

BeVision S1

Big Vision for Small Particles

PARTICLE SIZE

PARTICLE SHAPE



BeVision S1

Big Vision for Small Particles

The BeVision S1 offers an easy solution to measure and analyze the size and shape of particles in a range of 1 - 3,000 μm . It is easy to use while staying reliable and accurate.

The BeVision software offers 24 different particle size and shape parameters and further organizes the data into an all-around validation of particles.

The BeVision S1 is not only a reliable independent particle size and shape analyzer, but it can also be a perfect match for laser diffraction particle analyzers, as an aid or a verification.

With high magnification up to **4,000** times*

*Includes digital magnification

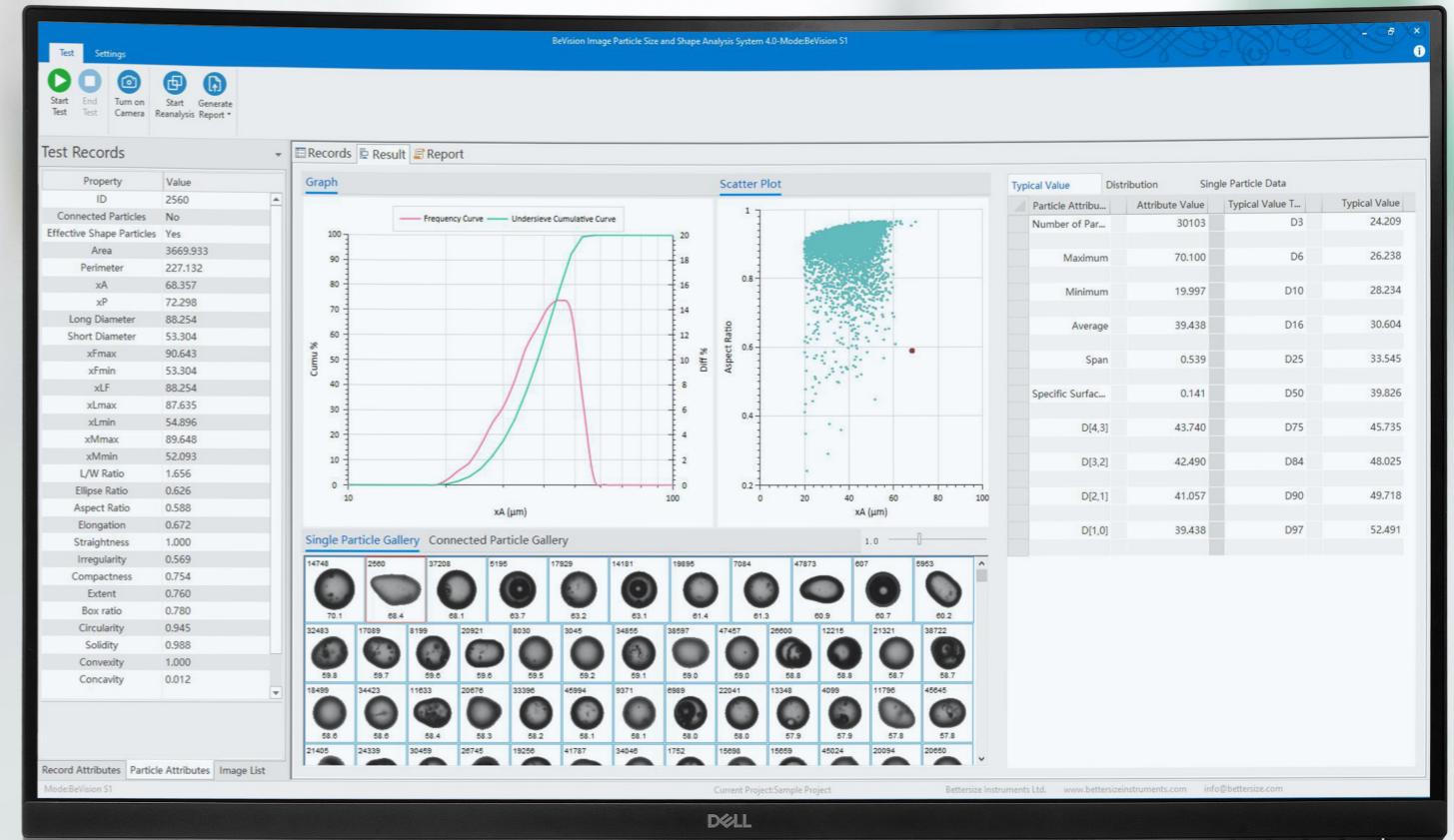
A **high - resolution** CMOS camera

Particles as fine as **1 micron** can be captured and analyzed



Features and Benefits

- Measurement range: **1 - 3,000 μm**
- Results in compliance with **ISO 9276 - 6**
- **24** different particle size and shape parameters
- A **budget - friendly** solution for your particle analysis
- **Optional** models for different applications
- **Powerful software** eases your work
- Both **dry and wet** measurements
- **Customizable** reports for different evaluation options



Why **Image Analysis** Method?

Easy

Capture an image of particles, identify particles, then measure their size and shape. Every step of image analysis is easy and clear.

Shape analysis

Based on a direct view of particles, it is possible to analyze not only the size of particles, but also their shape.

Seeing is believing

The image analysis method determines the size and shape of every individual particle and then sums it up to form a statistic. Details of particle size or shape distribution can be accurately provided.



Why **Static Image Analysis** Method?

Clear vision

