

Electron Beam Lithography

Equipment	UofT	Academic	Industrial
Raith EBPG 5000+ Write Time	\$141/hr	\$141/hr	\$421/hr
Lithography Setup Fee	\$102/job	\$102/job	\$306/job
EBL Wetbenches w/ Spinners	\$49/hr	\$69/hr	\$141/hr
EBL Hotplate	\$33/hr	\$45/hr	\$89/hr
EBL Optical Microscope	\$33/hr	\$45/hr	\$89/hr
EBL Ultrasonic Bath	\$33/hr	\$45/hr	\$89/hr
EBL Cold Bath	\$33/hr	\$45/hr	\$89/hr
EBL Convection Oven	\$33/hr	\$45/hr	\$89/hr

Photolithography

Equipment	UofT	Academic	Industrial
Suss Microtec MA4/MA6 Mask Aligners	\$71/hr	\$105/hr	\$210/hr
Wetbenches (Photolithography) w/ Hotplate, Spinner	\$49/hr	\$69/hr	\$141/hr
Isel Vakuum-UV-Belichtungsgerät 1 UV Exposure Box	\$71/hr	\$105/hr	\$210/hr

Depositon

Equipment	UofT	Academic	Industrial
Oxford PlasmaLab System 100 PECVD	\$71/hr	\$105/hr	\$210/hr
Exptech CTR-200 Nitride LPCVD	\$71/hr	\$105/hr	\$210/hr
Angstrom Nexdep E-Beam Evaporator PVD	\$71/hr	\$105/hr	\$210/hr
AJA ATC Orion 5 Sputter PVD	\$71/hr	\$105/hr	\$210/hr
Bruce Technologies Oxidation Furnace	\$71/hr	\$105/hr	\$210/hr

Etching

Equipment	UofT	Academic	Industrial
Oxford PlasmaPro Estrelas100 DRIE (Si)	\$71/hr	\$105/hr	\$210/hr
Oxford PlasmaPro 100 Cobra ICP-RIE (Si)	\$71/hr	\$105/hr	\$210/hr
TePla Technics 100-E Oxygen Plasma Asher	\$49/hr	\$69/hr	\$141/hr
Wetbenches (Clean & Etch) w/ Hotplate, Spinner	\$49/hr	\$69/hr	\$141/hr

Device Processing

Equipment	UofT	Academic	Industrial
Tousimis Autosamdri-815B CPD	\$71/hr	\$105/hr	\$210/hr
AnnealSys AS-One RTP	\$49/hr	\$69/hr	\$141/hr
Axus Poli-500 CMP	\$33/hr	\$45/hr	\$89/hr
AML AWB-04 Wafer Bonder	\$71/hr	\$105/hr	\$210/hr
Disco DAD3220 Dicing Saw	\$49/hr	\$69/hr	\$141/hr
TPT HB16 Wire Bonder	\$49/hr	\$69/hr	\$141/hr
CS 2010 Parylene Coater	\$49/hr	\$69/hr	\$141/hr
Laminar Flow Workstations	\$33/hr	\$45/hr	\$89/hr

Pratt Convection Oven	\$33/hr	\$45/hr	\$89/hr
Pratt Kiln Oven	\$33/hr	\$45/hr	\$89/hr
Pratt UV Oven	\$33/hr	\$45/hr	\$89/hr
Pratt Vacuum Oven	\$33/hr	\$45/hr	\$89/hr
Pratt Wafer Polisher	\$33/hr	\$45/hr	\$89/hr
Pratt Wafer Scriber	\$33/hr	\$45/hr	\$89/hr

Imaging & Characterization

Equipment	UofT	Academic	Industrial
Nikon Optical Microscopes	\$33/hr	\$45/hr	\$89/hr
Nikon 3D Optical Microscope	\$49/hr	\$69/hr	\$141/hr
AlphaStep Profilometer	\$71/hr	\$105/hr	\$210/hr
Horiba Joben Yvon UVISEL Ellipsometer	\$71/hr	\$105/hr	\$210/hr
Keithley SMU 2400 Sourcemeter	\$49/hr	\$69/hr	\$141/hr
HP 4155A Semiconductor Parameter Analyzer	\$49/hr	\$69/hr	\$141/hr
Everbeing Probe Station	\$33/hr	\$45/hr	\$89/hr
Everbeing 4-Point Probe	\$33/hr	\$45/hr	\$89/hr
Four Dimensions 101C 6-Point Probe	\$33/hr	\$45/hr	\$89/hr

Staff Fees

Fee	UofT	Academic	Industrial
Technical Staff Service (9am – 5pm) *	\$60/hr	\$60/hr	\$100/hr
Technical Staff Service (after 5pm) *	\$100/hr	\$100/hr	\$150/hr
Cleanroom Safety Training	\$150	\$150	\$150
Cleanroom Equipment Training*	\$60/hr	\$60/hr	\$100/hr
Electron Beam Lithography Training	\$300	\$300	\$300

*Equipment usage fees also apply.

Supply Fees

Fee	UofT	Academic	Industrial
4" Clean Silicon Wafer	\$20	\$20	\$20
4" Clean SOI Wafer	\$100	\$100	\$150
Cleanroom Notebook	\$10	\$10	\$10
Reusable Cleanroom Gown	\$100	\$100	\$100

Reservation Penalty

Users that have reserved equipment must report any delays/cancellations to TNFC Staff no later than 30 minutes after the start time of their reservation on the LMACS Access System. Users failing to give notice for equipment reservation delays/cancellations will be charged a penalty fee equal to their total reservation time.

Enabling Penalty

Users that are caught using TNFC equipment without properly enabling the equipment on the LMACS Access System will be charged a penalty fee equal to at least 4 hours usage time on the equipment, or more, depending on the equipment used.

Cleaning Penalty

Users that do not properly clean/tidy equipment and workspaces after use will be charged a penalty fee equal to 1 hour of Staff Support time for each workspace left untidy. Proper cleaning and tidying includes:

- Removal of all research samples to appropriate storage areas
- Turning off process gas and compressed air valves (as required)
- Turning off microscope and mask aligner lamps and heaters
- Disposing of used wipes, packaging, foil, tape, paper, gloves, hairnets, shoe covers etc.
- Cleaning minor spills, drips, splashes, stains of chemicals in wetbench areas
- Returning tools (tweezers, pens, blades, etc.) to appropriate storage racks
- Returning cleaned glassware and containers to appropriate storage racks
- Returning cleanroom safety attire (safety glasses, PPE) to appropriate storage areas
- Returning chairs to appropriate workspaces

Usage Cap Discount

All internal and external Academic researchers are eligible for a 50% discount on fees if usage is over \$20,000 during the Fiscal Year starting from May 1 - April 30, the following year.

Process Development Discount

Users with non-standard process requirements may apply for the Process Development Discount to offset the initial cost of establishing a reliable non-standard fabrication process at TNFC. In exchange for this discounted development, the users must share their recipe details and characterization results with TNFC. These materials will be used to expand and strengthen our standardized Process Database.

[To apply for the discount, please consult with TNFC staff and submit the Process Development Discount Application Form. The discount will be applied to the researcher account once recipes and results have been submitted.](#)