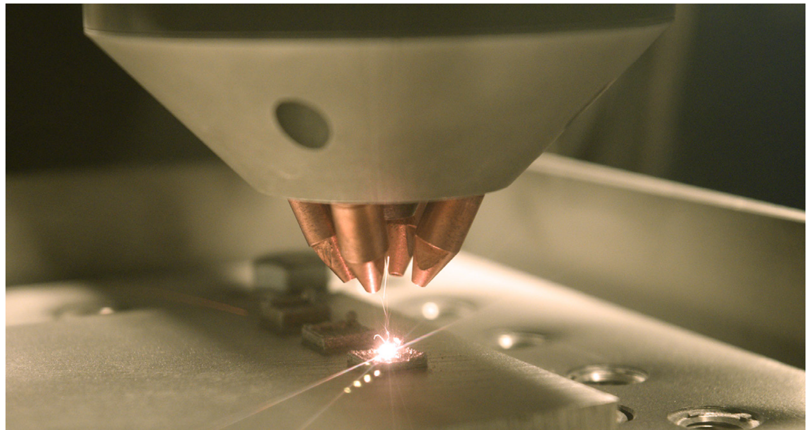
Advanced Digital Design & Fabrication



umass.edu/ials/core-facilities/advanced-digital-design-and-fabrication-addfab

Located on the 4th floor in the Life Science Laboratories the Advanced Digital Design & Fabrication facility offers state-of-the-art 3D printing and related digital manufacturing capabilities to support the translation of new technologies in biosensors and medical devices from lab bench to human testing that can then pave the way for commercialized innovative products and services. Design and 3D printing services are also available for all academic disciplines and commercial industries.

WORK WITH US

- 3D printing in a wide range of polymers and metals
- Engineered solutions utilizing 3D printed components
- Research into the science of 3D printing
- Daily/weekly rental of printers for specific research use
- Long-term projects
- Equipment training
- Classes and seminars

PRINTING WITH US

Printing and laser cutting services are available by the hour and include full technician support, or self-service for trained individuals. For details contact Dave Follette at follette@umass.edu.

Our rates are competitive and tiered based on needs and usage. Visit our website at *umass.edu/ials/core-facilities/advanced-digital-design-and-fabrication-addfab* for current listing.

A prototype of a bone cutting guide and bone, printed on the ADDFab Connex350, to help evaluate the initial prototype and communicate the concept.

UMassAmherst | Core Facilities

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University of Massachusetts Amherst
Life Science Laboratories
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Research & Innovation to Translate Basic Science into Products, Technologies and Services to Benefit Human Health and Well-Being

PARTNER WITH US!

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UMass Core Facilities Inquiries

Revision (10/16/25)

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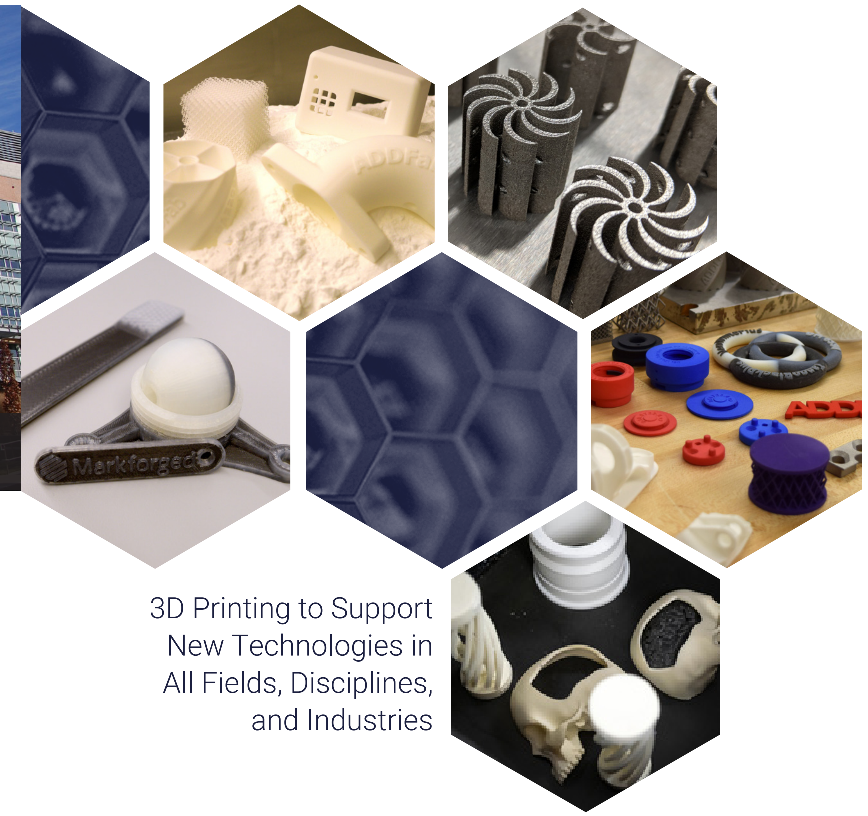
Advanced Digital Design & Fabrication

Institute for Applied Life Sciences
University of Massachusetts Amherst



3D Printing to Support New Technologies in All Fields, Disciplines, and Industries

ADDFab has an Array of Cutting-Edge, Industrial-Grade, 3D Printers

Capabilities

1. Engineer and Print Great Parts

Metal printing utilizing fine metal powders to build parts as large as 25x25x30cm with detail as fine as 250um. The EOS M290 is a powder bed system that uses direct metal laser sintering (DMLS) to build parts layer by layer with very high material density.

