



# MECHANICAL TEST LAB

*The Mechanical Test Laboratory provides the highest standards in static and fatigue testing for composites and metals to generate material strength allowables and evaluate material properties.*

## **CAPABILITIES**

- Static and cyclic testing (ASTM and non-standard)
- Impact drop testing
- Slow-cycle fatigue testing
- High temperature testing to 2500°F
- ASTM/ Boeing/ SACMA standard testing
- Ability to design and fabricate non-standard test fixtures and perform non-standard tests
- Aging studies
- Damage tolerance of sandwich panels
- Specimen conditioning
- Environmental testing (-200°F to +1,000°F)
- Full-scale structural testing
- Specimen machining (ASTM and non-standard)
- Strain gauging and specimen QC

## **FACILITIES & EQUIPMENT**

- 40+ load frames
  - 50 lb to 500-kip load frames with environmental testing chambers
- High rate test frame
- Slow-cycle fatigue machines
- Impact drop tower
- Laser extensometer
- Multiple MTS displacement instruments (uni-axial and biaxial)
- MTS high-temperature chamber (up to 2552°F) and high-temperature uniaxial extensometer
- Strain Smart (multichannel strain indicating software)
- Strain calibrators
- ARAMIS (offers non-contact 3D optical deformation and strain analysis)
- Max 60,000 in-lb multiple torsion test frame
- Wide variety of ASTM test fixtures
- High-rate load frame (600 in/sec)

## **PROJECTS**

- Off-axis core shear properties of honeycomb core
- Compression after impact testing to determine environmental knockdown effects (NIAR-Industry-State)
- Fatigue and static testing of titanium and stainless steel materials
- ARAMIS photogrammetry on friction stir welded panels
- ARAMIS photogrammetry on patella inserts for alternate ACL human knee repair

## **CLIENTS**

- Beechcraft
- Sikorsky Aircraft
- NAVAIR
- Learjet
- Cessna
- Spirit AeroSystems

## **CONTACT**

**Royal Lovingfoss, Associate Director**  
rlovingfoss@niar.wichita.edu  
(316) 978-5317  
www.niar.wichita.edu