In static image analyzers, precision microscopes and high-resolution cameras are specialized for high-quality particle images.

Undersized particle sensitivity

The static image analysis method is sensitive to undersized particles; it is even possible to estimate the size of undersized particles.

Small sample volume

The static image analysis method requires a small volume of samples. A few drops of emulsions or a few micrograms of powders are enough to do a measurement.

BeVision Series: Precision in Particle Vision



BeVision S1

Classical and versatile static image analyzer for wet and dry measurements.



BeVision M1

Automated static image analyzer for wet and dry measurements.



BeVision D2

Dynamic image analyzer for dry measurement.

	Static Image Analysis		Dynamic Image Analysis
	BeVision S1	BeVision M1	BeVision D2
Measurement range	1 - 3,000 μm	1 - 10,000 μm	30 - 10,000 μm
Particle shape analysis	●●●	●●●	●●●
High-resolution for narrow distributions	●●●	●●●	●●●
Accuracy for broad distributions	●	●●	●●●
Reproducibility	●	●●	●●●
Small sample volume for a single analysis	●●●	●●	●
Undersized particles detection	●●●	●●	●
Oversized particles detection	●	●	●●●
Simple operation and measurement efficiency	●●	●●●	●●●
Individual particle analysis	●●●	●●●	●●

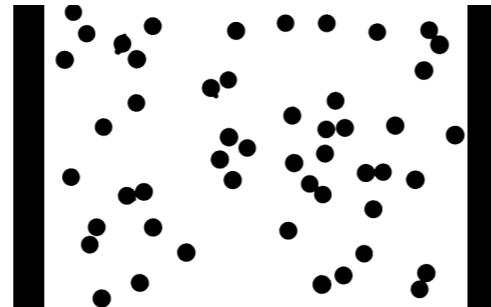
BeVision S1 Optional Models

Transmitted light illumination (Standard model)



Equipped with a transmitted light source, the BeVision S1 can observe and analyze particles effectively for most applications. The standard model BeVision S1 is widely used in different industries, e.g., chemicals, minerals, ceramics, and polishing agents.

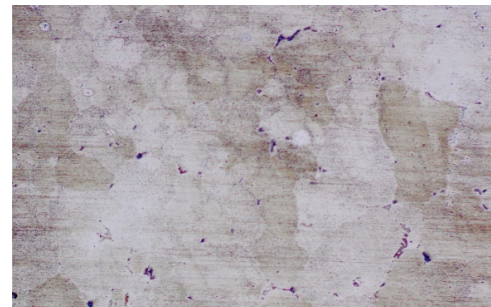
56.3	56.3	56.3	56.3	56.2	56.2
2777	24566	16702	23960	18014	1996
56.2	56.1	56.1	56.1	56.1	56.1
44025	42354	39993	17323	37584	22273
55.9	55.8	55.8	55.8	55.8	55.8
738	1011	4735	33186	48275	43777
55.6	55.6	55.6	55.6	55.6	55.6
33523	16318	32220	33970	28515	45066