Six polymer printers span four different printing technologies. The EOS P110 is a powder bed nylon printer that uses selective laser sintering (SLS) to produce parts. It has a build area of 23x20x30cm and can produce detail as fine as 250um. The Farsoon 252P uses the same process, but has a larger build area of 24x24x30cm and allows greater control of the printing parameters. The primary advantage of the SLS process is that it does not require support structures for overhanging parts, so it can print extremely complex and delicate geometries with ease. The Stratasys Connex350 is a multi-material printer that can print both flexible and rigid materials in one part, and even mix the materials to adjust material properties and colors. The Markforged and Prusa printers both extrude polymer filament in a fused filament fabrication (FFF) process. The Markforged Mark Two can print in nylon infused with chopped carbon fiber (Onyx), or embed a continuous strand of fiberglass, Kevlar, or carbon fiber into each layer, giving composite strength to a 3D printed part. The Profluidics 285D uses UV light to cure resin to create small, highly detailed molds for PDMS. These are often used in microfluidics applications.

For customers who need engineering or design support to generate files ready for printing, we offer engineering consulting on an hourly basis with either undergraduate students or experienced engineers.

2. Support Academic Research

The ADDFab facilities are available for use as-a-service where our staff does all of the printing, but also for dedicated use on a daily or weekly basis. Training is available where students and faculty can learn to use the equipment and then use it to conduct their own research on additive manufacturing.

Printing services and engineering support are available to faculty and students in all academic departments.

3. Train and Educate

ADDFab supports undergraduate and graduate courses in additive manufacturing by printing parts, providing tours, and training students on how to use the equipment. We actively partner with student groups and secondary schools as well.

For industry and the local community, ADDFab hosts a series of workshops on additive manufacturing. These are intended to broaden the understanding of how 3D printing will affect the manufacturing industry and to provide hands-on skills using industrial-grade 3D printing technology. Both types of courses are offered throughout the year.

EQUIPMENT

EOS M290

The M290 uses a laser to sinter a bed of metal powder, allowing layer by layer creation of geometrically complex, high quality metal parts. Using the M290, fully functional parts can be designed to be lighter, more complex, and better integrated into an assembly.

EOS P110

The Formiga P110 uses a laser to sinter a bed of plastic powder. The process facilitates the creation of batches of parts and allows complex geometries and quality builds from high strength plastic materials.

Farsoon 252P

The Farsoon 252P is very similar to the EOS P110 except that it has a larger build volume, and it allows full control of all of the print parameters. That means that we are able to use a variety of commercially available and custom polymer powders in this printer.

Profluidics 285D

The 285D has a small build area of 110x60mm but is able to produce features as small as 30 microns. It excels at printing molds for PDMS, which are often used in microfluidics applications.

Connex Objet 350

The Objet 350 allows the creation of parts with multiple materials. Materials can be printed separately or in specified ratios, offering a range of mechanical properties. Parts can be any blend of rigid and flexible materials, creating prototypes with different hardness durometers, or even soft overlays on rigid materials.

Markforged Mark Two

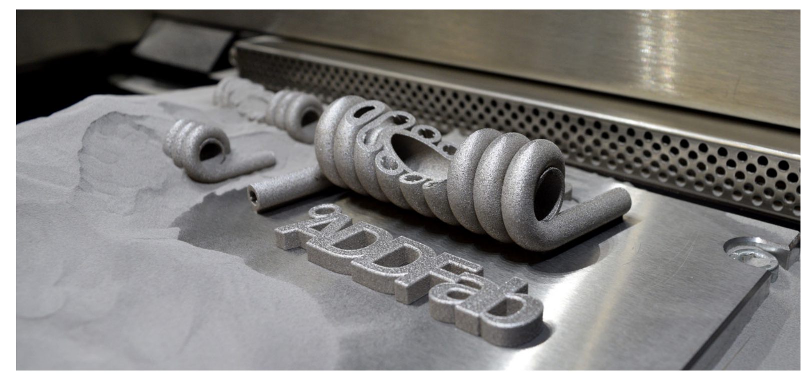
The Mark Two printer switches between two nozzles to create carbon fiber, Kevlar, or fiberglass. The resulting parts have high strength to weight ratios that can be used for tooling, fixtures, and prototyping.

Prusa XL

The Prusa XL is a, "consumer" type printer, but is extremely useful for quick and inexpensive prototypes and parts that do not require high strength. We print in PLA, PETG, and TPU materials, and in all different colors.

Spirit GLS Laser Cutter

The Spirit GLS allows rapid laser cutting and 256-level gray scale engraving. In addition to cutting potentially complex geometries in materials like wood and acrylic, it can engrave anodized aluminum.



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