Knight Campus Rapid Fabrication Facility

Available Tools - Updated March 2021
Metal Printer --- DMG SLM 30

Direct Laser Sintering, 99.95% fill

Rapid material changeover

- 300mm x 300mm x 300mm part size
- 0.02mm layer thickness
- 0.05mm spot size
- 1000W Fiber Laser
- Copper, Titanium, Stainless, and others
Composites Printer --- Markforged X7

Carbon fiber, Fiberglass, and Kevlar

Better strength-to-weight than aluminum

- Most rigid polymer print
- 13” x 10” x 8” part size
- 50 μm Z-axis resolution
Polymer Printer --- Formlabs Form 3

Biocompatible, flexible, clear, rigid, wax, and other materials available

Finished parts and mold negatives

- Large, accurate polymer prints
- 145mm x 145mm x 185mm part size
- 25 μm resolution
Exaddon printer

Micron Scale Metal 3D printer

Gold, Copper, and others

- 100mm x 70mm x 60mm chamber volume
- 500 nm feature size
Exaddon printer
NanoScribe GT2 polymer printer

Sub-micron Scale Polymer 3D printer

200 nm feature size

- On-chip and on-fiber printing
- Microfluidics valves
- 100mm x 70mm x 60mm chamber volume
- XY ±250 nm & Z ±5 nm positioning precision
Dragonfly PCB Printer

Flexible or rigid print options

Three dimensional circuit layout via 120 layers

- Multi-layer 100 micron Space/Trace
- 200mm x 200mm x 3mm Boards
- *In situ* component placement
Kern Micro Vario 5 axis Precision Mill

1 micron accuracy throughout work space

105 tool automated changer

30 part workpiece automated changer

- 350mm diameter x 200mm height
- 42,000 RPM Spindle
- Part shown in corner is milled, not polished
CNC Bed Mill --- Datron M8 Cube

- Vacuum surface part holding
- Automated tool changer
- Automated tool length setting

- 30” x 42” x 8” part size
- 60,000 RPM Spindle
- Integrated Camera System
CNC Mill --- Datron Neo

Vacuum surface part holding

Automated tool changer and setter

- Aluminum, brass, plastics
- 20” x 16” x 8” part size
- 40,000 RPM
- 4th (rotary) Axis
Coherent Exact Cut 430 Laser

Precision shapes from ceramics and metal

10 μm positional accuracy

- Ceramics, Metals, Glass
- 500mm x 500mm work area
- 4th (rotary) axis
Circuit Board Laser Mill - LPKF

Rapid prototyping of Printed Circuit Boards

10 μm positional accuracy

- Ceramics, Metals, Glass
- 300mm x 250mm work area
- 50 μm trace, 30 μm space
Micro Wire EDM

Sub-Micron resolution

Mirror surface finish

- Any conductive material
- 300mm x 200mm x 100mm part size
- 4th (rotary) Axis
- Highest precision EDM in the world, using 20 μm wire
Laser Welder

Precision micro-welding

Automated rotary and linear part motion

Joystick and foot pedal control

- 80J peak power
- Leica Optics
Waterjet Cutter - Flow Mach 200

60,000 PSI pump

Multi-Axis head

Cuts through most materials up to 12” thick

- Metal, Ceramic, Glass, Foam, Stone, Plastic
- 78” x 120” x 12” part size
CNC Toolroom Lathe --- Haas TL1

Precision part turning

16” Part Diameter

30” Part Length

- 1600 RPM
- Automated 8 position tool turret
Questions?

Contact Brian Gillis
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