Reflected light illumination



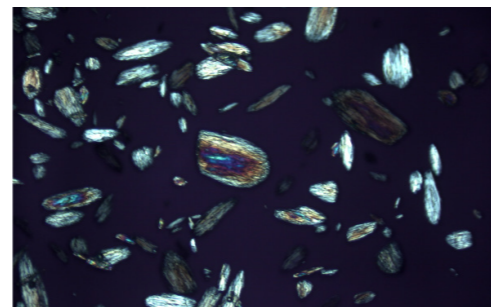
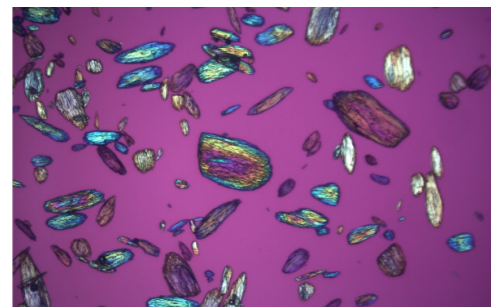
The optional reflected light source of the BeVision S1 can help measure particles dispersed in opaque mediums or on opaque surfaces, e.g., particles on filter paper or filter film, and metal powders embedded in metallographic samples.



Polarized light illumination



Equipped with polarizing plates, the BeVision S1 provides users with particle size and particle shape analysis under polarized light. The polarized light model BeVision S1 is trusted by researchers and engineers in the field of biology, pharmacy, medicine, geology, mining, etc.



Particle Size and Shape Parameters

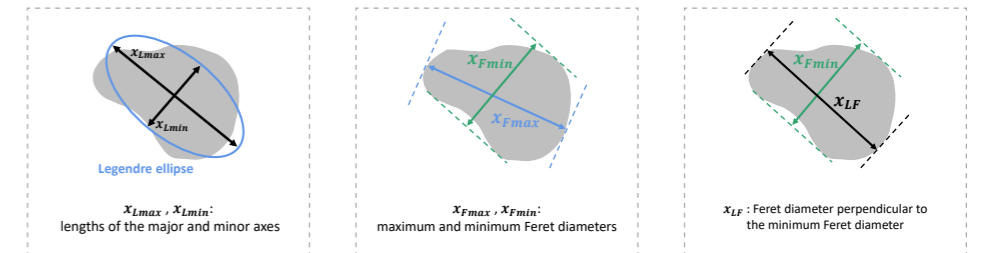
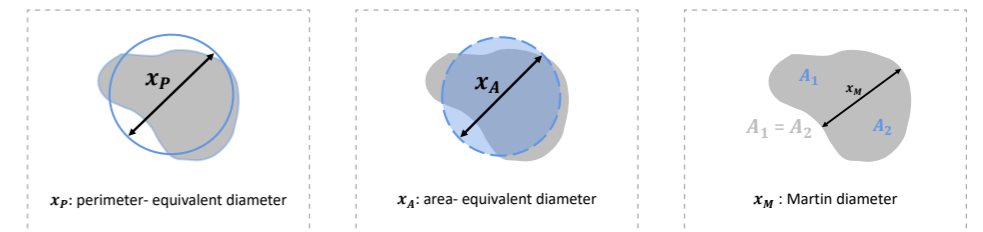
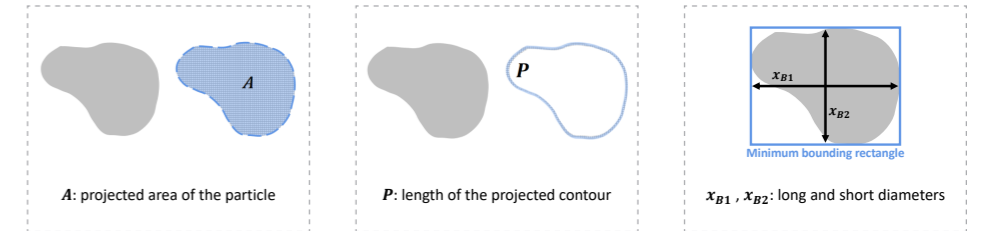
Size parameters

