4D LABS, Simon Fraser University 8888 University Drive, Burnaby, B.C. V5A 1S6
E info@4dlabs.ca T 778.782.8084 F 778.782.3765 W www.4dlabs.ca

User Fees for the 4D LABS Characterization Facility

1. Imaging Fees

Service	Non-Academic Rate
SEM 1 - Helios:	
• SEM/EDS mode	$180/hr
• SEM/EDS mode with FIB/Cryo functions	$180/hr
• Extra Cryo mode setup	$350/session
SEM 2 – Nova NanoSEM:	
• SEM/EDS mode	$120/hr
• SEM/EDS mode with mountable detectors or low vacuum mode	$130/hr
SEM 3 – Explorer	$60/hr
SEM 4 – Quattro:	
• SEM/EDS mode	$130/hr
• SEM/EDS mode with low vac, ESEM, cooling, or heating functions	$160/hr
• Setup fee for specialized detectors/holders	$60/session
STEM 1 – Tecnai Osiris:	
• Tool time	$160/hr
• Sample loading (normal and cryo)	$60/sample
Optical Microscope	$20/hr
Microtome	
• Room temperature mode	$50/hr
• Cryo mode	$40/session
• Additional cost when using diamond knife	$50/hr
Sample Preparation:	
• Polisher	$50/hr
• Plasma Cleaner	$10/hr
• Sputter Coater – Ir/C	$50/hr
• Vitrobot	$30/hr
• Wetbench 9 (Epoxy casting and sample prep)	$40/hr
Amira/Avizo modelling computer	$30/hr
Training	$80/hr
Technical Labor Rate	$175/hr

Non-Academic - Last Updated 1-Apr-2024

4D LABS, Simon Fraser University 8888 University Drive, Burnaby, B.C. V5A 1S6
E info@4dlabs.ca T 778.782.8084 F 778.782.3765 W www.4dlabs.ca

2. Characterization Fees

Service	Non-Academic Rate
Atomic Force Microscope (AFM):	
• Tool time	$90/hr
• Probe loading	$50/probe
Fuel Cell Test Stations	$15/hr
ICPMS	
• Solution Phase	$150/hr
• Laser Ablation	$200/hr
• Instrument setup	$100/session
Leak detector (minimum 1 hr)	
• Tool time	$60/hr
• Leak detector setup	$90/session
Particle Size Analyzer (Mastersizer)	$40/hr
Water Activity	$30/hr
X-Ray Characterization:	
• Small Angle X-ray Scattering (SAXS)	$65/hr
• XRD 1 (Rigaku)	$50/hr
• XRD 2 (Bruker)	$65/hr
• X-Ray Flourescence (XRF)	$100/hr
X-Ray Photoelectron Spectroscopy (XPS):	
• Tool time	$130/hr
• Routine sample loading	$60/sample holder
• XPS Ion gun setup (only for ion beam etching in XPS chamber)	$30/session
• Liquid Nitrogen Setup (only for outgassing samples or low temperature XPS)	$85/session
Sample Preparation:	
• Pellet Press	$50/hr
• Planetary Mixer	$20/hr
Training	$80/hr
Technical Labor Rate	$175/hr

4D LABS, Simon Fraser University 8888 University Drive, Burnaby, B.C. V5A 1S6
E info@4dlabs.ca T 778.782.8084 F 778.782.3765 W www.4dlabs.ca

