PARTICLE SIZE ANALYZER

Are you looking for milling equipment that could grind your sample up to nano size or homogenizing?

INTRODUCTION

Welcome to our 2020 - 2021 edition of Product Catalog. We would like to thank you for your continue support and encouragement. Throughout this challenging time, we have grown and transform our business to be more efficient and effective. This will enable us to offer better service and more competitive pricing to our customers.

Our new edition of catalog comes with a easy reference features where we categorized the products into different usage categories, i.e. Advanced Material, Renewable Energy, Bio-Process, Gauge Calibration, Membrane Technology, 3D scanner and others. This will facilitate the users to quickly access to the equipment specification required, and options available to them in term of measuring range or equipment complexity.

In our new catalog, we have also added the equipment to do research in renewable energy like solar cell, fuel cell, flow cell, lithium ion batteries, and membrane technologies. In synergy with our advanced material equipment, we have also added the equipment for material characterization especially in the area of rare earth research and magnetic properties. In line with the manufacturing industry footsteps, the equipment on 3D scanning and 3D printing also have been added in to expand the tools in the research and development for industry 4.0.

To our current customers, we believed our partnership will be strengthen for the years to come. The new catalog will also create new opportunities to build new relationship with new customers.

Lastly, I would like to thanks our staffs for their dedication and sacrifice in supporting the management for a brighter future.

Patrick Tan
Director
KGC (Group of Companies)

Contents

Particle Size Analyzer

Equipped with Nickel Based Super Alloy Tube & Flanges
30 Segments PID Temperature Control with Auto-tune Function
High Purity Alumina Fiber Insulation

MAGELLAN NP TRACE ANALYZER

MAGELLAN™ is a unique instrument for the measurement (size distribution and concentration) of nanoparticle traces in water, based on Laser Induced Breakdown Detection (LIBD) technique.

Key benefits

- Broadest particle size measurement range
- Unequaled sensitivity 10000 times superior to conventional light scattering techniques
- No sample preparation
- Advanced proprietary algorithm for accurate data analysis

Technologies & innovations

- Plasma generated using DPSS laser with limited maintenance
- Acoustic detection for unprecedented number of detection channels
- Compact and robust design allowing lab & field operation

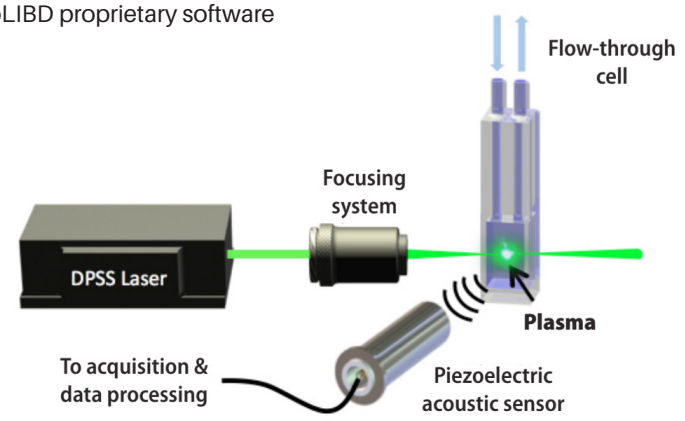
Main characteristics

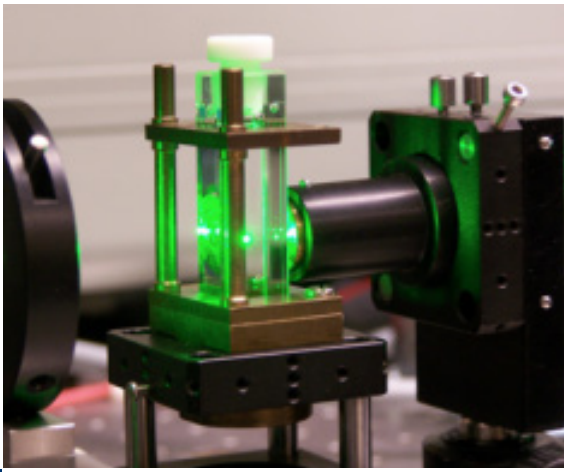
- Particle size range : 10nm – 1 µm
- Concentration range : 104 – 1011 part/ml
- Static or flow-through cell
- Variable flow rate
- Online and under-pressure measurements capabilities
- AstroLIBD proprietary software