Equivalent diameters:
area-equivalent diameter
perimeter-equivalent diameter

Feret diameters:
maximum and minimum Feret diameters, x_{LF} ("length")

Martin diameters:
maximum and minimum Martin diameters

Legendre ellipse:
major and minor axes



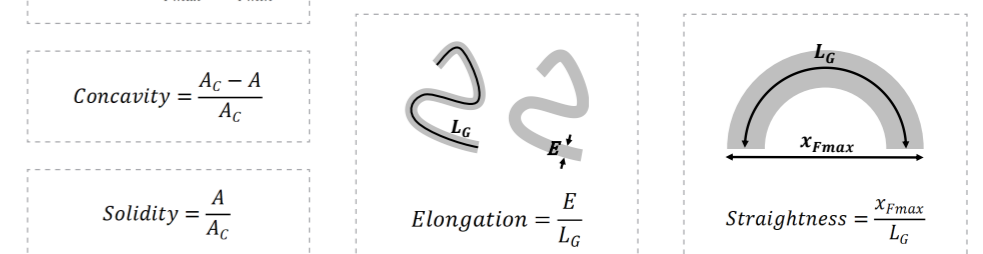
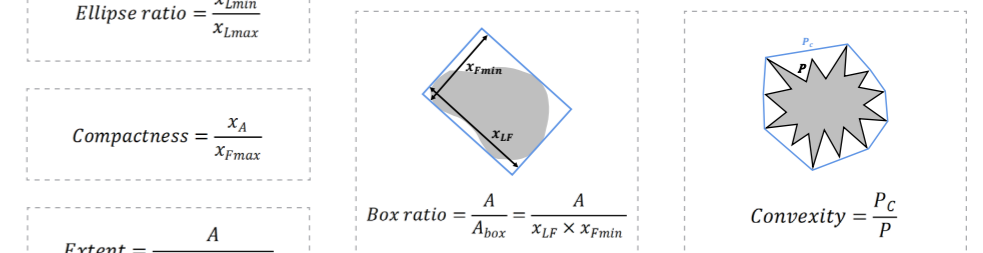
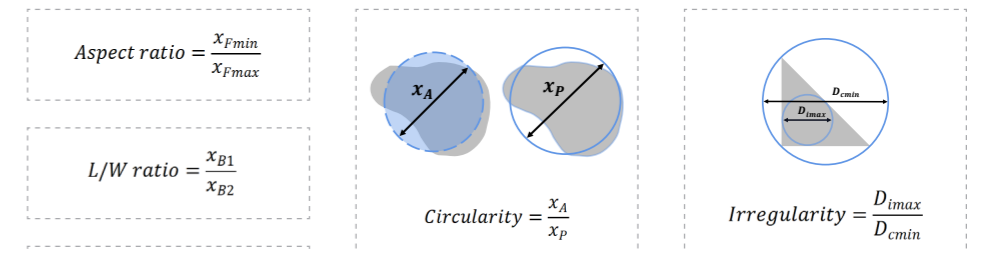
Shape parameters

Size difference in 2 directions:
aspect ratio
L/W ratio
ellipse ratio

Round-likeness and rectangle-likeness:
circularity
irregularity
compactness
extent
box ratio

Contour concavity:
concavity
convexity
solidity

For elongated particles:
elongation
straightness



BeVision Software: Visualized Insights for You

Distribution in total

Distribution curves and charts present particle size and shape distributions, and the scattering plot shows the relationship between two different particle size and shape parameters. All these charts, curves, and tables are customizable.

Distribution in summary

The BeVision software offers statistics and typical values to describe particle size and shape distributions, e.g., the D[1,0], span value, and D90. And the typical value chart is customizable.

