

**Cleanroom Rates** (effective July 1, 2019)<sup>1</sup>

Equipment	On-Campus Hourly Rate	Off-Campus Academic Rate	Industry <sup>2</sup> Rate	On-Campus <sup>3</sup> Automated Overnight Run Rate	Off-Campus <sup>3</sup> Academic Automated Overnight Run Rate	Industry <sup>3</sup> Automated Overnight Run Rate
<b>BENCHES AND HOODS<sup>4</sup></b>						
Fume Hoods (Solvent) <sup>4</sup>	\$17	\$26	\$34			
Spin Rinse Dryers <sup>4</sup>	\$17	\$26	\$34			
Wet Benches (Acid/Base) <sup>4</sup>	\$17	\$26	\$34			
<b>DEPOSITION</b>						
Agnitron Agilis-IH MOCVD	\$92	\$140	\$184			
Cambridge Fiji F200 (ALD)	\$60	\$91	\$120			
CHA SEL600 (E-beam) <sup>5</sup>	\$75	\$114	\$150			
Denton 635 (Sputter) <sup>5</sup>	\$90	\$137	\$180			
Denton Discovery 18 (Sputter) <sup>5</sup>	\$75	\$114	\$150			
Denton SJ20C (E-beam) <sup>5</sup>	\$75	\$114	\$150			
Oxford Plasmalab 80 (PECVD)	\$78	\$119	\$156			
SCS PDS 2010 (Parylene)	\$48	\$73	\$96			
TMV Super (Sputter) <sup>5</sup>	\$75	\$114	\$150			
<b>ELECTRICAL CHARACTERIZATION<sup>6</sup></b>						
Keithley 4200 Semiconductor Parameter Analyzer	\$5	\$8	\$10			
Keithley CV System	\$5	\$8	\$10			
Keysight 404A Mixed Signal Oscilloscope	\$0.50	\$0.76	\$1			
Keysight E5061B Network Analyzer	\$0.50	\$0.76	\$1			
NI PXIe-1071 Chassis with 4-SMU 4143 Board	\$0.50	\$0.76	\$1			
<b>ETCHING</b>						
Oxford 100 ICP (DRIE)	\$80	\$122	\$160			
Oxford Plasmalab 80 (RIE)	\$75	\$114	\$150			
STS ICP ASE (DRIE)	\$100	\$153	\$200	\$50/hr	\$76/hr	\$100/hr
Technics PE II-A (RIE)	\$30	\$46	\$60			
XACTIX X2 (XeF2)	\$62	\$95	\$124			
<b>FURNACES</b>						
Allwin AccuThermo AW 610 RTP	\$120	\$182	\$240			
Expertech CTR-125 LTO	\$90	\$137	\$180			
Expertech CTR-125 Nitride	\$80	\$122	\$160			
Expertech CTR-125 Poly	\$67	\$102	\$134			
Expertech CTR-125 TEOS	\$120	\$182	\$240			
Blue-M Box Furnace	\$5	\$8	\$10			
Pro Temp Clean Oxidation	\$70	\$106	\$140			
Pro Temp Doped Oxidation	\$83	\$126	\$166			

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<b>LASER SYSTEMS</b>						
JPSA Excimer Laser	\$43	\$65	\$86			
LaserStar 1900 (Laser Welder)	\$31	\$47	\$62			
Optec Micromaster KrF (Laser)	\$43	\$65	\$86			
Universal Laser PLS6.150D (CO2)	\$20	\$31	\$40			
<b>LITHOGRAPHY &amp; PATTERN GENERATION</b>						
Heidelberg MicroPG 101	\$55	\$84	\$110	\$28/hr	\$42/hr	\$55/hr
Heidelberg MicroPG 101, 0.9um max cost per substrate <sup>7</sup>	\$60	\$91	\$120	\$30/hr \$600/subst.	\$46/hr \$915/subst.	\$60/hr \$1200/subst.
Heidelberg MicroPG 101, 2.5um	\$60	\$91	\$120	\$30/hr	\$46/hr	\$60/hr
NanoFrazor max cost per substrate <sup>7</sup>	\$48	\$73	\$96	\$600/subst.	\$915/subst.	\$1200/subst.
Nanoscribe GT Professional 3D printer <sup>8</sup>	\$17	\$26	\$34			
Resist Spinners <sup>9</sup>	\$80	\$122	\$160			
Support Tools (Aligners, Hotplates, Ovens, Vapor Prime)	\$17	\$26	\$34			
<b>MICROFLUIDICS</b>						
CEE 200X PDMS Spinner	\$72	\$109	\$144			
Enercon Dyne-A-Mite	\$17	\$26	\$34			
March Plasmod Barrel RIE – O2	\$17	\$26	\$34			
PDMS Aligner-Bonder	\$17	\$26	\$34			
Seal Jumbo 160 Dry Mount Press	\$17	\$26	\$34			
VWR 1410 Vacuum Oven	\$17	\$26	\$34			
<b>PACKAGING &amp; BACKEND</b>						
Disco DAD3220 (Dicing)	\$47	\$71	\$94	\$24/hr	\$36/hr	\$47/hr
Disco DAD641 (Dicing)	\$47	\$71	\$94	\$24/hr	\$36/hr	\$47/hr
EVG 520 IS (Wafer bonding)	\$84	\$128	\$168			
MEI Wedge (Bonding)	\$24	\$36	\$48			
Strasbaugh 6EC (CMP)	\$70	\$106	\$140			
UV Tape Release UVM-102W	\$0.50	\$0.76	\$1			
<b>TEST MEASURE INSPECT</b>						
4-pt Probe Microtech RF-1	\$17	\$26	\$34			
Bell 5180 Gaussmeter	\$0.50	\$0.76	\$1			
Film Stress Tencor FLX-2320	\$17	\$26	\$34			
FLIR Handheld IR Camera	\$0.50	\$0.76	\$1			
Keithley 4200 SCS	\$17	\$26	\$34			
Keyence VHX-5000 Microscope	\$24	\$36	\$48			
Micromanipulator Probe Station	\$17	\$26	\$34			