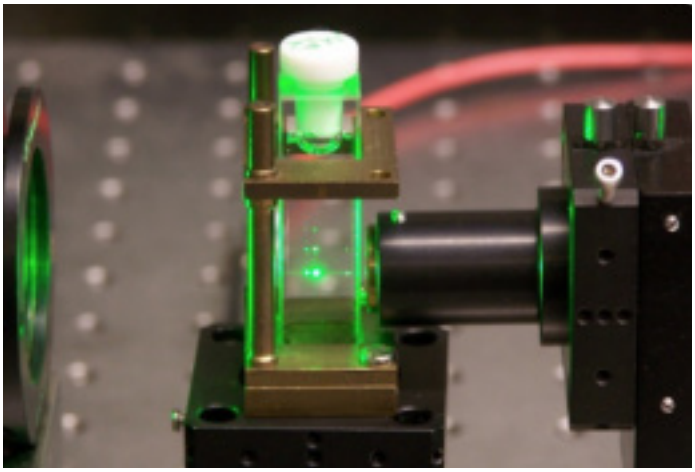
LIBD Principle

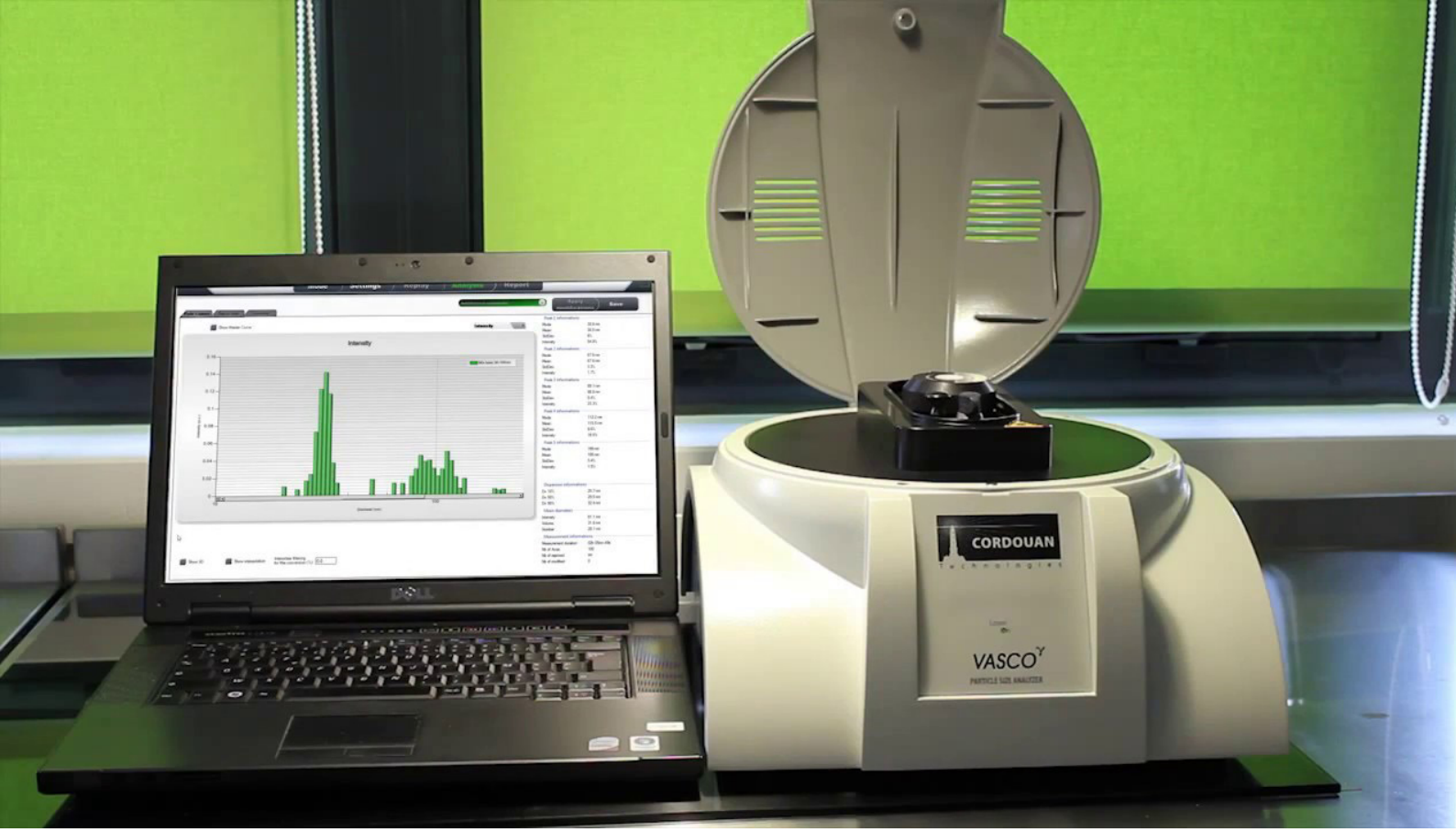
LIBD is a field proven technology issued from more than 20 years of research in KIT-INE; basically, a nanosecond pulsed laser is focused into a liquid containing nanoparticles to be detected. Each time a particle crosses the laser beam, a plasma is created and detected by an acoustic wave sensor.

