



Core Research Facilities
Shared Laboratories & Services at UMass Lowell

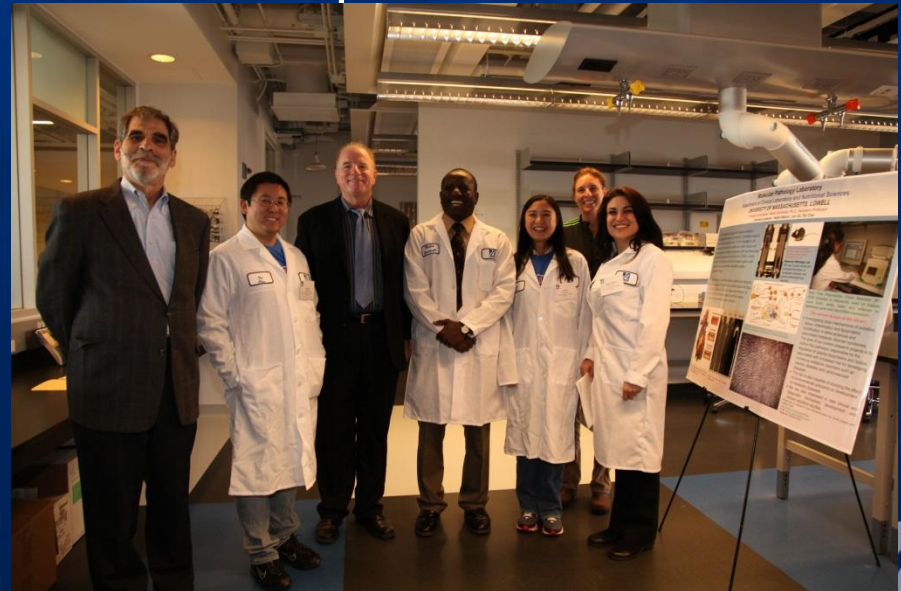
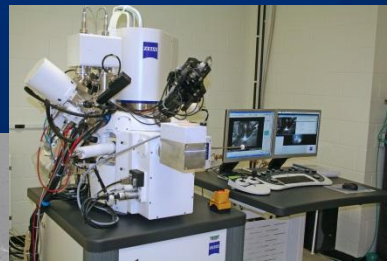
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UMass Lowell Core Research Facilities

Goals

Provide shared laboratories, facilities and services to the research community. We serve our students, faculty, industry start-ups, small and large businesses, non –profits and academic institutions.

Provide “bridge” to faculty expertise and campus resources.



Easy Access CRF

<http://www.uml.edu/Research/CRF>

- ▶ Apply for an account on-line
- ▶ CRF Agreement executed using e-signature
- ▶ Use on line reservation and ordering system
- ▶ Invoices emailed on a monthly basis
- ▶ Credit cards and check payment accepted
- ▶ Industry Partnership rates available. Contact CRF Business Office for more information.

Current Core Research Facilities

<http://www.uml.edu/research/CRF/>

- ❖ Nanofabrication Laboratory, Lab Director, Thomas Ferraguto
 - 22 Instruments, Class 100, 1000, 10,000 Clean Room
 - Location: Saab ETIC
- ❖ Materials Characterization Lab, Lab Manager: Earl Ada
 - 29 Instruments
 - Locations: Olney Science Center and Saab ETIC
- ❖ NERVE Center, Lab Manager: Adam Norton
(New England Robotic Validation and Experimentation)
 - 29 robotic test courses (NIST replicated)
 - Location: 1001 Pawtucket Avenue
- ❖ Thermal & Mechanical Properties
 - 4 Instruments with plans for expansion
 - Location: Saab ETIC

Saab Emerging Technologies & Innovation Center (ETIC)

84,000 square foot facility

Location of NFL, TMP, MCL Core Research Facility and
CRF Business Office



NanoFabrication Laboratory (NFL)

Class 100, 1000, 10,000
with Bio-Bay



CRISP™

searchable database

http://www.uml.edu/Research/CRF

UMass Lowell Research Laboratories - Google Chrome
 https://crf.uml.edu/index.php?q=SEM&sr=Search

UMASS LOWELL
Learning with Purpose

Search for Resources or Facilities CRF Umass @ UMass Lowell Industry Demo

Browse by Research Laboratory | Browse by Resource Type | SEM | Search

7 Resources found searching for SEM:

Cryo-Ultramicrotome
 Leica EM UC5
 Materials Characterization Lab
 Core Research Facility

Sample prep instrument for SEM, TEM and AFM imaging

Reserve ...

Rates
 Self: No Charge
 Training: No Charge

Field-emission Scanning Electron Microscope
 JEOL JSM 7401F Unit 1
 Materials Characterization Lab
 Core Research Facility

Note: Our shared laboratory is used by a variety of researchers. We ask that you make reasonable time estimates when scheduling. Billing is completed according to the reservation which is to reflect actual use (in fifteen minute increments). Please notify the Lab Director if use time is reduced due to equipment or facility malfunction. 24 hours cancellation is required by e-mail to the Lab Director.

Sample Characterization Equipment
 Training Estimates and Prerequisite:
 6 Hours and must have demonstrated proficiency in using JEOL 6390 SEM

Features:

1. Electron optical column: Cold-cathode tip field emission gun; 1.0 nm resolution at 15 kV accelerating voltage; 0.1 - 30 kV accelerating voltage range; 25x - 1,000,000x magnification range
2. Detectors: one chamber-mounted Everhart-Thornley type secondary electron detector, one semi-in-lens secondary electron detector with r-filter and secondary electron signal enhancer, one pneumatically retractable solid state back-scattered electron detector for topographical and compositional image contrast
3. Specimen chamber and stage: large specimen exchange port accommodating 4 inch diameter and 40 mm height samples, eucentric, goniometer stage with PC-automated X-, Y- and R- axes and manual Z- and Tilt- axes
4. X-ray Micro-analysis using Energy Dispersive Spectroscopy: EDAX Genesis XM2 Imaging System composed of a 10 mm² Si(Li) detector with SUTW window for detection of all elements down to Be, and the digital electronics and software for image acquisition and x-ray signal mapping and qualitative and quantitative analysis capabilities.
5. Nanometer Patterning Generation System for e-beam lithography includes NPGS PCI 516A high speed lithography board, Deben PCD beam blanking system, NPGS v9.0 control software and DesignCAD LT2000

Reservations Cart

Atomic Force Microscope (Veeco Dimension 3100) Assisted @ \$245/labour 03/14/14	\$245.00
Atomic Layer Deposition (FIJI) Training @ \$278/labour 03/29/14	\$278.00
Robotic Validation and Testing Facility (Courses replicated from NIST, designed in collaboration with the U.S. Army, and others) Self @ \$1,983/each 03/30/14 1 each	\$1,983.00
Total: \$2,506.00	

Check Out

CRF FYI

See website for more details: <http://www.uml.edu/Research/CRF/>

- ❖ Of 138 accounts, 65 are industry
- ❖ Of 375 “users”, 110 external “users”
- ❖ More that 75 instruments available within CRF program.
- ❖ More than 450 resources available through research services
- ❖ Additional CRF’s to be added in the near future
- ❖ Call for a tour-978.934.6421

