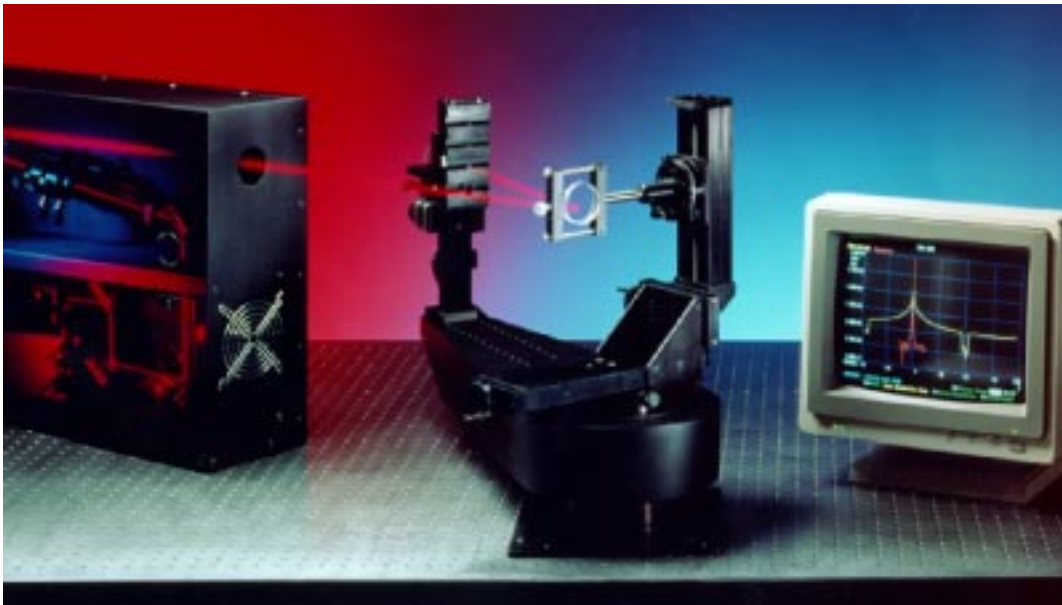




Complete Angle Scatter Instrument

SMS, the leader in light scatter measurement technology, presents the finest angle resolved BRDF instrument available.



System Description

The SMS CASI[®] Scatterometer uses laser light from UV to IR as a nondestructive probe to measure surface quality, optical performance, smoothness, appearance, defects, and contamination on a wide variety of materials.

The sample is mounted on stages capable of moving in X and Y and/or rotation. The incident angle can be set to any angle up to 85° from surface normal. The detector sweeps around the sample in the incident plane measuring scattered and specular light. During the scan, the computer controls gain, filter, and aperture changes through user-defined parameters. The instrument signature is measured separately and can be compared to the sample data.

The CASI Analysis Software simplifies analysis of scatter data. BRDF values are used to calculate TIS, Total Hemispherical Reflectance, PSD, and RMS roughness. Annotated results can be printed out for use as viewgraphs or publication-ready figures.

Applications

- Optical surfaces
- Diffuse materials
- Semiconductor wafers
- Signature verification
- Magnetic storage media
- Precision machined surfaces
- Advanced materials
- Polarization transformation studies
- Cosmetic appearance

CASI[®] Technical Information

Features

- Measures: Bi-directional Scatter Distribution Function, Transmittance (BTDF) and Reflectance (BRDF); Calculates Total Integrated Scatter (TIS), Total Hemispherical Reflectance (THR), Power Spectral Density (PSD), and RMS roughness.
 - Near specular BRDF to less than 0.1°
 - RMS roughness to less than 1 angstrom
 - Automated control of set-up, scanning, filter, and aperture changes
 - Area Raster scans for sample X & Y
 - Angular Resolved Scatter (ARS)
 - Real time data display
-

Specifications

Measurement: BRDF, BTDF, transmittance, reflectance; calculation of TIS, RDIF, PSD, and RMS

Wavelength: .325 μ m to 10.6 μ m wavelengths available

Total System Accuracy: 5%

Total System Linearity 2%

Repeatability: 2%

Noise Equivalent BRDF: Typical 5×10^{-8} (wavelength dependent)

Automated Axes:

Resolution .001°
.01 mm linear

Accuracy .05° angular
.01 mm linear

Incident Angle Range 0- 85°

Receiver Angle Range 360°

Sample X Motion ± 3 "

Sample Y Motion ± 3 "

Raster Area: 6" L x 6" W

Sample Weight: up to 5 lbs.

Source/Detector

Occulted Area: ± 4 ° from specular

Controller: IBM compatible Pentium computer

Software: Menu driven control and display functions

Options

Full polarization control for measurement of Stokes vectors and Mueller matrices

Other source wavelengths and receivers are available



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Specifications subject to change.
