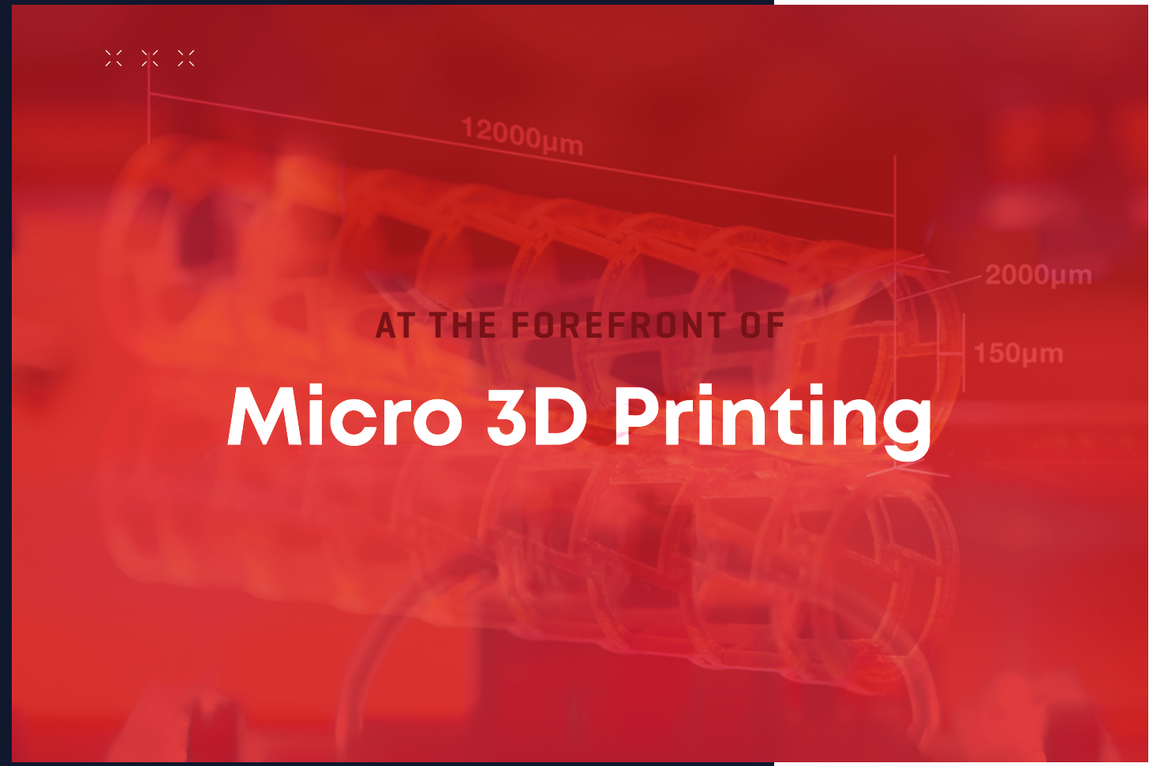
BMF

BOSTON MICRO FABRICATION

Industrial Micro-Precision 3D Printing

RESOLUTION × ACCURACY × PRECISION



AT THE FOREFRONT OF

Micro 3D Printing

About Us

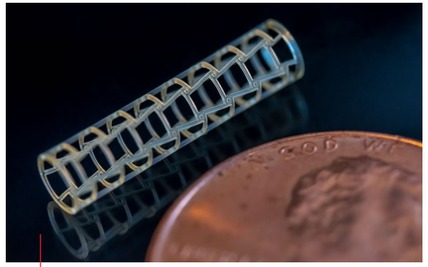
Boston Micro Fabrication (BMF) is the leading manufacturer of industrial micro-precision 3D printers. BMF uses an innovative technology called Projection Micro Stereolithography or PµSL, a technique that allows for rapid photopolymerization of a layer of liquid polymer using a flash of UV light at micro-scale resolution.

Using industrial-grade composite polymers and ceramics, BMF is capable of achieving resolution of 2µm~50µm and tolerance of +/- 5µm~25µm, thus providing mold-free, ultra-high-resolution fast prototyping and end part capability. Today, BMF is the only industrial 3D printing company to match the quality of high-resolution injection molding and CNC processing.

The microArch™series is the first commercialized high-resolution, 3D microfabrication equipment based on PµSL technology. The superior production of intricate, exact, and replicable parts makes PµSL the optimal prototyping process for various use cases across a wide variety of industries.

