

# Advanced Digital Design & Fabrication

Institute for Applied Life Sciences | University of Massachusetts Amherst

*Cutting Edge 3D Printing for Fabrication,  
Research, Training, and Education*

Research | Training

High-Quality Printed Parts

Design & Engineering Support

## Metal Technologies:

Powder Bed Fusion (EOS M290)  
Directed Energy Deposition (LENS 450)

## Polymer Technologies:

Selective Laser Sintering (EOS P110)  
PolyJet (Connex 350)  
Fused Filament with Fiber Inlay (Markforged)  
Laser Cutting (Spirit GLS)

## Characterization Capabilities:

Coordinate Measuring Machine (Nikon Altera 7.5.5)  
Strength (Instron Electropuls 10000)  
Hardness (KLA Tencor D-500)  
Roughness  
3D Scanning (3D Systems Capture)



### **EOS M290**

The M290 is a direct metal laser sintering (DMLS) printer with a 400W laser. It is a production-grade machine that builds parts with very fine resolution (20 micron layers) and creates geometries that can only be achieved through additive manufacturing.



### **EOS Formiga P110**

The P110 is a selective laser sintering (SLS) powder bed printer. It prints strong, tough, detailed parts in a nylon-12 powder with impressive speed. The powder also provides support to the parts during the print, so there are no supports to remove post-processing, allowing even more complex geometries.



### **Optomec LENS 450**

The LENS 450 is a directed energy deposition (DED) printer that uses a 350W laser to melt and deposit metal. With two powder feeders, it can blend metals as it prints or print different layers in different materials. It can also print on existing parts, allowing it to do detailed part repair.



### **Mark Two**

The Mark Two is a high quality fused filament fabrication (FFF) printer with a second extruder nozzle that can insert carbon fiber, Kevlar, or fiberglass filament. The resulting parts, a blend of nylon and fiber, are extremely lightweight and strong, making them ideal for tooling and demanding applications.

[umass.edu/ials/addfab](http://umass.edu/ials/addfab)

ADDFab Rates		Advanced Training				Intermediate Training		Basic Training		
		EOS M290	Optomec LENS 450	EOS P110 <sup>(2)</sup>	Stratasys Connex350 <sup>(2)</sup>	Markforged Mark Two	Spirit GLS Laser Cutter	Instron Electropuls E10000	Nikon CMM	Stress Photonics Roughness Hardness 3D Scanner
Training		\$300	\$200	\$100	\$50	\$50	\$50	\$50	\$100	\$50/instrument
Dedicated	Monthly	\$6,542	\$4,278	\$2,765	\$1,225	\$356	\$546	\$1,718	\$800	\$370
	Weekly	\$1,636	\$1,069	\$691	\$306	\$89	\$136	\$429	\$200	\$93
	Daily	\$360	\$235	\$152	\$67	\$20	\$30	\$86	\$40	
Shared	Annual					\$261	\$400	\$1,800	\$800	\$800
	Quarterly					\$65	\$100	\$450	\$200	\$200

### **Notes:**

- Prices are for trained users and do not include support staff, consumables, or materials.
- Printing-as-a-service is available on the P110 at \$0.10/cm<sup>3</sup> and on the Connex 350 at \$14/hr, including materials.
- Support for untrained users and for additional help is \$50/hr for technician, \$117/hr for engineering or design.
- Shared rates shown are 'per simultaneous user', so a lab could have multiple trained users and pay one shared fee, as long as only one piece of equipment is used at a time.
- All rates are for academic research for UMass (all) or the Five Colleges. Personal and industry use rates are 50% higher (e.g. \$300 → \$450).
- "Dedicated" means the machine is available for your exclusive use for that period of time. This includes setup, operation, and clean up.
- 'Shared' means that the machine is available on a first-come, first-served basis. There is no guarantee that shared equipment will be available at any specific time, and priority will be given to those who schedule dedicated access.
- Training Requirements:
  - All: EH&S Lab Safety Training, Fire Safety Training, machine specific training (from ADDFab)
  - Laser Cutter: Laser Safety Training
  - Metal Printers and EOS P110: Respirator fit and training
  - Metal Printers: Class C and D fire extinguisher training

See our website for complete details:  
[umass.edu/ials/addfab](http://umass.edu/ials/addfab)

Contact:  
Dave Follette, Core Facility Director  
follette@umass.edu