



Saturn DigiSizer[®] II

High-Definition, Laser-CCD Digital Particle Size Analyzer

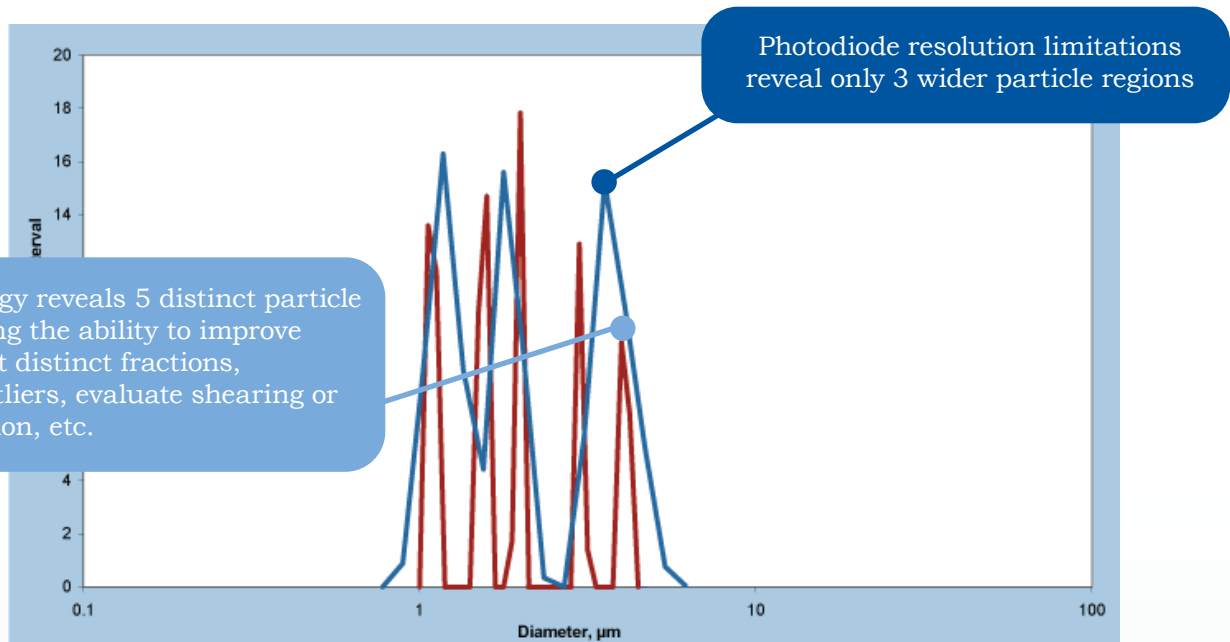


Saturn DigiSizer II

High Definition, Laser-CCD Digital Particle Size Analyzer

The Saturn DigiSizer II is designed with superior sensitivity to quantify outlier particles. It can accurately resolve small differences between particles in a sample distribution that are unseen by competitive instruments. Light scattering device accuracy/sensitivity is very dependent on the amount of available detectors that measure the angle of the scattering pattern produced by the laser system. Most instruments use photodiodes or arrays and have less than 150 detectors - the Saturn DigiSizer features more than three million detector elements.

The instrument for those who believe their product quality demands more than the currently accepted, industry error standards for particle sizing.



The enormous amount of data collected enables thousands of pixels to be grouped into angular positions and averaged as single, high-resolution data points. Each of these data points is comparable to a single photodiode detector used in all other conventional laser instruments, but are much smaller in size with significantly more sensitivity.

Pair the Saturn DigiSizer II with the Particle Insight for additional particle shape information

Particle Insight

Dynamic Image Analyzer

Range - 1.0 μ m to 800 μ m (3 models for range coverage)

The Particle Insight can be used to determine all aspects of particle shape, such as aspect, smoothness, polygon order, and size.

