Carleton University MicroFabrication Facility **Sept 2015**

External Academic User Rates

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: http://www.cmc.ca/en/WhatWeOffer/Make/MNTPortal.aspx .

***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 $55/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($55/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. (some exceptions include LPCVD furnaces, Semicore sputtering system)

-$1850 per four month academic term or $4950 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

-$3700 per term/$9875 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_4OH 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), liquid nitrogen for substrate cooling in the Plasmatherm ECR etcher, and precious metals for deposition.

In the unlikely 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

-Atmospheric Furnace runs : $85 for hydrogen or inert ambient anneals, $110 for most other runs.
-LPCVD furnace runs : typically $150 per run plus gas costs. (ie. Silane, Dichlorosilane,etc).
-Prefurnace clean (RCA): $70 (2"wafers), $85 (4"wafers) if required.
-SEM use $25/hour ($45/hour if assisted)
-Mask Aligner(MA6): $55/hr (includes use of photoresist spinner and development bench)
-Wet benches: $20/hr
-Balzers Ebeam/Thermal Evaporator/Varian PVD: $60/run (plus source material costs)
-Semicore inline sputtering system: $110/run (plus source material costs)
-Plasmatherm ECR etcher: $30/hr
-MRC RIE etcher: $30/hr
-Profilometers/Ellipometers: $20/hr
-Optical Microscopes: $20/hr