3. Materials and Supplies

Product	Cost
SEM Stub	$1/ea
SEM Storage Box	$4/ea
FIB Lift-Out Copper Grid	$2/ea
Lift-Out Grid Storage Box	$15/ea
TEM Grids:	
• 5-10 nm Formvar/Carbon on 300 mesh Cu	$5/ea
• Non-supported grid	$3/ea
• Ultrathin Carbon Film on Lacey Carbon Support Film, 400 mesh, Copper	$10/ea
• Ultrathin Carbon Film on Lacey Carbon Support Film, 300 mesh, Gold	$15/ea
• Ultrathin Carbon Type-A, 400 mesh, Copper	$10/ea
• Lacey Formvar/Carbon, 200 mesh, Copper	$10/ea
TEM Grid Storage Box	$20/ea
TEM Liftout Membrane Storage Box	$30/ea
Polishing Supplies:	
• Epoxy+Hardener	$0.40/g
• Grinding Discs	$2.50/ea
• Polishing Cloths	$20/ea
• Polisher Apex S Plate	$140/ea
• Polisher Magnomet Plate	$65/ea
• Polishing Solutions	$0.50/mL
EM sputter coating:	
• Carbon Deposition	$3/nm
• Iridium Deposition	$3/nm
Microtome:	
• glass knife	$5/ea
• glass bar (to make own knifes)	$20/ea
Liquid Nitrogen	$2/L
Fuel Cell gaskets	$10/ea
X-ray Capillary Tubes:	
• Boron-Rich Tubes	$7
• Quartz Tubes	$10

SAXS Supplies:	
• Mica window	$11
• Viton o-ring (-150 °C – 220 °C)	$3
• Kalrez o-ring (-150 °C – 315 °C)	$45
• Disposable capillary	$9
• Reusable capillary	$700
AFM Supplies:	
• ScanAsyst-Air probe tip	$50
• ScanAsyst-Liquid probe tip	$60
• Tapping Mode probe tip	$63
• Conductive probe tip	$80
• Sharp Nitride Lever probe tip	$55
• High Aspect Ratio probe tip	$155
• Gelpack tip holder (stores 10 tips)	$44
Safety Glasses	$10
Lab coat	$50

4. Industry Breakpoints for Service Fees in the Characterization Facility

Cumulative Annual Usage[†]	Discount
$0 → $20,000	0%
$20,000 → $40,000	10%
$40,000 → $60,000	20%
$60,000 → $90,000	30%
> $90,000	35%

[†] The cumulative usage is for a single company regardless of the number of users in the group and runs from April through March (4D LABS Fiscal Year). It is calculated separately for each facility.

* Discounts are not applied toward materials purchases (*e.g.*, metals, tweezers, gowns, etc.), photomask orders, or contract work.

4D LABS, Simon Fraser University 8888 University Drive, Burnaby, B.C. V5A 1S6
E info@4dlabs.ca T 778.782.8084 F 778.782.3765 W www.4dlabs.ca

Rules and Regulations:

1. Users of the Materials and Device Characterization Facility must be qualified on each tool used. This must be done through technician training at rates listed above. Training times will vary based on the complexity of the tool and the experience of the user.
2. Minimum usage is one half hour for all equipment.
3. External academic users who wish to have a 4D LABS technician run a sample for them (e.g., sample preparation, data acquisition, and data processing) will have to make these arrangements through 4D LABS (nanoimaging@4dlabs.ca). Cost estimates can be compiled based on a 10, 5, or 1 day turnaround time.
4. Invoices are normally sent on a monthly basis and payments can be made by cheque or account transfer (internal users only).
5. Payments are due Net (30) days from invoice date. Past due invoices are subject to a service charge of 1.5% per month (18% annual) on the unpaid balance or the maximum legal rate permitted by provincial law, whichever is lower.

Special Notes:

1. XPS sample loading includes up to 30 minutes of pump-down time. If the sample continues to outgas after that point, normal instrument rates apply.
2. ICPMS instrument time starts immediately following a successful performance test.
3. The cryo-SEM setup fee is not charged when the work is scheduled during our regularly planned cyro sessions.
4. The microtome diamond blade can only be used by staff for contract work.
5. The plasma cleaner is free for electron microscopy users.
6. The XPS usage fee includes access to data analysis software.
7. The XRD usage fee includes access to a sample preparation station, data analysis software, and crystal structure databases.
8. The modelling computer is free to use for analyzing data from the 4D LABS microscopes.
9. Lockers are available outside the Clean Room for a nominal charge of $1/day