

# Carleton University MicroFabrication Facility

## External Academic User Rates

April 2024

Please note that we are a member of the CMC Microsystems Micro-Nano Technology University Facilities group and as such financial assistance is available through CMC at: <https://www.cmc.ca/mnt/>

### Occasional users: (hourly system)

- Daily access rate of \$75/day per user (min ½ day charge).
- Any work requiring technical help will be charged at an additional \$60/hr.
- Additional equipment use charges will apply as per the Equipment Rate schedule at bottom of page.

### Project rates

- Project rates completed by Lab Staff: Labour(\$60/hr)+ Equipment fees+ Material costs

### Frequent users: (flat rate system)

Frequent users are encouraged to use the flat rate system.

- The **flat rate** system provides researchers with access to the majority of the equipment in the facility without additional equipment charges and daily rate charges. (there are some exceptions which include LPCVD furnaces, Semicore sputtering system, phosphorus diffusions)

-\$1900 per four month academic term or \$5050 per year per student. (Here “student” includes PDFs, research engineers, and others making active use of the facility)

This includes up to three hours per week of technical assistance and furnace runs up to a limit of 6 per term.

*or*

-\$3750 per term/\$10000 per year, per principal investigator, covering up to four students/researchers with the same limits on furnace runs and technical assistance as above.

### Materials Costs

Access Fees include the cost of “basic” materials in the small quantities required for typical research projects. Basic materials include standard positive photoresist and developer (S1811 is currently used), aqueous HCl, NH<sub>4</sub>OH and HF for RCA cleans, isopropanol and acetone, chemicals for photomask making, oxygen and HCl gas for furnaces, and aluminum for metallization. The rationale for not accounting for the consumption of these basic materials by individual users is that the costs involved are usually small and that almost all users require these materials.

Aside from the “basic materials” listed above, all users are responsible for the cost of other materials they consume. This includes silicon substrates, photomasks, specialty gases (in particular silane), and precious metals for deposition.

In the case that a user requires very large amounts of basic materials (for example, if a user is coating dozens of wafers with photoresist), additional basic materials charges may be levied.

### Common Equipment Rates - (minimum ½ hr bookings)

- Atmospheric Furnace runs : \$90/hr for hydrogen/inert anneals, \$120/hr for oxidations/diffusions.
- LPCVD furnace runs : typically \$160 per run/Trion PECVD \$110/hr plus gas costs. (ie. Silane, Dichlorosilane, etc).
- Prefurnace clean (RCA): \$75 (2”wafers), \$90 (4”wafers) if required.
- SEM use \$35/hour (\$60/hour if assisted)
- Mask Aligner(MA6): \$60/hr (includes use of photoresist spinner and development bench)
- Wet benches: \$35/hr
- Balzers Ebeam/Thermal Evaporator/Varian/MRC PVD: \$70/run (plus source material costs)
- Semicore inline sputtering system: \$120/run (plus source material costs)
- AG RTA, March RIE, Technics plasma etcher, Microwave asher: \$40/hr
- MRC RIE, Trion ICP etcher: \$60/hr
- Profilometers/Ellipsometers: \$25/hr
- Optical Microscopes: \$20/hr