



Rtec
instruments

INSTRUMENTS & APPLICATIONS

General overview of instrumentation, capabilities and applications





> Rtec-Instruments Company Profile

- Scientific instruments manufacturer for surface characterization

Rtec-Instruments develops and manufactures advanced mechanical and surface testing equipment for measurement solutions in research and industrial applications.

- Main Offices

Rtec-Instruments USA – USA (San Jose, California, Headquarters)

Rtec-Instruments SA – Switzerland (Yverdon-les-Bains) (sales, support, design, application)

Rtec-Instruments CN - China – Nanjing (sales, support)

Rtec-Instruments JP – Japan (sales, support)

- Worldwide Distributor Network

- All Parts Designed and Manufactured in San Jose (USA)

Silicon Valley based instrument manufacturer



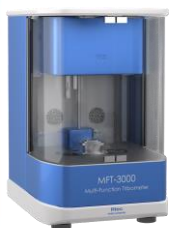
> Instruments Portfolio



Multi Functional Tribometer
MFT Series

**Base frame for
multi-axis mechanical testing**

- Tribology
- Force and torque measurements
- High temperature indentation
- Chemical mechanical polishing
- Scratch, tapping, cutting, drilling
- Inline 3D optical profilers



Surface Materials Tester
SMT-5000

**Table-top frame for
scratch and indentation testing**

- Scratch resistance
- Hardness and Elastic Modulus
- Friction and wear
- Inline 3D optical profilers



Fretting Testers
FFT series

High performance fretting

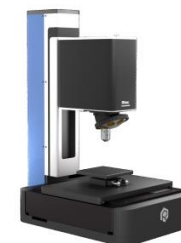
- Fretting
- High frequency fretting
- Friction and wear



Universal Profilometers
UP series

**3D Optical profilers
3D Microscope (WLI)**

- White Light Interferometer (WLI)
- Confocal microscope
- Bright field imaging
- Dark field imaging



Air Jet Erosion Tester
AJ-1000

Material Erosion Tester

- Coating / Material erosion
- High temperature test
- Abrasive media
- Controlled velocity / angle



> Instruments Portfolio



Material Vacuum Tester
MVT-2

- Tribology
- Micro Indentation
- Micro/Macro Scratch
- Cryogenic cooling to high temperature



High Pressure Tribometer

- High Pressure Tribometer with temperature control. Test lubricants and materials with various gases under high pressure



Twin Roller Testers
TwinRoller-3000

- Designed to study traction, wear, and rolling contact fatigue (RCF) under wide range of test conditions



CMP Tester
CP-5000

Chemical Mechanical Polisher

- Real Time Coefficient of Friction
- Integrated 3D profilometer
- Several wafer sizes can be mounted
- In-line Temperature and Acoustic Emission to study process

> Multi Functional Tribometer MFT-5000



Base frame for multi-axis mechanical testing

- Modular: interchangeable modules (upper and lower drives)
- Widest ranges of
force applied (< 1 mN to 12'000 N)
speed applied (0.001 to 10'000 rpm)
- Environmental control
-120°C to 1'200 °C, 5% - 95% RH
tribocorrosion
- Synchronised WLI and confocal microscopes for wear track
- Multiple configurations: pin-on-disk, block-on-ring, 4-ball, ...



> Selected Customers



> Wide Range Of Customer Applications



Industries

- Automotive – brake pads, engine parts, ...
- Chemicals – polymers, paints, cosmetics, consumer products, ...
- Petroleum – lubricants
- Cutting tools – inserts, drill bits
- Biomedical – hip joints, ...
- Glass and optical lenses
- Aerospace
- Semiconductor
- Smartphone
- Watch

Materials

- Functional coatings – hard, soft, protective and decorative
- PVD-CVD coatings
- Thin films – MEMS, solar cells, wafers, ...
- Bulk materials – ceramics, metals, polymers, composites, ...
- Liquid lubricants
- Solid lubricants

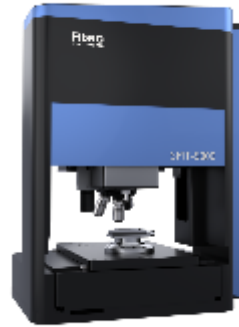
> Instruments Key Features



**Multi Functional Tribometer
MFT-5000**

**Base frame for
multi-axis mechanical testing**

- Modular
- Widest ranges of
 - force applied (<1 mN to 12'000 N)
 - speed applied (0.001 to 10'000 rpm)
- Environmental control
 - 120°C to 1'200 °C, 5% - 95%, RH, tribocorrosion
- Synchronised WLI and Confocal microscopes for wear track
- Pin-on-disk, block-on-ring, 4-ball, ...



**Surface Materials Tester
SMT-5000**

**Table-top frame for
indentation & scratch testing**

- Nano : max 1 N
- Micro : max 50 N
- Macro : max 200 N
- Fully automated measurements
- Flat or curved surfaces: pre-scan and post-scan of surface profiles
- Real 3D images of scratch track synchronised with WLI and confocal microscopes
- Tests with temperature, humidity and corrosive environment possible



**Fretting Testers
FFT series**

High performance fretting

- Stroke: 5 µm to 5 mm
- Frequency: max 500 Hz
- Force applied: max 5'000 N
- Frictionless electromagnet/voice coil actuators
- Piezo sensor for high precision friction measurement
- Highest position control: µm accuracy
- Environmental chambers
- Temperature: -40°C to 800°C



**Universal Profilometers
UP series**

3D Optical profilers

- All in one head: WLI + Confocal
- Sub-nm resolution
- Automatic stitching of images
- Analysis of any surface: transparent, dark, rough, smooth, flat and non-flat



**Air Jet Erosion Tester
AJ-1000**

Material Erosion Tester

- Close loop temperature control up to 900 °C
- Measurement of particle velocity
- Variable particle feed
- Conforms to ASTM G76, G211-14



Leading Innovation in Tribology and
Surface Testing Instrumentation