



CENTER FOR COMPOSITE MATERIALS  
AT THE UNIVERSITY OF DELAWARE

# MECHANICAL TESTING SERVICES

2026

The Center for Composite Materials provides composite mechanical testing services to customers across the aerospace, automotive, infrastructure, manufacturing, medical, and materials industries with our world-leading facilities and experts. Testing services range from composite building blocks (fibers, resins, sizings, adhesives, and core materials) to thermoset and thermoplastic composites laminates, sub-components and full-scale components based on ASTM, SACMA or other composite industry standards. We also provide expertise and develop test methods for non-standard materials, geometries and configurations, as well as thermo-mechanical and cyclic loading tests. In parallel, we provide quality assessment services including non-destructive evaluation of samples, fiber volume fraction, void content, and optical microscopy and X-ray computer tomography (CT).

## Mechanical Testing Capabilities

- High performance fiber tension and compression (filament level), sizing assessment (micro-droplet, fiber fragmentation) and polymer thermo-mechanical characterization.
- Tension and all varieties of compression tests, poisson's ratio, bearing, damage tolerance, compression after impact, v-notch shear/rail shear, lap shear, short beam shear, floating roller peel, climbing drum peel, etc.
- Elevated/Low Temperature Chamber for thermo-mechanical properties.
- Environmental Simulation/Conditioning for moisture and UV exposure.
- Large-scale drop tower for full-scale impact and damage tolerance tests.
- Test matrices to populate Finite Element Material Models for composites.
- Non-standard testing services – developing test methods for sub- component, component and full assembly structures, sensors and data acquisition systems, data reduction methods, and test reports.



# Discovery Development Deployment

**Technical Contact:**  
Nick Shevchenko, Ph.D.  
shevchen@udel.edu

101 Academy Street  
Newark, DE 19716

# MECHANICAL TESTING SERVICES

## Equipment

### Impact Towers

#### Dynatup 8250 Instrumented Impact Tester

Impact Energy: up to 300 Joules (gravity driven)  
Impact Velocity: 1 to 5.5 m/sec (gravity driven)  
Impact mass: up to 20 kg

#### Dynatup 8000 Instrumented Impact Tester

Impact Energy: up to 1000 Joules (gravity driven)  
Impact Velocity: 1 to 4.9 m/sec (gravity driven)  
Impact mass: up to 85 kg

#### Instron 9450 Instrumented Impact Tester

Impact Energy: up to 1800 Joules (gravity/spring driven)  
Impact Velocity: 1 to 24 m/sec (gravity/spring driven)  
Impact mass: up to 70 kg  
Environmental chamber for testing at specific temperatures

#### Full-Scale High-Energy Drop Tower

Impact Energy: up to 40000 Joules (gravity driven)  
Impact Velocity: 1 to 9 m/sec (gravity driven)  
Impact mass: up to 1250 kg

### Dynamic Loading Test Frames

#### Instron 1331

Servo-Hydraulic Actuation  
Load Range: up to 100 kN

#### Instron 1332

Servo-Hydraulic Actuation  
Load Range: up to 250 kN

### Strength Testing Load Frames

#### Instron 4484

Motor Actuated Column Screws  
Load Range: up to 150 kN

#### Instron 5565

Motor Actuated Column Screws  
Load Range: up to 5 kN

#### Instron 5567

Motor Actuated Column  
Load Range: up to 30 kN

#### Instron 5848

Motor Actuated  
Capable of testing single fiber strength  
Compatible load cells: 1N, 5N, 100N, 500N, 2kN

#### Instron 5944

Motor Actuated Column Screw  
Compatible load cells: 5N, 100N, 500N, 2kN

#### Instron 5982

Motor Actuated Column Screws  
Load Range: up to 100 kN

#### Instron 5985

Motor Actuated Column Screws  
Load Range: up to 250 kN

#### Instron 8562

Motor Actuated Concentric Screw Static Loading Test Frame  
Load Range: up to 100 kN

#### Instron 68TM10

Motor Actuated Column Screws  
Load Range: up to 50 kN

### Structure Testing System

#### MTS Servo-Hydraulic Test System

SilentFlo 505.30 Hydraulic Power Unit  
4 Station Service Manifold  
FlexTest 60 Controller  
- 4 independent channels  
- 4 stations

Many actuators available in the range of 20 to 150 kips  
8 ft x 20 ft Reaction Floor  
Fixtures to apply loads to vehicle size structures along any vector

### Low and high Temperature Capabilities

#### Tenny BTRC Temperature and Humidity Test Chamber

Temperature Range -85 to 338 °F  
Humidity Range 20 to 95%  
Closed Cycle Cooling

#### Instron 3119 Series Environmental Chambers

##### Model 616

Temperature Range -80 to 350 °C

##### Model 609

Temperature Range -100 to 350 °C

##### Model 608

Temperature Range -150 to 600 °C

##### Model 615

Temperature Range -100 to 350 °C



#### Technical Contact:

Nick Shevchenko, Ph.D.  
shevchen@udel.edu

101 Academy Street  
Newark, DE 19716