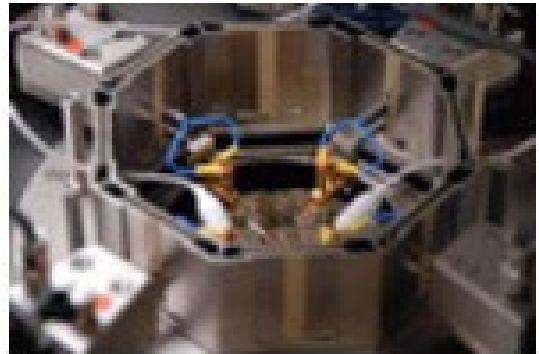
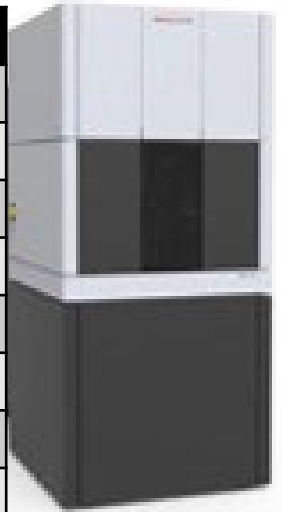


Analysis Research Service Center (ARSC) user rates-effective 5/1/23

Fee description	Comments	External	Internal
Tier 1 hourly equipment fee	per piece of equipment, same rate for training	\$30	\$10
Tier 2 hourly equipment fee	per piece of equipment, same rate for training	\$45	\$15
Tier 3 hourly equipment fee	per piece of equipment, same rate for training	\$75	\$25
Tier 4 hourly equipment fee	per piece of equipment, same rate for training	\$105	\$35
Tier 5 hourly equipment fee	per piece of equipment, same rate for training	\$150	\$50
Tier 6 hourly equipment fee	per piece of equipment, same rate for training	\$225	\$75
Monthly project cap*	external soft cap: rate=internal after cap	\$3,500	\$700
Monthly project minimum charge	only billed when facility is accessed	\$500	\$100

*excludes purchased consumables (e.g. specialty chemicals, deposition materials, substrates, tweezers, notebooks, etc.)



ARSC Equipment Tiers

Equipment Name	Equipment Tier	Approx. Training Time (hrs)
Linear Four Point Probe	1	2
Hermes	1	2
Pelco Dimpler	1	2
Ultrasonic Disk Cutter	1	2
UV-Vis Spectrometer	1	2
Wire Saw	1	2
Wire Bonder	1	2
Surface Profilometer	2	2
Critical Point Dryer	2	2
Cronus	2	2
Leica Cryotome	2	4
Ellipsometer	2	2
FTIR	2	2
Hirox Digital Microscope	2	2
Glass Knife Maker	2	2

Equipment Name	Equipment Tier	Approx. Training Time (hrs)
Imaging Sputter Coater - Au, Ir, C	2	2
Leica TXP Microscopy Sample Prep System	2	2
Optical Microscope	2	2
XRF	3	4
Raman-AFM	3	4
VSM	3	6
Argon Polisher	4	2
AFM	4	4
XRD	4	4
Dynacool PPMS	5	6
ICP-MS	5	6
Nexsa XPS	6	6
FV3000 Laser Scanning Confocal Microscope	5	6
SEM	6	6
Talos TEM	6	6
Leica Cryo-ultramicrotome	2 for room temp, 3 for cryo	4
JOEL SEM	4 for standard, 5 for CL	4

ARSC Equipment Consumables – External Pricing Rates

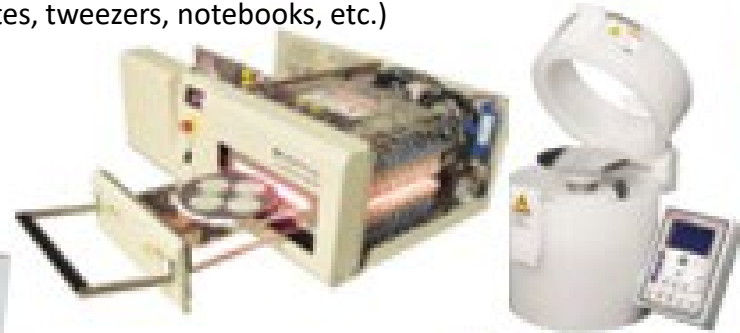
**For consumable internal pricing, divide external pricing by 1.495

