

Diffraction User Center Instruments

- High-Temperature X-ray Diffractometer
- High-Temperature Neutron Powder Diffractometer
- Synchrotron Powder Diffractometer (Room Temp & High Temp)
- Room-Temperature X-ray Diffractometers
- Software and Data Processing
- Philips X'Pert Pro MPD X-Ray Diffractometer with Anton PAAR XRK-900 High Temperature Stage
- Low Temperature X-ray Diffractometer

Thermophysical Properties User Center Instruments

Thermal Analysis Instruments:

- Simultaneous Thermal Analysis/Mass Spectrometer (DTA/TG/MS to 1500°C)
- Concurrent Thermal Analysis (TG/DTA to 1700°C)
- Differential Scanning Calorimeter (DSC to 1500°C)
- Dual Push Rod Dilatometer (CTE to 1600°C)
- Vertical Dilatometer (CTE to 2400°C and bi-layer CTE to 1600°C)
- Auto Pycnometer (density at RT)

Thermal Transport Instruments:

- High-Temperature Laser Flash Thermal Diffusivity System (LFTD to 2500°C)
- Room-Temperature Xenon Flash Thermal Diffusivity Unit
- Infrared Camera
- 3-Omega Thermal Conductivity System
- Hot Disk Thermal Constants Analyzer

Residual Stress User Center Instruments

X-Ray Diffraction Facilities Overview

- 4-Axis Goniometer/18-kW Rotating Anode X-ray Source
- 4-Axis Goniometer/2-kW X-ray Tube
- X14A Synchrotron 6-Axis Goniometer

Large Specimen X-ray Residual Stress Mapping Facility

Philips X'Pert Pro MPD X-Ray Diffractometer with Anton PAAR XRK-900 High Temperature Stage

Neutron Diffraction Facilities Overview

Second Generation Neutron Diffraction Residual Stress Mapping Facility (NRSF2)

Mechanical Characterization & Analysis User Center Instruments

- High-Temperature Tensile Test Facility
- Tensile Creep/Stress Rupture and Stress Relaxation Facility
- Ceramic Flexure Test Facility
- Electromechanical Test Facility
- Electromechanical Test Facilities with Environmental Testing
- Test Facility for Composites and their Constituents
- Mechanical Properties Microprobe
- Life-Prediction Analysis (FEA + ERICA / CERAMIC + CARES)
- Resonant Ultrasound Spectroscopy (RUS) Facility

Materials Analysis User Center Instruments

Transmission Electron Microscopy

Hitachi HF-2000

Aberration Corrected Electron Microscope ACEM, based on JEOL 2200FEF-AC

Dedicated Scanning Transmission Electron Microscope

Hitachi HD-2000 STEM

Scanning Electron Microscopes

Hitachi S-4700 & S-800

Scanning Auger Microprobe

PHI 680 Scanning Auger Microprobe

Electron Probe Analysis

JEOL 8200 Electron Superprobe

Focused Ion Beam Micromill

Hitachi FB-2000 FIB

Friction, Wear & Machinability User Center Instruments

Machining Instruments

K. O. Lee Instrumented Creep Feed Grinder

Weldon Cylindrical Grinder

Nicco Creep Feed Surface Grinder

Sabre CNC Vertical Grinding Center

Benchman® VMC4000 Vertical Machining Center

Compact Grindability Test System

proLIGHT™ 3000 Turning Center

Inspection Instruments

Electronic Measuring Devices (EMD) Legend Integrated Metrology Center

Taylor Hobson Form Talysurf 120 Stylus Profiler

Rodenstock Surface Topography Measurement System

Mahr MMQ40 Formtester

KSI SAM-2000 Scanning Acoustic Microscope

Nikon Model V-12 Profile Projector

Tribology Instruments

Pin-on-disk Friction and Wear Testing Stations

Reciprocating Friction and Wear Tester

Repetitive Impact Testing System

Cameron-Plint Model TE-77 Reciprocating Sliding Wear Tester

Microfriction Apparatus

CSEM Instrumented Scratch Tester

High-Temperature Pin-on-disk System

Cameron-Plint TE-53 Multi-mode Rolling/Sliding Friction and Wear Tester

Micro-Abrasive Wear Testing Machine

Sub-Scale Brake Material Testing System

Sather High-Temperature Oscillatory Scuffing Tester Capacity Screening Rig

Teledyne-Taber Portable Scratch Tester

Wilson Microindentation Hardness Tester

Talysurf Model 10 Stylus Surface Roughness Measuring System

Durometer for Measuring Elastomer Hardness