- Unique high-frame-rate camera with high-resolution optics - Data for all shape parameters shown in real-time display
- Three-dimensional analysis with random orientation for measuring all aspects of particle shape
- Select from 28 size/shape parameters best suited to your materials
- All particles are captured on thumbnail images for post-run viewing and archiving

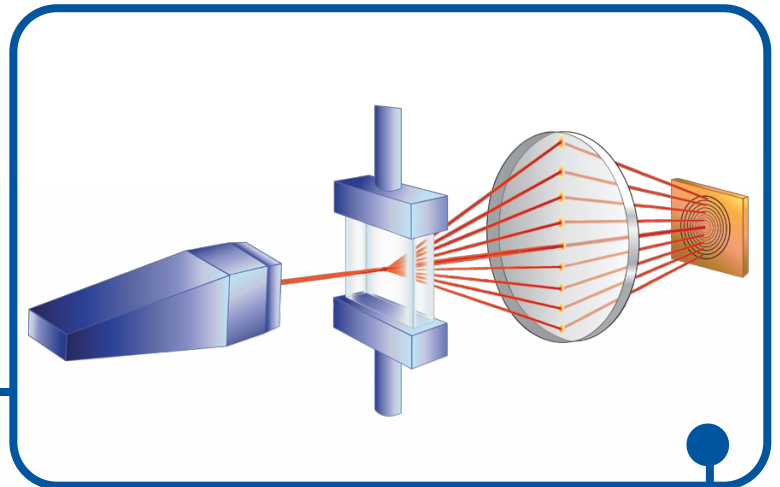


A MICROMERITICS BRAND

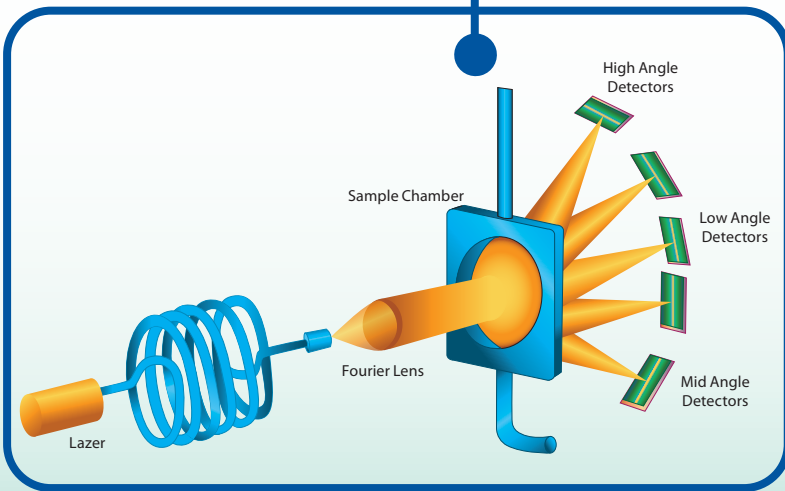
CCD- Patented Optical Design

Provides superior particle discrimination versus photodiode-based systems.

- The application of CCD technology provides the ability to deliver highly detailed, high resolution results across the entire measurement range without a need for two light sources and the data coordination between those sources required by photodiode array systems. This eliminates variability, interpolation, and the limiting of collected data points for accurate sizing.
- Unlike photodiode-based systems, the Saturn DigiSizer II is automatically aligned by remapping the CCD array so that the scattering angle assigned to each element is exact to less than a 0.005 degree relative to the central, unscattered light beam. No mechanical adjustment or alignment - manual or automatic is required.
- Millions of data points are created by a vast increase in detectors for the light scattering pattern. Log-based or spatial arrays used in photodiode systems limit the capture of all angular light scattering patterns and interpolate the data based on a magnitude of fewer data points.
- Permanent alignment and stored SOPs ensure tighter results control from analysis to analysis, unit to unit, location to location. SOPs developed on the Saturn DigiSizer II can be transferred to multiple facilities with confidence.
- Direct Application of Mie Theory - no need for correction algorithms or prior knowledge if the sample is a monomodal or multimodal distribution.



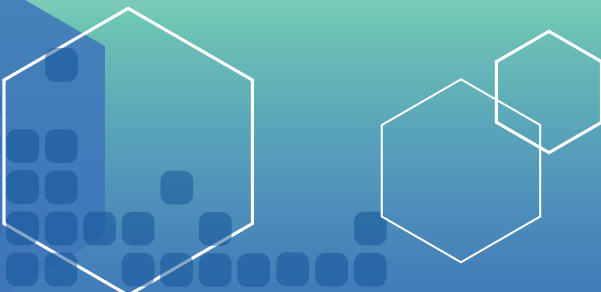
Advanced design features enable the Saturn DigiSizer II to measure a light scattering pattern over a broad range of scattering angles. Combined with the high angular resolution of the CCD, the detector system provides an effective resolution of several million pixels at different positions in the scattering pattern.



Typical geometry of photodiode-based detection.