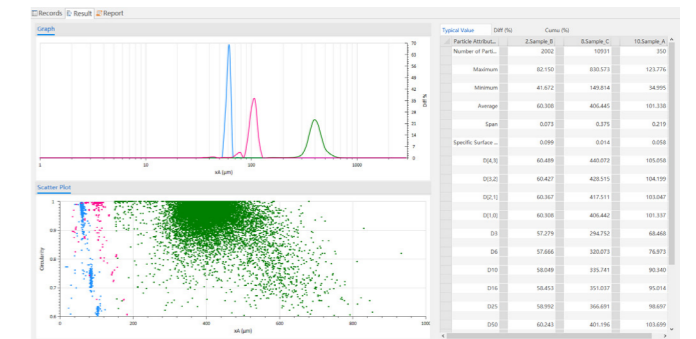
Reproducible measurements

To ensure a reproducible result, the BeVision software can make a measurement automatically, following a saved standard operation procedure (SOP).



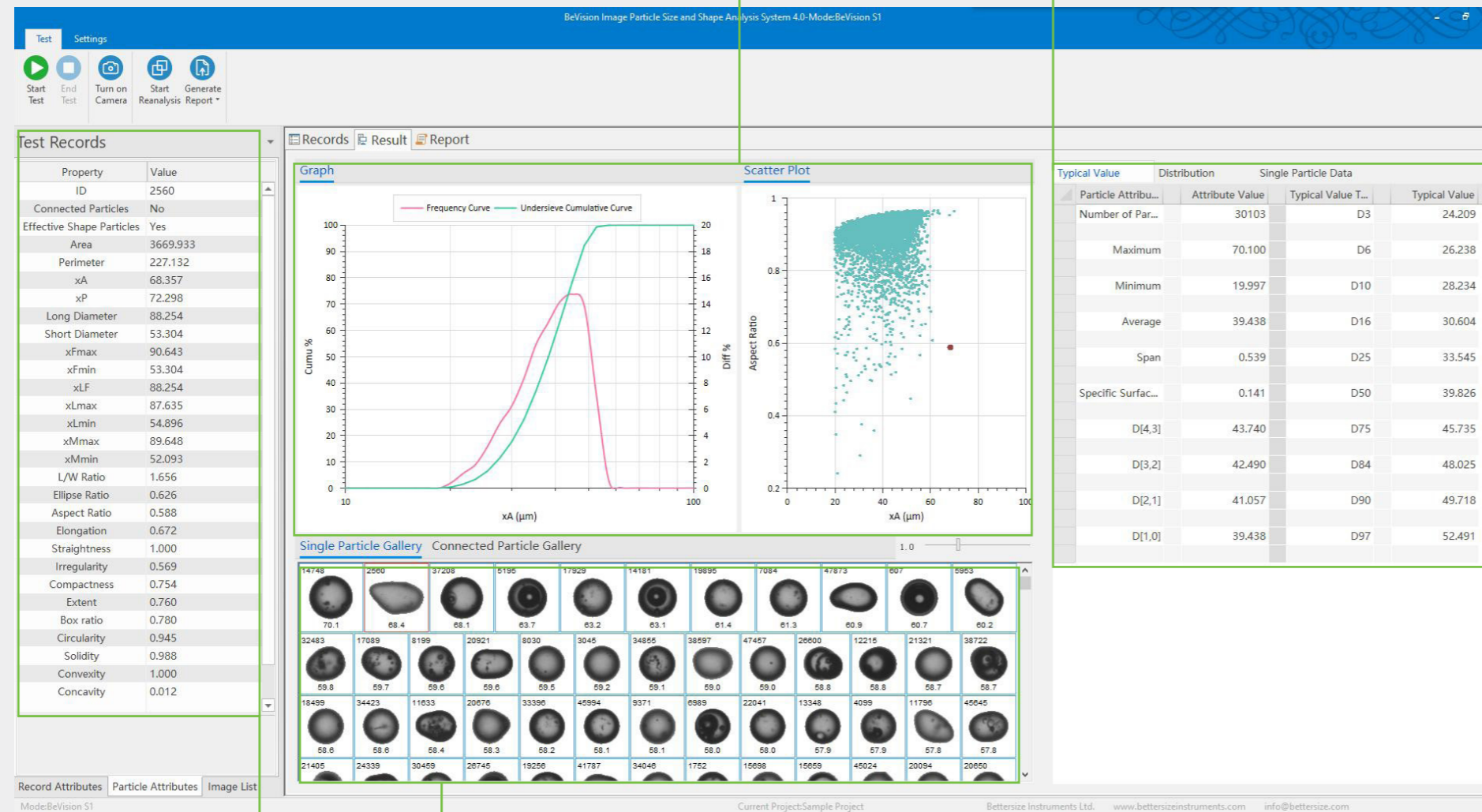
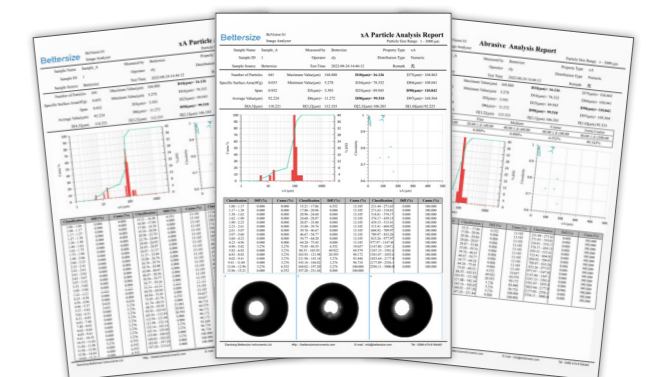
Comparable results

