



CSM Products Catalogue

Advanced Mechanical Surface Testing

- //// Adhesion and Scratch resistance
- //// Hardness and Elastic modulus
- //// Tribology and Wear
- //// Coating Thickness
- //// 3D Imaging and Surface Topography

CSM Instruments Inc
//// Advanced Mechanical Surface Testing

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+
Instruments

SCRATCH TESTERS

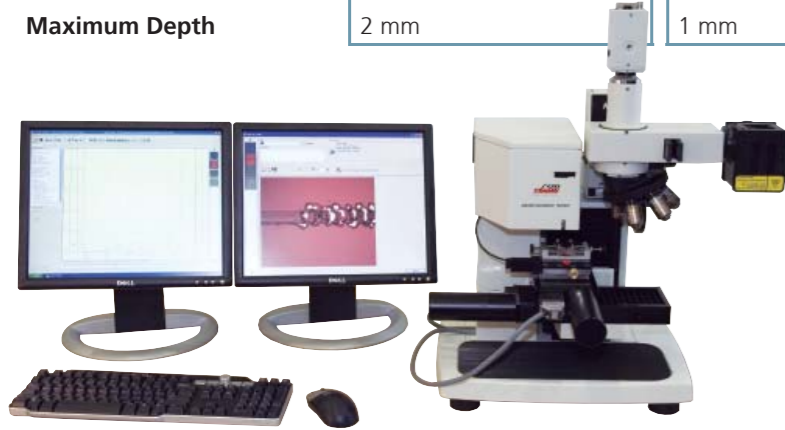
World Leader in Scratch Testing

Load Range
Load Speed
Length of Scratch
Maximum Friction Force
Maximum Depth

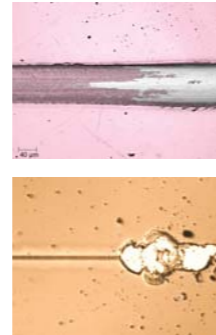
NANO Scratch Tester
 10 μ N to 1 N
 0.4 to 600 mm/min
 10 μ m - 20 mm
 1 N
 2 mm

MICRO Scratch Tester
 30mN to 30N
 0.4 to 600 mm/min
 10 μ m - 20 mm
 30 N
 1 mm

REVETEST Scratch Tester
 0.9N to 200N
 0.4 to 600 mm/min
 10 μ m - 20 mm
 200 N
 1 mm



Micro Scratch Tester



Revetest

PIN-ON-DISC TRIBOMETERS

User-friendly Instruments for Tribological Studies

Rotation Speed
Load Range
Frictional Force
Temperature

NANO Tribometer
 1 to 100 rpm
 50 μ N - 1 N
 10 mN - 1 N
 Room temperature

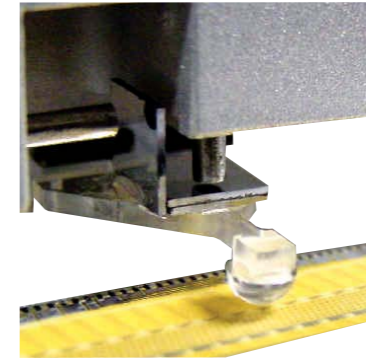
MICRO Tribometer
 0.3-500 rpm (1500 optional)
 up to 60 N
 up to 20 N
 Optional 120°C

HIGH TEMPERATURE Tribometer
 0.3-500 rpm (1500 optional)
 up to 60 N
 up to 20 N
 20 - 1000°C

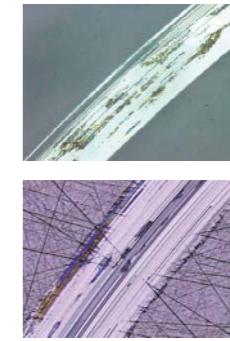
Options: linear reciprocating, electrical contact, wear depth, high vacuum down to 5×10^{-7} mbar, ...



Micro Tribometer



Nano Tribometer



Vacuum Tribometer

INDENTATION TESTERS

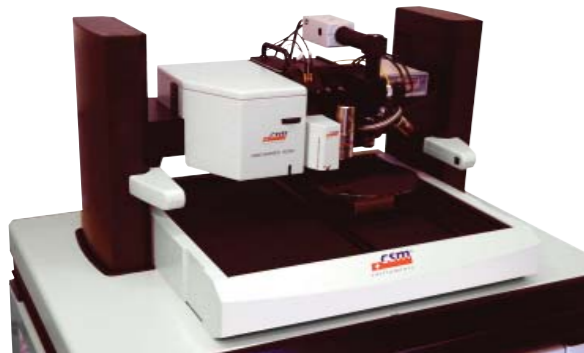
State-of-the-Art Instruments for Hardness and Elastic Modulus Measurement

Maximum Load
Load Resolution
Maximum Depth
Depth Resolution

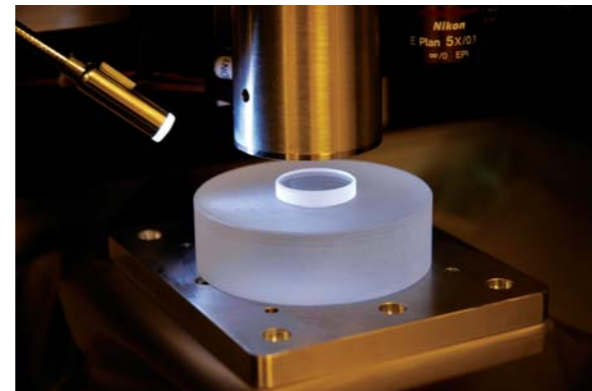
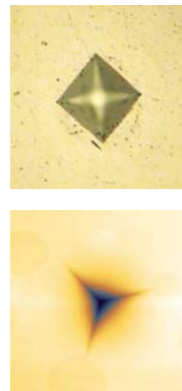
ULTRA NANO Hardness
 100 mN
 0.001 μ N
 100 μ m
 0.001 nm

NANO Hardness
 500 mN
 0.04 μ N
 200 μ m
 0.04 nm

MICRO Hardness
 30 N
 0.3 mN
 200 μ m
 0.3 nm



Nano Platform



Nanoindentation

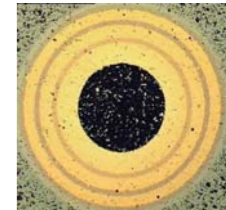
CALOTEST & CALOWEAR

The easiest Instruments for Thickness Measurement

Shaft speed
Standard ball diameters
Abrasion time range

CALOTEST
 10 to 2900 rpm
 10, 15, 20, 25, 30, 40 mm
 1 sec to 15 min

CALOWEAR
 60 to 1200 rpm
 20, 25, 30, 40 mm
 1 sec to 15 min



Calotest

3D IMAGING (AFM and Conscan Microscope)

For advanced Topographical Characterization after Mechanical Surface Testing

Scan Range

AFM
 20 x 20 x 2 μ m
 40 x 40 x 4 μ m
 80 x 80 x 6 μ m

CONSCAN
 20 μ m in Z
 80 μ m in Z
 300 μ m in Z

Options

Non Contact, Phase detection, Friction & Lateral force detection, STM, etc

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