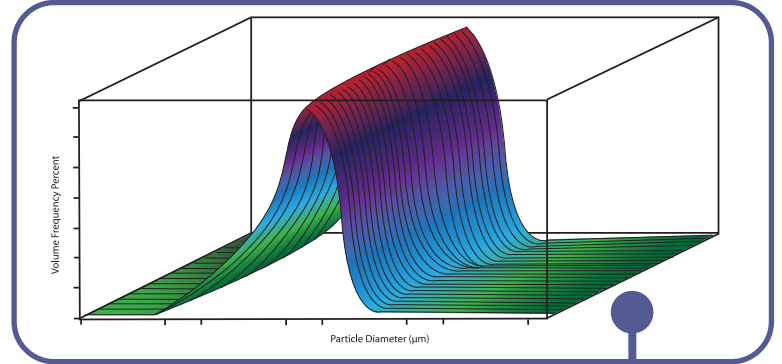
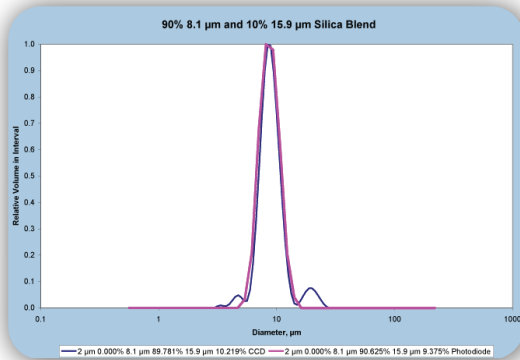
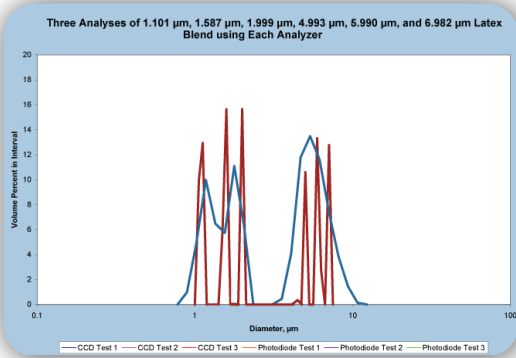
Permanently aligned CCD array with over 3 million detectors is far beyond the sensitivity of any other light scattering particle sizing instrument.

Immediate measurement - user does not need to have prior knowledge of the size distribution before analysis.



Saturn DigiSizer II

High-Definition, Laser-CCD Digital Particle Size Analyzer



This PSD History chart of 94 analyses of garnet illustrates the reproducibility of the Saturn DigiSizer II.

High resolution of data permits Mie Theory to be applied directly – there are no compensation algorithms or concerns for the user to adjust for monomodal or multimodal samples.

Patented reservoir rinse design sprays wall of chamber - not a simple fill-and-flush cycle as with other instruments.



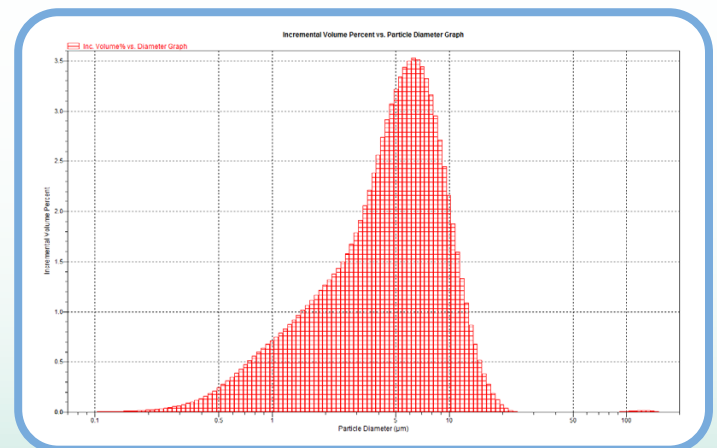
Liquid Sampling Advantages vs. Dry Powder Analysis

- **Toxicity-** Handling samples in a wet state makes control easier, reducing the risk of inadvertent inhalation
- **Friability-** Wet dispersion can provide more gentle dispersion for fragile particles. Particles can be fractured by the energy of a gas stream used with dry powders in an aerosol system
- **Dispersion and Flow-** Liquid suspension provides a higher degree of dispersion, with an improved ability of flow motion for greater discrimination
- **Aggregation-** Using dry techniques, cohesive and/or very fine particles (below 20 μm) can be difficult to disperse completely
- **Industry Recommendations-** ISO-13320 recommends checking wet sample dispersion to validate dry dispersion

Choice of liquid handling options accommodates sample needs – the standard unit includes a reservoir that is adjustable between 590 to 690 mL of dispersed sample. A low-volume option is adjustable between 100 to 120mL.