With the help of the BeVision software, it is possible to do a comparison among multiple records: particle size or shape distribution comparison, typical value comparison, etc.



Customizable reports

The BeVision series prepares various report templates for different evaluation options. Layouts and contents of report templates are editable and customizable.



Particle details

For irregularly shaped particles, it is hard to describe their size with a single dimension. Scanning over 180 different directions of each particle projection, the BeVision software is able to precisely analyze particles, and present the particle size and shape in 24 different parameters. The size and shape parameters are in compliance with ISO 9276 - 6.

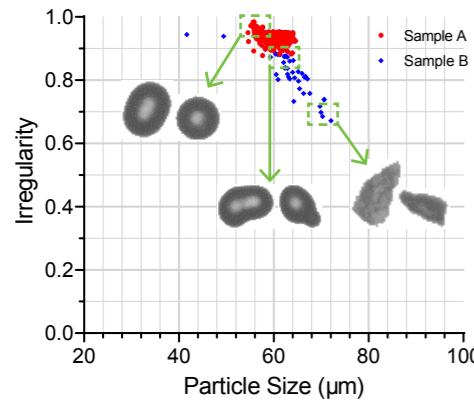
Locate particles

The BeVision software offers a single particle gallery that can be the direct way to locate particles with a specific appearance. Besides, the BeVision software allows users to find particles with specific characteristics, with a customizable filter.

Application Cases

Glass beads

Glass beads are widely used in construction, traffic paint, sandblasting, etc. In this case, both size and shape of glass beads affect their grinding effect. The BeVision S1 offers size and shape measurement results at the same time, helping the QC engineers achieve an insightful validation of glass beads products. A scatter plot showing the relationship between particle size and irregularity helps compare the shape distribution and the irregular particle concentration of samples A and B, and evaluates their quality.



