

Services & Capabilities



Full-spectrum management for technical engineering projects including research and development, design, testing, and manufacturing. Experts in metamaterial composites.

Research & Development

- Requirements discovery
- Solution ideation
- User/market feedback
- Application integration requirements
- Reverse engineering

Testing & Characterization

- Computational data analysis
- Destructive and non-destructive testing
- Quality control and conformance

Design

- Computational material discovery
- CAD and technical drawing
- Finite Element Analysis (FEA)
- Multiphysics modeling

Manufacturing

- Pre-prototypes
- Representative samples
- Prototypes
- Digital inventory and reproduction
- At-scale production/supply chain support

Technical Reporting & Writing

- Feasibility reports
- Performance specifications
- Commercialization strategy
- Build documents and manuals

Facilities & Equipment

Production and Rapid Prototyping

Multiscale Systems Compression Forming System™

Production system with full dynamic range of time, temperature, and pressure settings for rapid prototyping of any thermoplastic resin and/or composite including large draw depth parts.

3DGence Industry F350 Printer

High-temperature dual extruder 3D printer dedicated to PEEK additive manufacturing.

MakerGear M3-ID 3D Printers

Six dual-extruder 3D printers operating as in-house print farm. Available materials include fiber-reinforced polymers, neat polymers, and metal-infused resins.

StepCraft Q.204 CNC Machine

Computer-controlled milling machine with automatic tool-changing system for up to six mill bits per job.

Glowforge Plus Laser Cutter

Rapid cutting or etching of customized jigs, gantries, and related components.

Mayku FormBox Thermoformer and Multiplier

Vacuum-thermoformer machines for rapid prototyping with scalable manufacturing methods.

3D Scanner

High-precision scanner with accuracy up to 0.1 mm for prototype creation, digital inventory management, and digital twinning capabilities.

Resin Casting

Once a master is perfected, we form a silicone mold for resin casting to reproduce the part.

Testing and Characterization

Instron 5985 Universal Tester

Dual-column floor model universal tester for characterizing material properties under compression, extension, oscillatory loading, 3-point bending, or peel testing over a range of loads spanning 5 N to 250 kN.

Multiscale Systems MS-Polariscope™

Contact-free optical metrology system for non-destructive measurement of material thickness variations down to 25 microns (0.001 in.) for quality evaluation and production process optimization.

ThorLabs Optical Microscope

Custom assembly bright field optical microscopy setup with 12-48x magnification at 60 fps for full-color characterization and quantification of materials down to the 1 μ m scale.

SainSmart Mini Infrared Thermal Camera

Contact-free thermal measurements from -14 °F to 752 °F.

Multiscale Systems SA300™ Impact Testing Tower

Durability and damage testing at velocities reaching 8.5 m/s with a MadgeTech Shock300 data logger for measuring up to 300 g of force.

Design, Computation, and Analysis

Titan Computers HPC

High-performance computing system for metamaterial design and FEA analysis; Ansys software suite; on- and off-site redundant data storage and backup.