Size distribution and concentration are then deduced from the plasma statistic by the use of an advanced proprietary algorithm and calibration data.









VASCO PARTICLE SIZE ANALYZER

VASCO™ is a unique instrument for nanoparticle suspension and colloidal characterization, based on the Dynamic Light Scattering (DLS).

Key benefits

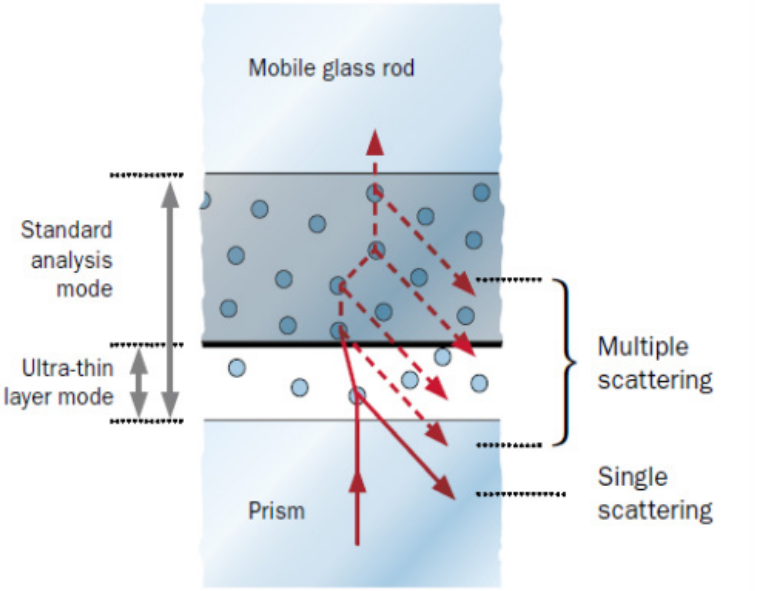
- High detection efficiency in opaque/dark media, as well as in diluted solution thanks to a DTC patented system
- Extended sample concentration range (up to 40%*)
- Reduce sample preparation (no filtration or dilution)
- Polymodal and complex sample analysis
- No consumable
- Solvent-proof sample cell

Technologies & innovations

- Unique embedded sample cell made of a silica prism and backscattered light detection
- Dual Thickness Controller (DTC) : patented system allowing measurement of diluted sample as well as dark / concentrated ones, without dilution
- Flusher to remove dust and bubbles
- Advanced Padé Laplace algorithm

Main characteristics

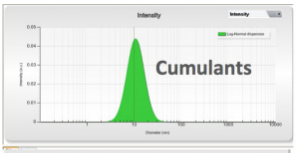
- Based on Dynamic Light Scattering (DLS)
- Particle size (diameter) : 0,5 nm – 10 µm
- Sample concentration : 0.1ppm – 40%w/v *
- Optical filter option to improve measurements on fluorescent samples
- On-line sample cell option - size kinetics study
- NanoQ proprietary software
- Compliant with ISO 13 321 – Particle size analysis – Photon correlation Spectroscopy & ISO 22 412 – Particle size analysis – Dynamic Light Scattering