Starch granules of *Treculia africana*

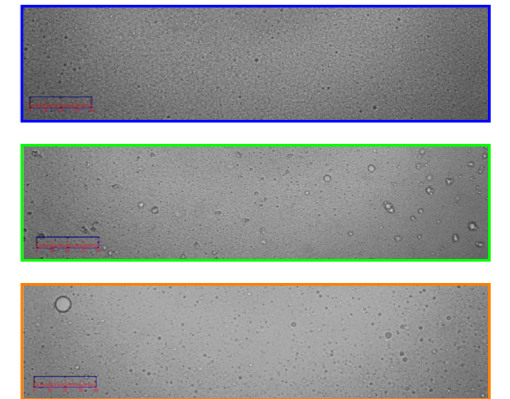
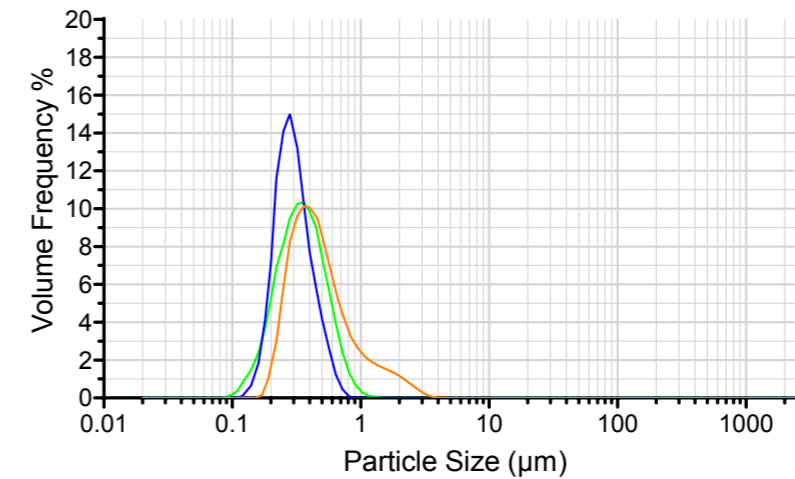
Just like other micro particles in the field of biology research, starch granules from different botanical sources present characteristic shapes, sizes, and morphologies. Accordingly, the BeVision S1 offers a flexible way to count the total number of particles and to analyze the size and shape of them automatically. For example, a BeVision S1 helps researchers from the University of Ibadan and Glyndwr University to analyze the size and shape of seed starch granules of *Treculia africana* and develop more insights into the starch manufacturing.

Granule characteristics				
Sample Number	TASS1	TASS2	TASS3	TASS4
Particle number	130	154	162	150
Maximum xA (µm)	11.64	10.11	13.6	11.59
Minimum xA (µm)	4.33	3.5	4.49	5.15
Average xA (µm)	7.93	7.02	7.77	7.79
Circularity	0.56	0.66	0.69	0.6

Image and size distribution of *Treculia africana* starch granules. Adopted from Nwokocha, L. M., Williams, P. A., Structure and properties of *Treculia africana*, (Decne) seed starch, *Carbohydrate Polymers*, 2009, (84), 395-401

Pharmaceutical lipid emulsions

Images provided by the BeVision S1 are persuasive support for the particle size distribution results of other sizing methods. Here, the particle size distribution curves from the Bettersizer 2600 show the trend of the particle size distribution of lipid emulsions after multiple homogenization processes. The BeVision S1 is a convincing tool when evaluating particle size results, and also a handy tool to ensure product quality.



Typical Applications

Agriculture



Abrasives



Paints, Inks & Coatings



Metal Powders



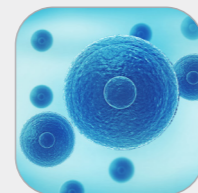
Pharmaceuticals



Mining and Minerals



Biology and Microorganisms



Ceramics



BT - 910 Helps to Prepare Dry Powders



How does it help?

The BT-910 powder disperser generates a pre-set air pressure difference, which drives the dispersion airflow. The BT-910 aims to offer a reliable and reproducible dispersion method for dry powders.

Features and Benefits

- Reproducible dispersion
- No aggregates
- Even Dispersion

General

Measuring principle	Static image analysis method
Parameters	Particle size, shape, and number

Measurement performance

Measuring range	1 – 3,000 μm
Typical measurement time	3 to 5 min *
Number of size/shape classes	100 (user adjustable)
Special functions	SOP settings, analysis of saved images

Main device

Optical lens	4 \times , 10 \times , 40 \times , 100 \times (with 40 \times digital magnification)
Camera	5Mpix CMOS camera
Light source	White light LED, Halogen lamp (optional)

System parameters

Dimensions (L \times W \times H)	20.0 \times 42.0 \times 55.0 cm
Weight	8.0 kg
Supply voltage	100 / 240 V, 50 / 60 Hz

Software

Conformity	ISO 13321, ISO 9276
Reports	Customizable reporting

* Sample and sample preparation dependent

BT - 910 powder disperser

Dimensions (L \times W \times H)	23.5 \times 16.5 \times 26.6 cm
Weight	4.3 kg
Supply voltage	100 / 240 V, 50 / 60 Hz
Dispersion air pressure	\leq - 60 kPa

Bettersize

BETTER PARTICLE SIZE SOLUTIONS

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