A significant portion of core equipment has been purchased through MLSC grant funding support.

**Sensor Integration**

LSL S469
Joe Bardin | bardin@ecs.umass.edu | (413) 545-2463
Robert Jackson | jackson@ecs.umass.edu | (413) 545-1386
Miniaturizing systems in preparation for human testing.

**X-Ray Scattering Facility**

Conte 8341, 8522
Alex Ribbe | aeribbe@polysci.umass.edu | (413) 658-7415
Instruments dedicated to the structural analysis of crystalline materials, the determination of highly periodic morphologies in self-assembled systems over a large length scale range.

**Off-Campus Core Facilities**

**Massachusetts Green High Performance Computing Center**

100 Bigelow Street, Holyoke, MA 01040
Ralph Zottola | rzottola@umassp.edu | (774) 455-7700
Christopher Misra | chris.misra@umass.edu | (413) 545-2947
University of Massachusetts Amherst
Provides world-class computational infrastructure, indispensable in the increasingly sensor and data-rich environments of modern science and engineering discovery.

**Small Molecule Screening Facility (SMSF) (High Throughput Screening)**

University of Massachusetts Medical School
364 Plantation Street, Worcester, MA 01655
Sangram Parelkar | sangram.parelkar@umassmed.edu
Provides investigators with a platform for assay development and screening of unique, small drug-like molecule libraries occupying novel chemical space in a variety of readout systems for the discovery of exceptional chemical probes, potential diagnostic and therapeutic candidates of high impact, as well as research tools.

**Institute for Applied Life Sciences (IALS)**

University of Massachusetts Amherst
5307 Life Science Laboratories
240 Thatcher Road
Amherst, MA 01003

Andrew Vinard
Core Facilities Director
avinard@umass.edu | (413) 577-4582

Charlene Coleman
Core Facilities Accountant
ccoelman@umass.edu | (413) 577-4578

www.umass.edu/ials/core-facilities
Innovation and commercialization in partnership with to institutionalize the Center for Surgical Technology technologies in biosensors and medical devices from capabilities to support the translation of new Sundar Krishnamurty | skrishna@ecs.umass.edu Doug Eddy | dceddy@umass.edu | (413) 577-4540 LSL S466, S470 Advanced Digital Design and Amherst.

The overall Core Facility infrastructure was made possible by a grant from the Massachusetts Life Science Center and operational support from UMass Amherst.

Advanced Digital Design and Fabrication (AddFab) LSL S466, S470 Doug Eddy | dceddy@umass.edu | (413) 577-4540 Sundar Krishnamurty | skrishna@ecs.umass.edu 3D printing and related digital manufacturing capabilities to support the translation of new technologies in biosensors and medical devices from lab to bench to human testing. The mission of AddFab is to institutionalize the Center for Surgical Technology Innovation and commercialization in partnership with UMass Medical School.

Animal Imaging ISB 068 Amy Burnside | aburnside@umass.edu | (413) 545-1385 Designed to assist members of the research community on UMass and other five college campuses to conduct research using live animal imaging technologies. Equipment is capable of fluorescence and luminescence imaging independent of or concurrent with CT imaging.

Atomic Force Microscopy (AFM) Conte B343 Alex Ribble | arebble@polysci.umass.edu | (413) 658-7415 Provide analytical and high resolution scanning probe-based microscopy. This includes Atomic Force Microscopy (AFM) related techniques such as tapping mode, contract mode or conductive AFM as well as force measurements.

Biophysical Characterization LSL S541 Lizz Bartlett | dbartlett@umass.edu | (413) 577-0560 Interactions between biological macromolecules like proteins, nucleic acids, lipids and their complexes, and small molecule interactions with these macromolecules.

Bioproduction/Seperation LSL S577, S577A Lizz Bartlett | dbartlett@umass.edu | (413) 577-0560 Offers equipment for expression, separation, and isolation of biomolecules allowing users to culture cells including bacterial, yeast, insect, plant, and mammalian cells, and then separate biomolecules of interest including proteins, nucleic acids, natural products, and metabolites.

