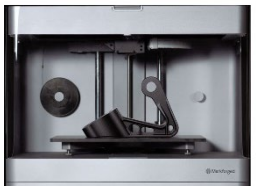
University at Buffalo
Shared Instrumentation Laboratories

Digital Manufacturing Laboratory – 118 Bonner Hall – Additive Manufacturing / 3D Printing Resources

Image	Item	Material	Build Volume (W/D/H) Layer Thickness / Resolution	File Formats	General Features
Fused Deposition Modeling: FDM Printers (desktop)					
	**Original Prusa MK4**	**Plastic (not all in stock):** PLA, ABS, PET/PETG, HIPS, Flex PP, ASA, Carbon-fibers enhanced filaments, Polycarbonates, Nylon	**Build Volume:** 9.84 x 8.3 x 8.6 inches (25 x 21 x 22 cm) **Layer Thickness:** From 0.08 mm Variable layer thickness available	STL, OBJ, 3MF	• Consistently produces precise, high-quality, high-resolution prints • Supports multiple filament types enabling printing in a variety of materials • Reliable for printing simple and complex parts • Software auto-generates supports; minimal support removal and sanding required
Fused Deposition Modeling: FDM Printers (professional grade)					
	**Ultimaker** **Method XL**	**Plastic (not all in stock):** ABS-R, ABS Carbon Fiber, N12-Carbon Fiber, ASA	**Build Volume:** 12 x 12 x 12.6 inches (30.5 x 30.5 x 32 cm) **Layer Thickness:** From 0.1 mm	STL	• Largest usable build volume • High-quality strength and resolution for realistic prototypes or finished parts • Support material washes away enabling a smooth, clean finish without sanding or filing
	**Stratasys** **uPrint SE**	**Plastic:** Acrylonitrile-Butadiene-Styrene+ (ABS+) **Color:** Ivory	**Build Volume:** 8 x 6 x 6 inches (203 x 152 x 152 mm) **Layer Thickness:** 0.254 mm (0.010 in)	STL	• High-quality strength and resolution for realistic prototypes or finished parts • Support material washes away enabling a smooth, clean finish without sanding or filing
Stereolithography: SLA Printer					
	**FormLabs** **Form 3+** *Laser-based:* *405nm violet*	**Liquid Resin:** Methacrylate Photopolymer Resin **Resin Types:** Rigid, Castable, Tough, Flexible, High-temperature, etc.	**Build Volume:** 5.7 × 5.7 × 7.6 inches (14.5 × 14.5 × 19.3 cm) **Layer Thickness:** 25, 50, 100 microns (0.001, 0.002, 0.004 in) **XY Resolution:** 25 microns (0.001 in)	STL, OBJ	• Smooth, clean finish on any part; solid parts and small intricate details • Variety of materials enable builds of rigid, flexible, and castable parts • Software auto-generates required supports; minimal post-processing, support removal and sanding required • UV lightbox enhances curing

PolyJet Printer					
	**Stratasys** **Objet30 Prime**	**Multiple Materials:** Rigid (Vero), Rubber-like (Tango), High-temperature, Simulated Polypropylene • All materials not available at all times	**Build Volume:** 11.57 x 7.55 x 5.85 inches (294 x 192 x 148.6 mm) **Layer Thickness:** 28 microns (0.0011 in) for Tango materials; 16 microns (0.0006 in) for all other materials **Accuracy:** 0.1mm (0.0039 in) **Resolution:** x, y: 600 dpi; z: 1600 dpi **Three build modes:** • Draft (36 micron) • High Speed (28 micron) • High Quality (16 micron)	STL	• Prints precise consumer-product prototypes with smooth surfaces and flexible components • Rubber material enables prototyping of gaskets, plugs and seals • Offers rigid materials in multiple opaque shades as well as clear, for detail visualization and prototypes that include see-through components • Rubberlike materials for soft-touch features and flexible components • Capable of printing specialized materials such as High Temperature, Simulated Polypropylene and even Bio-compatible for medical device prototyping and production parts such as surgical guides
Composite Printers					
	**Markforged Mark Two Professional** *Fused Filament Fabrication (FFF);* *Composite Filament Fabrication (CFF)*	**Base Material:** Nylon (extruded) **Composite Infill:** Carbon Fiber, Fiberglass, Kevlar®	**Build Volume:** 12.6 x 5.2 x 6.06 inches (320 x 132 x 154 mm) **Layer Thickness:** FFF Printing: 100 Microns (0.1mm)	STL	• Capable of producing tough, abrasion-resistant, composite-reinforced parts • Carbon fiber material is 20x stiffer than ABS, making it useful for fixtures, jigs, and parts that need the highest strength-to-weight ratio • Kevlar® filament is perfect for parts that need to be stiff and tough • Fiberglass filament provides impressive strength, but at a lower cost than carbon
	**Markforged Mark X** *Fused Filament Fabrication (FFF);* *Composite Filament Fabrication (CFF)*	**Base Material:** Onyx (extruded) **Composite Infill:** Carbon Fiber, Fiberglass, Kevlar®	**Build Volume:** 12.9 x 9.8 x 7.8 inches (330 x 250 x 200 mm) **Layer Thickness:** FFF Printing: 50 Microns (0.05mm)	STL	• Prints larger parts with the high-strength materials • Onyx material combines nylon with micro-carbon reinforcement; 1.4 times stronger & stiffer than ABS • Add carbon, Kevlar® and fiberglass filaments for additional strength • High quality finish; high heat tolerance • Laser displacement sensor enables in-process part inspection
Colorjet Printer					
	**3D Systems** **ProJet CJP 260Plus**	**Material:** VisiJet PXL Core VisiJet PXL Clear Binder **Colors:** Full color (CMY)	**Build Volume:** 9.3 x 7.3 x 5 inches (236 x 185 x 127 mm) **Layer Thickness:** 0.004 in (0.1 mm) **Resolution:** 300 x 450 dpi	STL, 3DS, VRML + more	• Builds realistic, high definition, full-color concept models, assemblies and prototypes in full CMY color • Well-suited for concept modeling of communication, sales and marketing models; rapid design iteration; display/art models • Easy post-processing with no supports to remove • Choose from a range of part finishing options to meet your application requirements