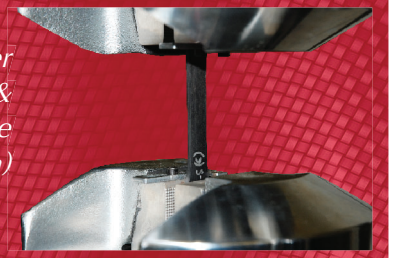
Fatigue Testing

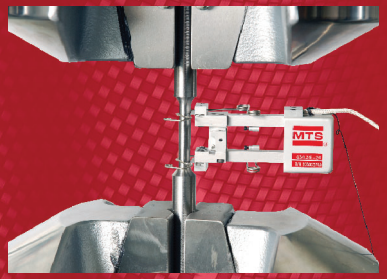
Fatigue testing offers you much better predictability for how your materials and products will perform over a lifetime. Fatigue is the cause of failure more often than any other failure mechanism. IMR Test Labs has the ability to provide you clear, accurate and reliable data when you need it.

Let our accessible and knowledgeable staff help you develop a fatigue test program to meet the needs of your client and your product.

If further analysis is necessary, our metallurgical lab, chemical analysis department and failure analysis experts can offer the insights and explanations you need.



PEEK polymer fatigue (right) & titanium fatigue (bottom)



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Fatigue Testing and Fracture Mechanics

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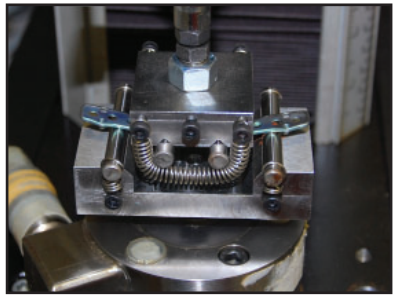
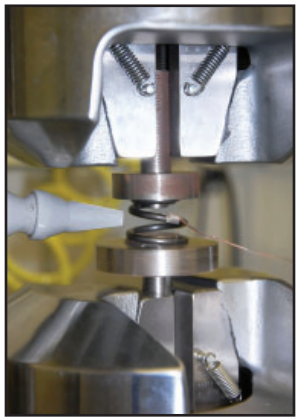


3 Point Bend Fatigue of an Orthopedic Support Sample

Some of the ASTM Methods Offered

E466 - Axial Load Controlled Fatigue Testing
E606 - Strain Controlled Fatigue Testing
F399 - Fracture Toughness
F1160 - Coating Shear
F1440 - Cyclic Fatigue of Hip Joints without Torsion
F1612 - Cyclic Fatigue of Hip Joints with Torsion
F1800 - Cyclic Fatigue of Knee Joints



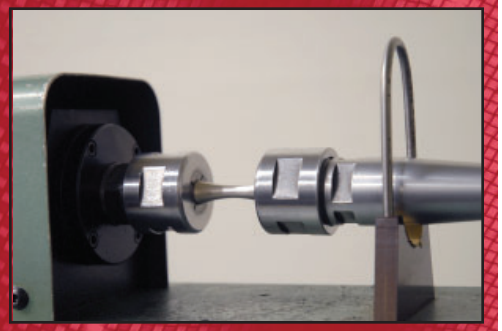
Spring Fatigue & Fatigue of Pre-Dented Panels

Coating Shear Fatigue

Services Available

- Axial Fatigue (Room Temp. to 1800°F)
  - Displacement Controlled
  - Strain Controlled
  - Load Controlled
- High Cycle
- Low Cycle
- Fracture Mechanics Testing
- Fracture Toughness Testing (K_{1c})
- Rotating Beam (up to 1000°F)
- Coating Shear Fatigue
- Specimen Conditioning
- In-House Machine Shop & Specimen Preparation
- Polymer Fatigue (Not climate controlled)
- Composite Fatigue
- Thermal Spray Coating Fatigue

Rotating Beam Fatigue



Fracture Mechanics & Fracture Toughness Testing (K_{1c})

Fracture mechanics testing is used to predict crack formation, propagation and ultimately, it provides quantitative results regarding the structural integrity of the components.

Criteria such as material behavior, stresses and loading conditions, flaws and operational requirements are all considered in relation to each other to determine performance of components in service and to prevent devastating failures and accidents.

IMR's Fracture Mechanics experts utilize state-of-the-art equipment, along with years of experience and many successful investigations to help analyze crack initiation, crack growth and crack instability. We can do this as part of a failure analysis, or as fracture mechanics testing to support our clients design and development efforts.

Low Temperature Fracture Mechanics Testing