Cell Culture LSL S471A, S570 James Chambers | jchambe@umass.edu | (413) 577-4580 Two cell culture facilities for both biological and bio-engineering approaches. Biosafety cabinets, incubators and general wet lab supplies.

Computational Modeling LSL S585B Jianhan Chen | jianhanc@umass.edu Provides consultative and collaborative service in computational and molecular modeling.

Device Characterization LSL S465A Doug Eddy | dceddy@umass.edu | (413) 577-4500 Provides gold-standard verification of wearable and point-of-care devices and other medical devices. This lab offers a full suite of mechanical testing capabilities to fully characterize materials, manufacturing processes, and their fabricated devices.

Device Fabrication (Cleanroom) Conte B163-B172 Alex Ribble | arebble@polysci.umass.edu | (413) 658-7415 Transmission (TEM) and Scanning (SEM) Electron Microscopes as well as related sample preparation equipment.

Electron Microscopy Conte B163-B172 Alex Ribble | arebble@polysci.umass.edu | (413) 658-7415 Provides microscope-based high-throughput screens.

Electronic Materials Conte B523, B524 Volodymyr Duzhko | duzhko@pse.umass.edu | (413) 577-0962 Provides access and training in state-of-the-art characterization related to photoluminescent, semiconductor, and conducting materials, including device fabrication and methods for determining charge carrier mobility and solar cell efficiency.

Flow Cytometry ISB 068 Amy Burnside | aburnside@umass.edu | (413) 545-1385 Enables researchers to image structures ranging from single molecules to whole model organisms and performs microscope-based high-throughput screens.

Genomics Resource Laboratory Morrill 1, N380 Ravi Ranjan | ravi@umass.edu | (413) 577-4502 NGS DNA Sequencing, Sanger DNA Sequencing, Fragment Analysis, and Real-Time PCR available.

High Frequency Sensor Development LSL S460 Joe Bardin | jbardin@ecs.umass.edu | (413) 545-2463 Robert Jackson | robert@ecs.umass.edu | (413) 545-1386 Provides world class measurement capability for frequencies into the Terahertz range. It will be used for high frequency spectral analysis of materials and for testing high-speed communications technologies.

Human Magnetic Resonance Center LSL S230 Jane Kent | jkent@kin.umass.edu Jacqueline Kurland | jkurland@comdis.umass.edu Whole-body non-invasive imaging and spectroscopy technologies for academic and industry-based research.

Human Testing Center LSL S360 Suite Michael Busa | mbusa@umass.edu | (413) 577-0574 Exercise Intervention and Outcomes Diagnostic testing capabilities include: exercise performance, VO2 max, exercise stress testing, strength testing, body composition (including abdominal obesity) and bone density evaluation.

Human Motion Assessment of human movement (free living and robot assisted) and human and robotic testing of sensor technologies.

Living Science Evaluate biosensor performance in healthy participants or participants who are at risk for chronic disease while living in a natural environment.

Room Calorimeter Capability to measure 24 hour human energy expenditure for purposes of movement sensor calibration and validation, and to conduct studies requiring assessment of energy balance and energy metabolism.

Sleep Monitoring Lab Rebecca Spencer | rspencer@psych.umass.edu | (413) 545-5987 Equipped with paired and whole-head EEG systems for recording sleep physiology (sleep staging). A central control room will allow for on-line observation of sleep and monitoring of sleep in populations from infants to the elderly.

Human Motion Assessment of human movement (free living and robot assisted) and human and robotic testing of sensor technologies.

Core Facilities

IALS offers more than 30 Core Facilities, available to both internal and external users. These turnkey facilities are a significant resource for faculty research and student training in the Massachusetts and New England region, while representing a novel interface for government and industry partners. These facilities enable faculty, students, and industry collaborators to access a broad array of equipment to enhance their R&D capabilities, address both basic and translational questions, deliver technologies and product candidates more readily, and become more competitive in obtaining state, federal, foundation, and private funding. These facilities, many housed in the Life Science Laboratories, will advance the University’s objectives of becoming a destination and partner of choice as well as the Institute’s goals of supporting high quality research and advancing translational programs towards novel drug targets, drug delivery technologies, personalized healthcare devices, nutraceuticals, and other technologies that enhance human health and well-being.

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