



### Microfabrication Cleanroom Facility

Office of the Vice President for Research  
 & Dean of the Graduate School  
 University of Maine  
 5703 Alumni Hall, Room 201  
 Orono, Maine 04469-5703

#### External, non-Federal Program Service Rates (Effective August 1, 2024)

	Unit Type	Rate per Unit	Additional Information
Physical / Vacuum Deposition	Hour	\$ 65.00	Sputter, E-Beam evaporation and Atomic layer deposition to coat substrates with pure and/or reacted (oxygen or nitrogen) metal thin films. (FIRST e-beam, Lesker Sputter, Temescal e-beam, AJA Sputter)
Plasma Etch / Chemical Vapor Deposition	Hour	\$ 70.00	Plasma etching with O <sub>2</sub> and CF <sub>4</sub> process gases (Oxford RIE); silicon, silicon nitride and silicon dioxide isotropic etch (Oxford RIE); chemical vapor deposition of SiO <sub>2</sub> , Si <sub>3</sub> N <sub>4</sub> , SiO <sub>x</sub> N <sub>y</sub> , SiC and aSi (Oxford PECVD) and parylene (Specialty Coating Systems)
Deep Reactive Ion Etch / STS DRIE	Hour	\$ 85.00	Anisotropic etching for generating deep / high aspect ratio features (STS DRIE)
Glovebox Evaporator	Hour	\$ 35.00	
Furnace	Hour	\$ 70.00	High temperature processing and annealing (JGA oxide furnace, anneal/oxidation/LPCVD), rapid thermal processing (RTP-600S Modular Process Technology Corp)
Photolithography	Hour	\$ 50.00	Pattern up to 100mm wafers with positive and negative photoresists for masked etch or lift-off. Also SU-8 negative acting high aspect ratio epoxy resists for microstructures. (Karl Suss Aligner, Cobilt Aligner, Quintel Aligner, Headway Spinner, FIRST Spinner, Solitek Vapor Primer, Photoresist Oven, Photolith Benches)
Mask Generation	Hour	\$ 35.00	Mask making for patterning (Mann PG, GCA Stepper, Photolith Bench)
Wet Processes	Hour	\$ 30.00	Silicon wafer wet etch capabilities (RCA bench, Piranha/HF bench, KOH Bench, Solvent Bench, General Bench)
Packaging / Dicing	Hour	\$ -	Cost of Technical Assistance is listed below
X-Ray Diffraction (XRD) Analysis / Characterization			Malvern Pananalytical X'pert Pro multipurpose X-ray diffractometer
First hour of machine use per run	Hour	\$ 55.00	XRD first hour of use. (Does not include technical assistance of G. Bernhardt. See below for rate.)
Additional hours of machine use per run	Hour	\$ 25.00	XRD instrument time for runs lasting longer than 1 hour
Hot Stage	Hour	\$ 35.00	
Thin Film Analysis / Characterization	Hour	\$ 40.00	Thin film thickness and refractive index measurements (Tencor Profilometer, J.A. Woolam Ellipsometer)
Technical Assistance: Call	Hour	\$ 80.00	Technical Assistance with processes / services offered in the Cleanroom
Technical Assistance: Carfagno	Hour	\$ 100.00	Technical Assistance with processes / services offered in the Cleanroom
Advanced Design Work	Hour	call	FIRST faculty assisted design & development work
Cleanroom Entry Fee	Entry	\$ 4.50	Use of Cleanroom space. Charged only when no Cleanroom equipment/process is used.
Cleanroom Day Use Fee	Day	\$ 20.00	Use of Cleanroom space. Charged only when no Cleanroom equipment/process is used.
Mask	Each	\$ 35.00	
RCA Clean ACS	Each	\$ 50.00	
RCA Clean Trace Metal	Each	\$ 120.00	

#### Items to Note

Pre-payments are not allowed under any circumstances. All payments must be for services rendered. Services purchased with sponsored funds must be directly allocable to the funding project.

Training costs are charged based on technician time plus machine time and will vary depending on the instrument used.

Facility usage fees are evaluated each fiscal year and are subject to change. For purposes related to budgeting multi-year projects, annual 5% increase in user rates should be anticipated.

A member of the University of Maine System