NanoQ

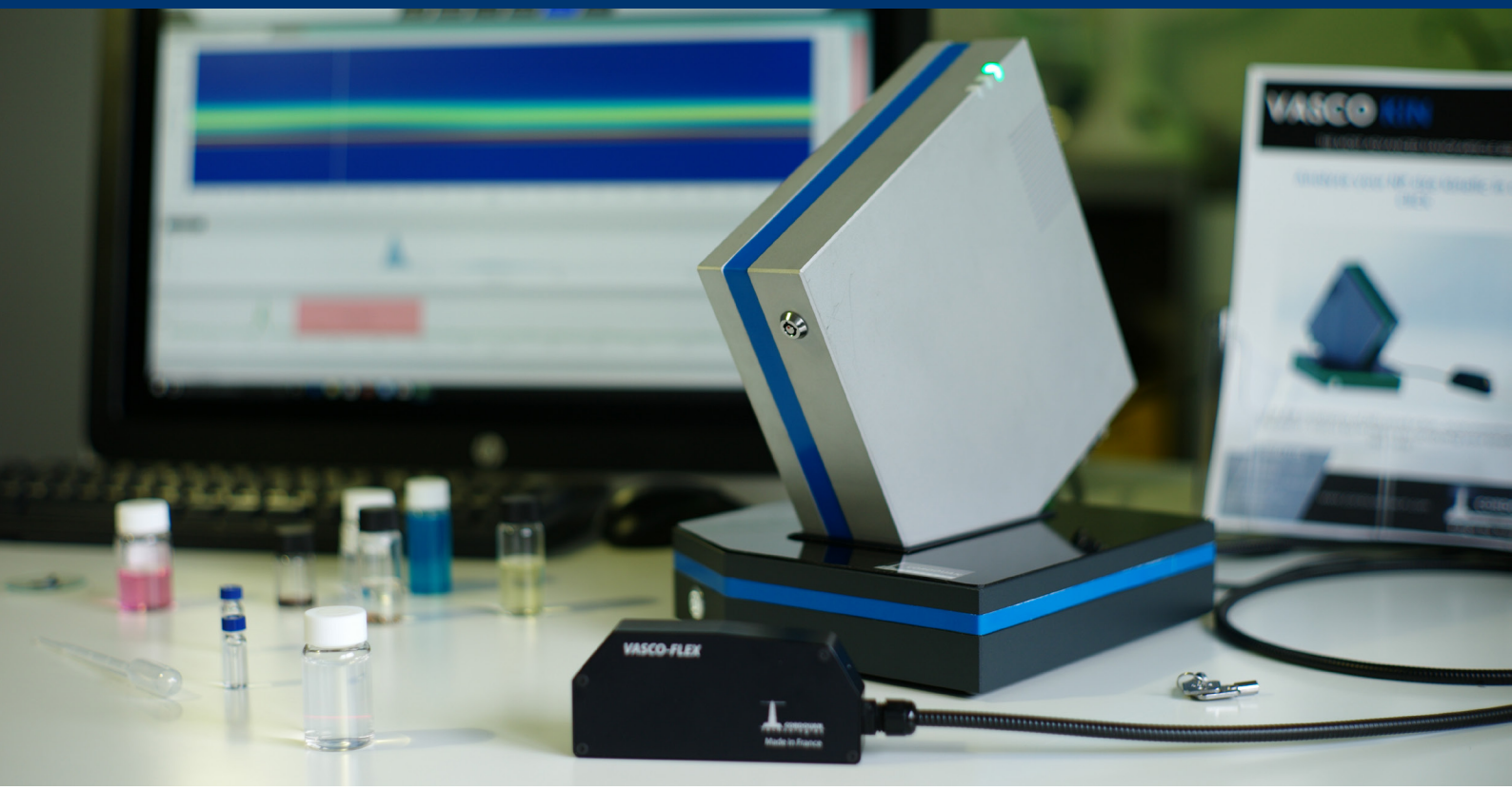
A software fully-dedicated to nanoparticle size measurements for the VASCO series featuring :

- User-friendly and intuitive GUI
- User-defined Standard Operation Procedures (SOPs)
- Measurement replay mode for post-data treatment
- Exhaustive solvent database
- Standard Cumulant and unique Padé Laplace algorithms for complex colloids analysis
- Unique indebted simulator for measurement interpretation and pedagogic purpose
- Report editor for results presentation and saving
- User management database



Particle Size Analyzer

Equipped with Nickel Based Super Alloy Tube & Flanges
30 Segments PID Temperature Control with Auto-tune Function
High Purity Alumina Fiber Insulation



VASCO KIN PARTICLE SIZE ANALYZER

VASCO KIN™ is a new generation of Time-Resolved instrument for accurate kinetic analyses combined with an in situ and contactless remote optical head. It allows to monitor in Real Time nanoparticles synthesis, agglomeration or the stability of suspensions.

With a single and continuous measurement, VASCO KIN™ gives access to all characterization data of a reaction (size distribution, scattered intensity, correlogramms, etc.).

Key features & benefits

- Frequency stabilized Laser & Artefact-free Avalanche Photodiode (APD) detector
  - High measurement accuracy
  - Very Low scattering samples
- Embedded dedicated PC including software correlation and a complete & dedicated software NanoKin®
  - User-friendly interface
  - Photon-counts storage for Time-Resolved analysis & post-analysis
  - Full report including kinetic analysis
- Enhanced mathematic models
  - Better reliability of results
  = 2D Colormap of size distribution over time
  Acoustic detection for unprecedented number of detection channels
- Compact and robust design allowing lab & field operation