Superior data reduction and reporting available to meet 21 CFR Part 11 and ISO 13320 Standards – the Saturn DigiSizer II allows access to raw data. The scattering pattern can be presented in either a 2-D or 3-D display. For a quick assessment of the fit of theoretical models to experimental data, an overlay plot of measured data calculated from Mie theory can be obtained. Receive reports in graphical or tabular format.

Optional automated sample prep unit sonicates or stirs up to 18 samples unattended, prior to analysis. Increases repeatability and reproducibility as all samples are uniformly prepared.



Accessories

Low Volume Liquid Sample Handling Unit

Optional accessory includes a reservoir that is adjustable between 100 to 120mL of dispersed sample. It can circulate particles from 0.04 to 750 μm in diameter. Very useful when sample quantity is limited, supply of dispersion liquid is limited, or if dispersion liquid is hazardous and disposal difficult.

AquaPrep

Highly-effective optional system for freeing water of dissolved gases. The removal of dissolved gases that subsequently lead to bubble formation is extremely desirable for obtaining the most accurate particle size data possible.

MasterTech Autosampler

Optional unit designed to increase throughput, repeatability and reproducibility. Up to 18 samples can be queued to run sequentially and unattended. Process includes automatic stirring, sonication, and transfer to the analysis system.

HEADQUARTERS

Micromeritics Instrument Corporation
4356 Communications Drive
Norcross, GA 30093, U.S.A.
Telephone: (770)662-3636
Fax: (770)662-3696
Internet Address: <http://www.micromeritics.com>

SUBSIDIARIES

Micromeritics China
Suite 1505-1509
600 Minsheng Road
Shanghai, 200135, P.R. CHINA
Telephone: (+86)21-51085884
Fax: (+86)21-50129907

Micromeritics Japan, G. K.
5F Tokatsu Techno Plaza
501, 5-4-6 Kashiwanoha
Kashiwa, Chiba 277-0882, JAPAN
Telephone: (+81)(0)4-7128-5051
Fax: (+81)(0)4-7128-5054

Micromeritics European Technical Center
Micromeritics GmbH
Avantis Science Park
Rutherford 108
D-52072 Aachen, GERMANY
Telephone: (+49)(0)241-189-446-0
Fax: (+49)(0)241-189-446-11

Specs

Laser

Type: Solid-state, Diode
Wavelength: 658 nm
Power output: 6 to 9 mW
Beam type: Parallel
Beam width (in sample): 16 mm
Certified under IEC 825 as a Class 1 laser product

Lens Focal length, 200 mm (fixed)

Detector

Number of elements: 3,407,872
Alignment: Automatic, with no mechanical adjustment

Output

Measurement range: 0.04 to 2500 μm Equivalent Spherical Diameter (Standard sample handler); 0.04 to 750 μm (Low-volume sample handler)
Measurement time: Less than five minutes, sample to sample
Size class range: 40 per decade for four decades

Deconvolution Mie theory and Fraunhofer theory models applied

Electrical

Voltage: 100/115/220/240 VAC
Frequency: 47 to 63 Hz
Power: 150 VA
Physical: Height: 50 cm (19.7 in.)
Width: 47 cm (18.5 in.)
Depth: 65 cm (25.6 in.)
Weight: 45 kg (99 lbs)

Micromeritics France S.A.
Parc Alata
Rue Antoine Laurent Lavoisier
F-60550 Verneuil en Halatte, FRANCE
Telephone: (+33)0-3-44-64-60-80
Fax: (+33)0-3-44-64-60-89

Micromeritics Ltd.
Unit 2, Chestnut House
178-182 High Street North
Dunstable, Bedfordshire LU6 1AT, ENGLAND
Telephone: (+44)(0)1582-475248
Fax: (+44)(0)1582-475252

Micromeritics N.V./S.A.
Eugene Plaskylaan 140B
1030 Brussels, BELGIUM
Telephone: (+32)(0)2-743-39-74
Fax: (+44)(0)2-743-39-79

Micromeritics SRL
Via W. Tobagi n. 26/7
20068 Peschiera Borromeo
Milano, ITALY
Telephone: (+39)(0)2-553-02833
Fax: (+49)(0)2-553-02843