- MEDICAL DEVICES
- MEMS
- ELECTRONICS
- MICROFLUIDICS
- BIOPHARMA
- EDUCATION & RESEARCH

Applications

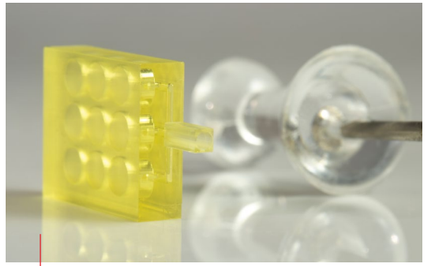


MEDICAL DEVICES

Medical devices are becoming smaller, more expensive to assemble, and used more commonly with collaborative robotics. Miniaturization, the cost of assembly, and the complexity of designing tools for diagnostic and surgical robots are just some of the challenges that today's medical device designers face. Micro 3D printing helps to alleviate some of these challenges. With PμSL technology, engineers can print small parts rapidly in biocompatible materials with 2μm resolution and +/- 10μm accuracy. Medical applications for BMF's PμSL technology include endoscopes, cardiovascular stents, and blood heat exchangers.

ELECTRONICS

3D printing electronics is emerging as a viable alternative to traditional manufacturing processes. This is especially relevant as electronics are becoming smaller, more tightly packaged, and subjected to more demanding conditions. Traditionally, manufacturers have used micro injection molding to produce electronic components like connector bases, chip sockets, and brackets for fiber optic arrays. Some of the disadvantages to this method are longer wait times and higher costs if the tooling needs to be changed or discarded. 3D printing eliminates the tooling used in micro injection molding and can reduce time-to-market across multiple design iterations and test cycles.

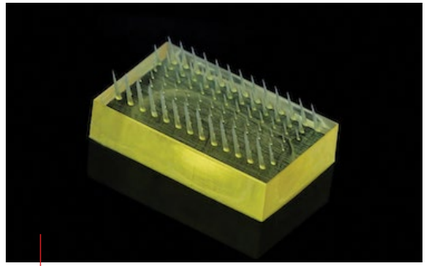


MICROFLUIDICS

Microfluidic devices (MFDs) are used in many healthcare, biological, and medical applications. They also have growing uses in environmental analysis and food and agriculture research. In addition, microfluidics is becoming increasingly important as pharmaceutical companies seek high-performance but cost-effective diagnostic techniques during the COVID-19 pandemic. Current methods of building MFD's are time consuming and costly and include cutting, etching and molding - in many cases these manufacturing methods cannot achieve the sizes and tolerances that are required for the complex 3D channels. PμSL technology and print channels down to 10μm and supports the production of high precision micro tooling for molding materials like PDMS.

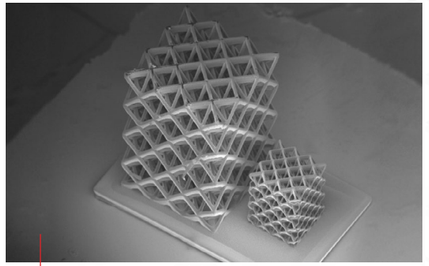
MICRO-ELECTROMECHANICAL SYSTEMS (MEMS)

Micro-Electromechanical Systems (MEMS) are miniature mechanical structures with 3D features and considerable complexity. These mini machines can be integrated with electrical components and have dimensions measured in microns. Examples of MEMS include the tiny vibrating mirrors used in digital projectors and the accelerometers used in cars. As the demand for micro-electromechanical devices continues to grow, designers want greater freedom and faster speeds. This is where micro 3D printing comes Into play. PμSL technology delivers greater design and manufacturing freedom in less time at resolution and tolerances that meet the high standards of MEMS fabrication.



BIOPHARMA

The world of medical and drug research continues to find ways to propel drug delivery and biopharmaceutical innovation. Micro 3D printing is emerging as a viable alternative for manufacturing diagnostic tools and drug delivery methods, providing large time and cost savings, as well as greater design flexibility. Having the ability to develop materials with characteristics such as biocompatibility and high temperature resistance is crucial to achieving the end result desired. Microneedles is one example where micro 3D printing can make an impact, achieving the resolution and biocompatibility requirements necessary for the small arrays.



EDUCATION / RESEARCH

When it comes to choosing what 3D printers to use for education and research, there is a need for experimental capabilities that can provide the experience of a microfabrication laboratory with a focus on medical devices, electronics, microfluidics, or micro mechanical devices. At universities, faculty want to provide undergraduates with access to advanced microfabrication equipment that doesn't require a cleanroom, hazardous or expensive chemicals, or time-consuming preparation and execution. PμSL micro 3D printing technology delivers ultra-high resolution, accuracy and precision and can achieve the small sizes and fine features required by microfabrication.