Main specifications

- Measurement principle: Optical Fiber Dynamic Light Scattering (DLS)
- Measurement configuration: in situ / contactless remote probe
- Particle size range: 0.5 nm to 10 µm*
- Concentration range: up to 40% wt*
- Measurement time: from 2s up to 12 hours
- Time resolution: down to 200 ms
- Small footprint, no mobile part, easy-to-integrate in harsh environment

Technologies & innovations

- Plasma generated using DPSS laser with limited maintenance
- Acoustic detection for unprecedented number of detection channels
- Compact and robust design allowing lab & field operation

Main characteristics

- Particle size range : 10nm – 1 µm
- Concentration range : 104 – 1011 part/ml
- Static or flow-through cell
- Variable flow rate
- Online and under-pressure measurements capabilities
- AstroLIBD proprietary software

CUTTING-EDGE TECHNOLOGIES

- **Frequency stabilised Laser**
- Artefact-free Avalanche Photodiode (APD) detector
  - → **High measurement accuracy**
  - → Measurement of diluted & sub-nanometer samples (i.e. proteins)

PLUG & PLAY, AND AUTOMATIC SETTINGS

IMPROVED **REPEATABILITY** OF MEASUREMENT

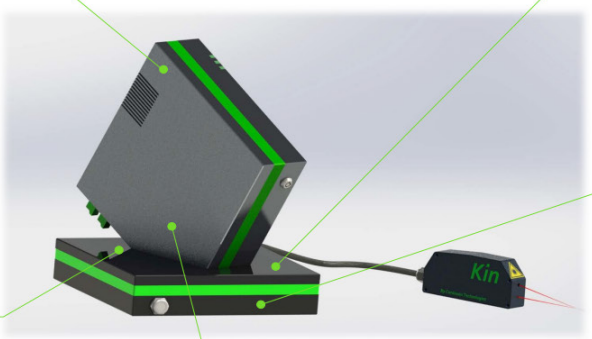
IN SITU AND CONTACTLESS MEASUREMENT

SOFTWARE CORRELATION

- **Photoncounts storage**
  - → Time-resolved analysis and post-analysis
  - → For an innovative approach for dynamic study
- **Rapidity**
  - → Realtime measurement
  - → Higher number of acquisitions → higher statistic

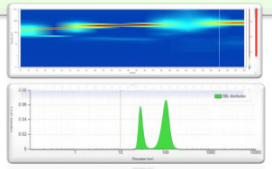
NANO KIN™

- Complete & **user-friendly software**
- Dedicated to dynamic analysis
  - → With a **unique « time slicing » function**
  - → A Full report including kinetic analysis



ENHANCED MATHEMATIC MODELS

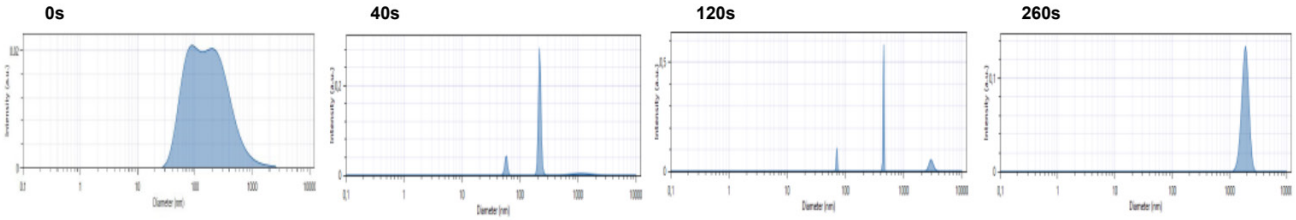
- **Sparse Bayesian Learning algorithm**
  - → For a better reliability of results
  - → **Colormap** of size distribution over time

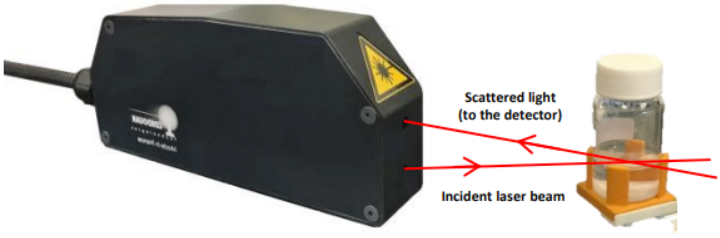


SMALL FORM FACTOR (SFF)

- → OEM integrability, remote control
- → Very small footprint

Size distribution for the chosen times





In situ remote head for contactless measurements. It can be used in any custom measurements including a limited access and/or harsh environment.

Measurement in a custom container – no batching

In situ monitoring in a double jacket glass reactor

Analysis of injectable vaccine in a prefilled syringe

High concentration remote head based on the patented technology Dual Thickness Controller (DTC) designed for measurements of absorbing or highly concentrated samples.