Item	External Price
FIB	\$7.48/hour
Gold	\$4.50/run
Iridium	\$14.95/run
1 run = 2nm of Iridium or Gold	
Parafilm Embedding Center	\$15.05/hour
Quartz 8mm perpendicular sample holder	\$224.25/ea.
Quartz 8mm transverse sample holder	\$194.35/ea.
Boron Nitride Spacer	\$451.39/ea.
Boron Nitride Cup	\$367.77/ea.
PCTFE Spacer (threaded)	\$197.34/ea.
PCTFE Cup (threaded)	\$98.67/ea.
AFM Tips Type A, HQ.NSC14/Al BS, 160kHz, 5N/m, 125µm	\$16.45/ea.
AFM Tips Type D, HQ.NSC15/Al BS, 325kHz, 40N/m, 125µm	\$26.91/ea.
AFM Tips Type E, HQ.NSC19/Al BS, 65kHz, 0.5N/m, 125µm	\$26.91/ea.
AFM Tips Type F, RTESPA-525, 525kHz, 200N/m, 125µm	\$49.34/ea.
AFM Tips Type K, HQ.NSC14/Pt, 160kHz, 5N/m, 125µm	\$25.42/ea.
AFM Tips Type L, HQ.NSC15/Pt, 325kHz, 40N/m, 125µm	\$28.41/ea.
AFM Tips Type P, PtSi-FM, 75kHz, 2.8N/m, 225µm	\$198.84/ea.
PELCO® Center-Marked Grids, 200 mesh, Nickle	\$43.48/100 grids
PELCO® Slot Grids, 1 x 2mm, Molybdenum	\$137.78/25 grids
PELCO® Slot Grids, 1 x 2mm, Aluminum	\$166.00/25 grids
PELCO® FIB Lift-Out TEM Grids, 2 wide posts, Copper	\$129.40/100 grids
Carbon Type-B, 200 mesh TH, Nickle	\$174.30/50 grids
Lacey Formvar/Carbon, 200 mesh, Copper approx. grid hole size: 97µm	\$195.88/50 grids
PELCO® TEM Grid Storage Box	\$7.80/ea.

Nanofabrication Research Service Center (NRSC) user rates-effective 5/1/23*

Fee description	Comments	External	Internal
Daily access fee per user	Unlimited entry/re-entry 00:00-24:00 for the date accessed	\$30	\$10
Tier 1 hourly equipment fee	Per piece of equipment, same rate for training	\$45	\$15
Tier 2 hourly equipment fee	Per piece of equipment, same rate for training	\$60	\$20
Tier 3 hourly equipment fee	Per piece of equipment, same rate for training	\$75	\$25
Tier 4 hourly equipment fee	Per piece of equipment, same rate for training	\$90	\$30
Tier 5 hourly equipment fee	Per piece of equipment, same rate for training	\$105	\$35
Monthly project cap*	External soft cap (internal rate after cap)	\$3500	\$700
Monthly project minimum charge	Only billed when facility is accessed	\$500	\$100

*excludes purchased consumables (e.g. specialty chemicals, deposition materials, substrates, tweezers, notebooks, etc.)



NRSC Equipment Tiers

Equipment	Module	Tier
NRSC Teaching Bay SS Hood	Etch	0
NRSC Vacuum Oven	Thermal	0
NRSC Teaching Bay Four Point Probe	Metrology	1
NRSC Axiotron Microscope	Metrology	1
NRSC Olympus Microscope	Metrology	1
NRSC Oxidation Furnace-Dry	Thermal	1
NRSC Oxidation Furnace-Wet	Thermal	1
NRSC HMDS Oven	Lithography	1
NRSC Chimera Wet Hood	Etch	1
NRSC 3-Zone Tube Furnace	Thermal	2
NRSC Teaching Bay Lithography Stations	Lithography	2
NRSC Teaching Bay PVD	Deposition	2
NRSC Teaching Bay NRP-4000 Etch/PVD tool	Etch/Deposition	2
NRSC Hydra Wet Hood	Etch	2

Equipment	Module	Tier
NRSC Probestation (Zeus)	Metrology	2
NRSC PE50 O2 Plasma Asher	Etch	2
NRSC Teaching Bay F20 Filmetrics	Lithography	2
NRSC Teaching Bay N-Type (P) Doping Furnace	Thermal	2
NRSC Teaching Bay P-Type (B) Doping Furnace	Thermal	2
NRSC Teaching Bay Etch Station	Etch	2
NRSC F50 FILMETRICS	Metrology	2
NRSC Surface Profilometer	Metrology	3
NRSC PECVD	Deposition	3
NRSC Wafer Bonder	Lithography	3
NRSC SuSS MJB4 Contact Aligner	Lithography	3
NRSC RTP	Thermal	3
NRSC Xanthos Hood	Lithography	3
NRSC AJA Magnetron Sputter	Deposition	4
NRSC PEALD	Deposition	4
NRSC Oxford ICP/RIE	Etch	5
NRSC Ebeam Evaporator	Deposition	5

NRSC Consumables Costs

Consumable	unit	internal \$/unit	external \$/unit
100mm DIA Si test grade wafer	Ea.	\$9.00	\$13.46
Gold PVD	500 Angstroms	\$35.00	\$52.33
Platinum PVD	500 Angstroms	\$35.00	\$52.33
Cleanroom notebook	Ea.	\$10	\$14.95
Wafer tweezers	Ea.	\$36.00	\$53.82
Diamond scribe	Ea.	\$17.00	\$25.42
Kapton tape	roll	\$9.00	\$13.46