3D Printing Systems

2µm Series

P130
- Optical Resolution: 2µm
- Build Size: 3.84 × 2.16 × 10mm

S130
- Optical Resolution: 2µm
- Build Size: 50 × 50 × 10mm

10µm Series

P140
- Optical Resolution: 10µm
- Build Size: 19.2 × 10.8 × 45mm

S140
- Optical Resolution: 10µm
- Build Size: 94 × 52 × 45mm

S240
- Optical Resolution: 10µm
- Build Size: 100 × 100 × 75mm

25µm Series

P150
- Optical Resolution: 25µm
- Build Size: 48 × 27 × 50mm

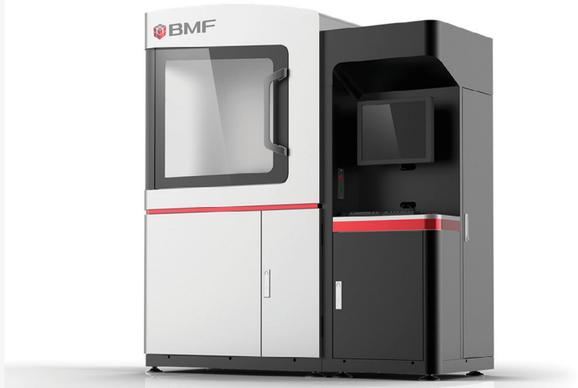
microArch™

2µm Series

The 2µm series is our highest resolution system, perfect for applications that require ultra-high resolution and tight tolerances. Compatible with a wide-range of materials, the 2µm series is the ultimate choice for prototyping parts that are true to CAD and look exactly like the finished product.

LAYER THICKNESS
5 µm - 20 µm

RESOLUTION
2µm



SYSTEM SPECIFICATIONS

	P130	S130
PRINTING MATERIAL	Photosensitive Resin	Photosensitive Resin
OPTICAL RESOLUTION	2µm	2µm
BUILD SIZE	3.84 × 2.16 × 10mm	50 × 50 × 10mm
SURFACE FINISH	0.4-0.8µm Ra (top) 1.5-2.5µm Ra (side)	0.4-0.8µm Ra (top) 1.5-2.5µm Ra (side)
INPUT DATA FILE FORMAT	STL	STL
WEIGHT	390kg	390kg
LIGHT SOURCE	UV-LED (405nm)	UV-LED (405nm)
EXTERNAL DIMENSIONS	1720 × 750 × 1820mm	1720 × 750 × 1820mm

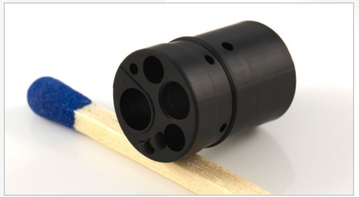
microArch™

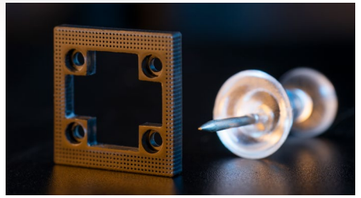
10µm Series

The 10µm series is the ideal solution for businesses and universities requiring high resolution, accuracy and precision in a desktop package. Within the 10µm series, the S240 is our industrial workhorse, with the ability to print with engineering-grade materials and a larger build volume - specifically designed to meet the needs of industrial production.

LAYER THICKNESS
10 µm - 40 µm

RESOLUTION
10µm





	P140	S140	S240
PRINTING MATERIAL	Photosensitive Resin	Photosensitive Resin	Photosensitive Resin
OPTICAL RESOLUTION	10µm	10µm	10µm
BUILD SIZE	19.2 × 10.8 × 45mm	94 × 52 × 45mm	100 × 100 × 75mm
SURFACE FINISH	0.4-0.8µm Ra (top) 1.5-2.5µm Ra (side)	0.4-0.8µm Ra (top) 1.5-2.5µm Ra (side)	0.4-0.8µm Ra (top) 1.5-2.5µm Ra (side)
INPUT DATA FILE FORMAT	STL	STL	STL
WEIGHT	85kg	85kg	130kg
LIGHT SOURCE	UV-LED (405nm)	UV-LED (405nm)	UV-LED (405nm)
EXTERNAL DIMENSIONS	650 × 650 × 750mm	650 × 650 × 750mm	650 × 700 × 790mm

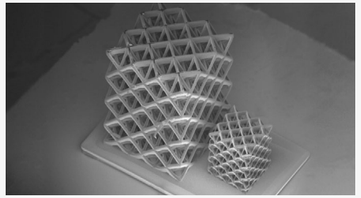
microArch™

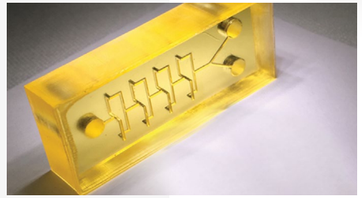
25µm Series

The P150 is BMF's entry level micro-precision 3D printing system. With print resolution down to 25µm and a lower price point, it's the perfect system for small, detailed parts that don't need ultra-high resolution.

LAYER THICKNESS
10 µm - 50 µm

RESOLUTION
25µm





P150

PRINTING MATERIAL	Photosensitive Resin
OPTICAL RESOLUTION	25µm
BUILD SIZE	48 × 27 × 50mm
SURFACE FINISH	0.4-0.8µm Ra (top) 1.5-2.5µm Ra (side)
INPUT DATA FILE FORMAT	STL
WEIGHT	65kg
LIGHT SOURCE	UV-LED (405nm)
EXTERNAL DIMENSIONS	530 × 540 × 700mm

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