Particle Size Analyzer

Equipped with Nickel Based Super Alloy Tube & Flanges
30 Segments PID Temperature Control with Auto-tune Function
High Purity Alumina Fiber Insulation

AMERIGO PARTICLE SIZE & ZETA POTENTIAL ANALYZER

AMERIGO is an innovative analyzer for the characterization of nanoparticle suspensions combining into the same instrument Particle Size and Zeta Potential measurements.

It is based on state of the art version of Dynamic Light Scattering (DLS) and Laser Doppler Electrophoresis (LDE) techniques offering high resolution, accurate and rapid measurement.

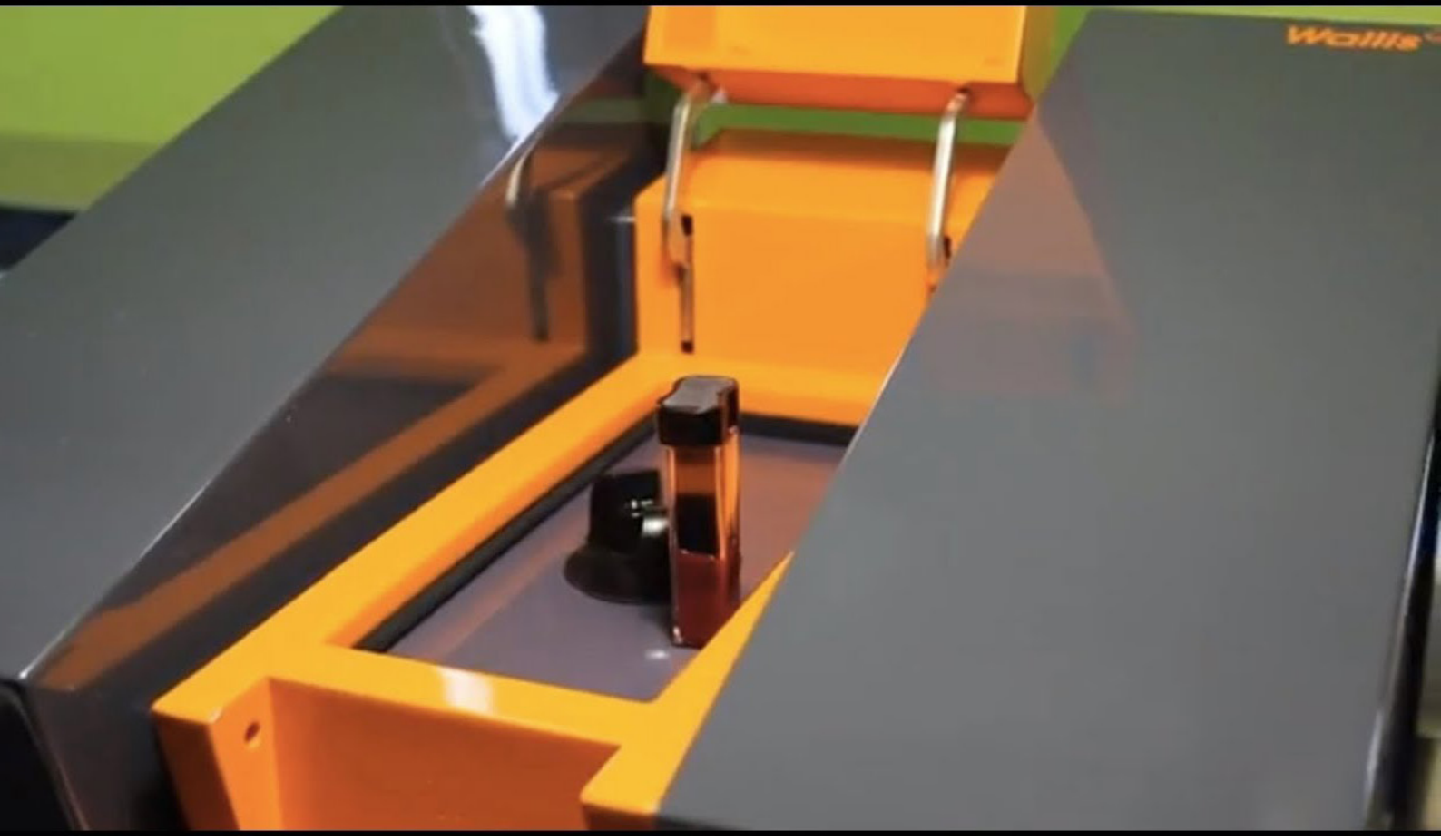
These two techniques provide complementary information about the nanoparticle solution: the size of the nanoparticles and the stability of the formulation.

