

Any nanoFAB users with academic projects may submit specimens to be exposed using the following process:

1. Login to [LMACS](#)
2. Create a new request, of type **EBL Service**.
3. Each distinct GDSII design to be exposed should be submitted as a separate request item within the request, and must include the following details:
 - a. Substrate dimensions
 - b. Substrate material(s)
 - c. Substrate quantity (if multiple substrates are to be patterned with the same design)
 - d. Substrate processing history (e.g., existing patterns on chip, bare substrate, etc.)
 - e. Total number of layers to be patterned using EBL Service
 - f. E-beam resist
 - g. CD (smallest lateral feature size)
 - h. GDSII design (upload file to request item)
 - i. Layout details: GDSII cell name(s), layer, exposure coordinates. A diagram may be uploaded for clarity. You can also copy and paste or drag and drop images into your instructions.
4. Your submission will be reviewed by nanoFAB staff, asking for more information if necessary.
5. If the submission is approved, you must prepare the specimens for exposure (cleaning, spin-coating with resist/anti-charging layers, etc.)* and give them to nanoFAB staff in a specimen-holder suitable for shipping (e.g., wafer carrier, gel-pak, etc.).
6. nanoFAB staff will prepare the GDSII data for exposure and ship the specimens to QNFCF.
7. The specimens are exposed on the QNFCF JEOL JBX-6300FS system; expected turnaround is 1–2 weeks.
8. Wait for notification that your samples have been received back at the nanoFAB
9. Pick up your sample and continue with development of the exposed resist.*

 *Users may request for these steps to be performed by nanoFAB staff (tool and staff time to be charged to user's project).

 Please note that, as with any micro/nanofabrication process, multiple iterations may be necessary to achieve a desired result. All work will be performed on a best-effort basis.

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