

Fee schedule for CEDT Facilities
May 1, 2012
(Applies to Canadian grant funded research)
Rates are subject to review every 6 months

Clean Rooms:

JHE A306: there are two adjacent clean rooms;

a) The PL side is for photolithography. It contains a wet bench, spinner and mask aligner, UV-ozone source, holography exposure, optical microscope with digital camera, alpha step profilometer, plasma asher, critical point dryer, oven (20–150°C), programmable furnace (20–1000°C) and a stress measurement tool.

b) The RIE side is for deposition and dry etch. It contains ECR RIE (for III-V materials), SiON RIE (H₂, CF₄ and O₂ gases are available), SiON PECVD, optical microscope, ellipsometer, metallization, wet bench and a spinner.

Access to the PL side of the clean rooms for photolithography is offered by scheduled sessions. A typical day contains 5 two hour sessions. An individual may reserve at most 3 consecutive sessions in a day, or two non-consecutive sessions in a day, providing that the reservation includes either the first or last session of the day. The charge rate is \$30/hr per person for the duration of the session. If two or more people have agreed to shared use of this room for photolithography, each person will be charged at \$30/hr for the duration of the session. A newcomer may accompany a trained person for the purpose of observation without additional charge, provided they have taken all the required safety training and notified our staff.

This charge rate does not apply to the unscheduled use (i.e. when photolithography is not being done) of individual equipment in this room, namely the optical microscope, alpha step profilometer, plasma asher, stress tool, wet bench, UV-ozone, furnace/oven. See rate schedule below for individual charges.

If the PL side is booked, the priority on all tools in that room is held by the person(s) with the booking.

The fees described above do not include training of students by CEDT staff. The charge for initial training on these CEDT facilities is \$35/hr. Only one person at a time will be trained.

Access to the apparatus on the RIE side of the clean rooms and individual processes on the PL side is offered on a fee basis, according to the following fee schedule:

Facility – PL side	Fee	Unit	Notes
Photolithography	\$30.00	per hour	In 2 hour sessions
Wet bench	\$25.00	per hour	
Spinner only	\$25.00	per hour	Wet bench rate
Holography exposure	\$30.00	per hour	
Stress tool	\$10.00	per hour	30 minutes minimum
Optical microscope, w. camera	\$10.00	per hour	30 minutes minimum
Alpha step profilometer	\$10.00	per hour	30 minutes minimum
Critical point dryer	\$15.00	per run	
UV-ozone	\$10.00	per run	
Furnace/oven	\$10.00	per run	
Plasma asher	\$5.00	per run	
Facility – RIE side	Fee	Unit	Notes
Wet bench	\$25.00	per hour	
Spinner only	\$25.00	per hour	Wet bench rate
e-beam evaporator	\$90.00	per run	extra charge for Au/Pt
Technical PE-CVD, for SiON growth	\$50.00	per run	
Technical RIE, for SiON etching	\$40.00	per run	
ECR-RIE (III-V)	\$90.00	per run	
Ellipsometer	\$10.00	per hour	30 minutes minimum

Note: Evaporation of Au or Pt will be charged an additional fee at market rates. Current rates are \$5 per 20 nm of Au and \$8 per 20 nm of Pt.

Standard chemicals are included in the prices above – including standard photoresists, developers, solvents, bases and acids. Spin-on dopants, spin-on glasses and other non-standard materials must be provided by the user or ordered by our staff and are subject to compliance with our safety procedures and explicit authorization by our staff.

Characterization and Processing:

JHE A314: RTA (2), Hall machine (with Eng. Phys.), scribe, alpha step profilometer.

JHE A302: wet fume hood with DI water and chemicals, polishing tools.

TAB Annex 1: LT FTIR and PL tool, grating PL, X-ray QC1, X-ray D1, RIE (N₂, Ar, SF₆, C₄F₈ and O₂ gases are available).

TAB Annex 2: LIV station with OSA, RTA (III-V), LT Hall probe, tube furnaces, sample preparation wet bench, environmental oven, LT PL, variable angle spectroscopic ellipsometry and a low resolution SEM.

ABB B147 (CCEM): e-beam lithography

Location	Facility	Fee	Unit
JHE A314	RTA – contacts	\$10.00	per run
JHE A314	RTA – semiconductors	\$10.00	per run
JHE A314	Scriber	\$10.00	per run
JHE A314	Alpha step profilometer	\$10.00	per run
JHE A302	Polishing tools	\$25.00	per hour
JHE A302	HF/DI water station	\$25.00	per hour
TAB Annex	SEM (low resolution)	\$20.00	per hour
TAB Annex	RIE (fast etch tool)	\$50.00	per hour
TAB Annex	x-ray	\$20.00	per hour
TAB Annex	RTA (III-V)	\$15.00	per hour
ABB B147	e-beam lithography	\$60.00	per hour

The charge for initial training on these CEDT facilities is \$35/hr. Only one person at a time will be trained.

For e-beam lithography, the cover charge includes the \$60/hr charge for writing time; a CCEM charge (presently at \$75/hr) for the use of the SEM will be billed separately.

Please contact CEDT staff for fees for accessing individual pieces of characterization equipment not listed here.

Materials Growth Facilities:

TAB 1: MBE, Ion Implanter, PECVD

- a) MBE – typical rates are \$150/growth hour + substrate costs + calibration costs. The calibration costs will be shared by growths that require the same calibration.
- b) Ion implantation – typical rates are \$130/implant hour + a \$300 set-up fee. The set-up fee will be shared by implants that require the same set-up.
- c) PECVD – contact Jacek Wojcik for information regarding growths

Additional Facilities:

JHE A314: dc and RF sputtering system. Two targets can be loaded into the system at the same time and sputtered sequentially by dc or RF guns. There is a \$30 set-up fee + a \$30/hour charge. Sputtering from the CEDT Au or Pt targets will be charged an additional fee at market rates. No Pt target is available at this time. Current rates are \$5 per 20 nm of Au and \$8 per 20 nm of Pt.

JHE A314: the wire and wedge bonders can only be operated by CEDT staff at this time, at a fee of \$80/hour, with a 15 minute minimum charge.

TAB Annex 2: the dicing saw can only be operated by CEDT staff at this time, at a fee of \$80/hour, with a 30 minute minimum charge.

CEDT staff time:

The CEDT staff members are available for additional support at the following rates:

- a) Additional training sessions: \$50/hour, 30 minute minimum
- b) Project consultation and/or process development: \$50/hour, 30 minute minimum
- c) “Contract work” on a short or medium term project: \$70/hour

These staff rates do not include other charges for facility use as listed above.