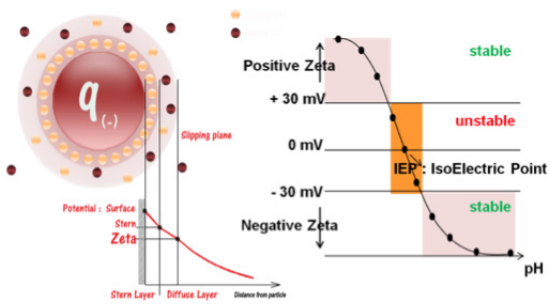
Key features & benefits

- Three-in-one instrument
- Using an interchangeable remote heads
  In situ or high concentration head
- Sample compartment designed for standard 10mm x 10mm cuvettes – no specific consumables
- Measurements in two configurations: backscattering (170°) or transmission (17°)
- High durability vitreous carbon electrodes
- Easy-to-use intuitive software
- Software correlator – dynamic time slicing and data analysis feature
- Small footprint

Specifications

- Particle size: 0.5 nm to 10 µm / Zeta potential: 1 nm to 100 µm
- Sample concentration: 0.0001% to 10% w/% (solvent dependent)
  In situ or high concentration head
- Zeta potential range: -500 mV to +500 mV
- Mobility range: 10^{-10} to 10^{-7} $m^2/V.s$
- Sample cell: Cuvette cell with optical quality windows compatible with organic solvents
- Sample volume: Typically 750 µL (Hellma cell: 10 mm light path)





WALLIS ZETA POTENTIAL

WALLIS ζ ™ is an innovative high resolution Zeta potential analyzer purely dedicated to nanoparticle and colloidal charge characterization.

- Based on a modern version of Laser Doppler Electrophoresis (LDE) technique
- Ideal tool for studying colloidal suspension's stability and nanoparticles' electrophoretic properties

Key benefits

- No electro-osmosis- Artifact-free measurements
- Improved LDE technology - Efficient, reliable & simple
- Designed for standard disposable and quartz cuvette
- Advanced software functionalities (Time, pH, Temperature kinetic modes, SOPs, reporteditor, etc.)
- Easy-to-use and intuitive Graphical User Interface (GUI) software

Technologies & innovations

- Simple and easy sample preparation ; no risk of bubble
- Robust : high durability vitreous carbon electrodes
- Artifact-free : optimized dip cell electrodes design - no electro-osmosis bias
- High resolution measurements : sampling frequency 30 times higher than competitors / significantly improving measurement resolution down to 0.1 mV
-

Main characteristics

- Zeta potential range: -500 mV to 500 mV
- Mobility range: 10^{-10} to 10-7 $m^2/V.s$
- Particle size: 1 nm up to 100 µm
- Sample concentration: 0.0001% to 10% w/% (solvent dependent)
- Sample type: Aqueous & organic solvents - pH: 1 - 14 (depending on cuvette cell material)

Laser Particle Size Analyzer

Used to measure the sizes of particles in a material. Particle size is calculated by measuring the angle of light scattered by the particles as they pass through a laser beam. Laser particle size analyzers are used in many applications, including manufacturing, quality control and product development.

Key features & benefits

- **Advanced design of light path:**
  Winner patented technique of Fourier transform of converging light released the scattered light at large-scattering angles from the restriction of the aperture of the Fourier lens. The focal length is reduced to enhance the resolution of the instrument.

- **Built-in dispersing units:**
  We carefully aligned the stirring set-up, the ultrasonic dispersing unit and the sample circulation pipes, and fixed them inside the instrument. Such a builtin design effectively prevents the inhomogeneous dispersion and sedimentation of big particles, which can be observed in the designs that these dispersing units are separated from the instruments, where the sample circulation pipes are therefore too long, The sample will be sufficiently dispersed.

- **Unconstrained fitting techniques:**
  The particle analysis software uses a unique unconstrained data fitting technique that we developed to obtain data of unknown size distribution, this is particularly important for researchers.

- **Micro sample chamber (optional):**
  The capacity of the sample chamber is as small as only 10ml. This helps with measuring expensive/precious samples, or samples difficult to be dispersed within medium.

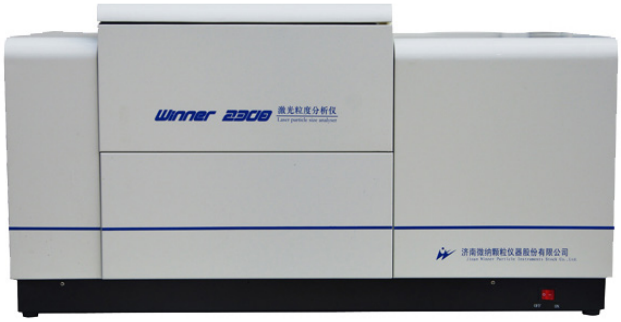
- **Modern measurement control:**
  Users can perform all measurement procedures by simply operating on the PC and have ideal results in a very short time.