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Mitutoyo Dial Indicator Probe	\$0.50	\$0.76	\$1			
N and K 1500 Analyzer	\$17	\$26	\$34			
Nanospec 3000	\$17	\$26	\$34			
Oscilloscope Tektronix TDS 2002 B	\$17	\$26	\$34			
Pirani Gauge	\$0.50	\$0.76	\$1			
Profilometer Tencor P-10	\$17	\$26	\$34			
Profilometer Tencor P-20H	\$17	\$26	\$34			
UTI Wirebond Pull Tester	\$0.50	\$0.76	\$1			
UV Intensity Meter OAI 306	\$17	\$26	\$34			
UV Intensity Meter OAI 357	\$17	\$26	\$34			
<b>MISCELLANEOUS</b>						
CAD Work Station	\$17	\$26	\$34			
Omicure 1000UV Light Pen	\$0.50	\$0.76	\$1			
Room Use – Cleanroom, Non-Equipment	\$17	\$26	\$34			
Room Use – Non-Cleanroom, Non-Equipment	\$5	\$8	\$10			
<b>TECHNICAL SUPPORT</b>						
Professional Tech Support <sup>10</sup>	\$65	\$99	\$130			
Student Tech Support	\$23	\$35	\$46			

***For on-campus use only***

<p><b>Monthly Cap<sup>10, 11, 12, 13</sup></b>          (Per month, total tool use per lab member,          per project)</p>
\$2,000 FY19

## Notes

1. Rates are subject to change.
2. Off-campus industry lab members using a federal grant or contract to pay equipment/lab fees qualify for the off-campus academic rates.
3. Overnight runs are to be scheduled between the hours of 5:00pm-8:00am.
4. Charges for typical lithography processing (coat, develop, align, wet etch) are included in the Resist Spinners rate. The rates shown can apply for use of these tools for processing other than typical lithography.
5. Rate does not include the cost of precious metals, which are charged/purchased separately.
6. Includes use of power supplies, O-scope, network analyzer, probe station.
7. For automated overnight runs using the Heidelberg MicroPG 101, 0.9um or NanoFrazor, lab members will not be charged more than \$600 per substrate (mask, wafer, etc.) processed.
8. The Nanoscribe GT Professional 3D printer is currently available at no cost to all on-campus users until September 30, 2021. Off-Campus users will be charged the rate above.
9. Charge includes all coat/develop/alignment and wet etch costs.
10. Fees excluded from the monthly cap: set-up fees, supplies, masks, precious metals, technician time, and expenditures in the Nano Imaging and Surface Analysis Lab.
11. A setup fee will be charged to all new lab members. University lab members \$150, Off-campus academic lab members \$229, and industry \$300. This will train new lab members to qualify to enter the lab.
12. No gowning or daily entry fees; free safety buddies; free mentoring by PI's in the lab.
13. Monthly caps do not apply to misuse of the tool reservation system. If a lab member fails to cancel their equipment reservation they will be charged for any unused reservation time.

## Use of tool reservations

- Lab members can cancel any unused reservation time following a tool disable, and they will not be billed for the unused reservation time.
- Lab members need to cancel their equipment reservation prior to their reservation start time to avoid unused reservation charges.

## Payment Policy

- Services are billed at the end of each calendar month.
- Payment is due Net 30 from the date of invoice.
- Credit card payments are welcome.
- If payment is not received within 60 days of the invoice date, the lab member will be locked out of the lab.