- **Friendly Operation:**
  Manual mode and the automatic mode, freely choose, to measure according to the sample features. In some conditions（e.g. the sample have unknown features or there are special requirements for the measurements), users can make a test measurement in the manual mode first, and after having an idea of the sample features and the measurement conditions, measure the samples in the automatic mode.

- **Fully automatic light path alignment:**
  A precise four phase hybrid stepping motor automatically aligns the optical path and can adjust it at any moment. This releases users from manual adjusting the optical path and improved accuracy and stability of the measurement results.

- **Quick measurements:**
  Set " automatic" mode, all operation procedures are performed automatically,automatic water supply, Automatic ultrasonic sample, stirring, circulation,background testing, sample testing,analysis , draining and cleaning, which significantly reduces the time for measurements, the full process only take 2 minutes.

- **Data analysis:**
  Errors in the data are rejected and the measurement results are automatically processed. Manual data processing is not necessary and the output is more standard.



Model	2000ZDE	3005	2308A
Standard	ISO13320-1:1999, GB/ T19077.1-2008, Q/ JWN001-2009	ISO13320-1:1999 GB/ T19077.1-2008,Q/ 0100JWN001-2013	ISO13320-1:1999 GB/ T19077.1-2008,Q/ 0100JWN001-2013
Principle	MIE scattering principle	Dry turbulence dispersion mode	Laser Diffraction Principle
Measuring Range	0.1μm - 300 μm	0.1μm - 500 μm	228 mm
Channel Number	39 pcs	40 pcs	Wet: 127 Dry: 100
Accuracy Error	<1%	<1%	<1%
Repeatability Error	<1%	<1%	<1%
Light Source	He-Ne Laser (λ= 632.8nm, P>2MW)	He-Ne Laser (λ= 632.8nm, P>2MW)	He-Ne laser P>3.0 MW (λ= 632.8nm)
Ultrasonic Frequency	40 kHz		0.5 - 5 sl/min
Stirring Speed	0 - 3,000 rpm		
Sample Pool	350 ml		1,000 ml
Micro-sample Pool	10 ml		10 ml
Operation Mode	Automatic / Manual		Automati / Manual
Optical Calibration System			
Test Speed per time	Wet: <2 Min Dry : <1min typical measuring time<10S	Wet: <2 Min Dry : <1min typical measuring time<10S	Wet: <2 Min Dry : <1min typical measuring time<10S

Surface Area Analyzer

Compared with other competitors analyzers, multi pioneered technologies make its performance much better. Heighten accuracy and consistence of results, enhance measurement stability, all these lead to a leading level among global competitors.

Model	F-Sorb 1400CE	V-Sorb 2400CE	V-Sorb 2800S (2 ports)	V-Sorb 2800S (2 ports)
Measuring Method	Reference materials comparison method flowing nitrogen adsorption	Reference materials comparison method single and multi point BET, Langmuir, etc	Static volumetric nitrogen adsorption principle	Static volumetric gas adsorption principle.
Measuring Range	0.01 m^2/g to no known upper limit (specific surface area).	0.01 m^2/g to no known upper limit (specific surface area).	0.005m^2/g to no upper limit (specific surface area)	0.005m^2/g to no known upper limit (specific surface area).
Accuracy	Repeatability deviations ≤1%.	Repeatability deviations ≤1%.	Repeatability errors ≤1%	Repeatability errors ≤1%
Sample Type	Powders, nanoparticles, fiber, flakes and other species have similar adsorption performance with reference materials (RM)	Powders, nanoparticle, fiber, flakes and other species.	Powders, nanoparticle, fiber, flakes and other materials.	Powders, particle, fiber, flakes and other materials.
Pressure Re-quirement	Atmospheric pressure	Atmospheric pressure	4x10-2 Pa (3x10-4 Torr).	4x10-2 Pa (3x10-4 Torr)
Adsorbate Gas	Mixed He+N2 (4:1)	High purity (99.99%) Helium as carrier; Nitrogen (99.99%) as adsorbate	High purity nitrogen (≥99.999%), Ar, Kr, CO etc	4x10-2 Pa (3x10-4 Torr)


cations :
loidal stability / IEP determination
rmulation & functionalization
rticle / particle-surface interaction studies
J&M
MS-80
Moisture Sensor
ENLIGHTENING
SOLUTIONS —
FROM LAB
ROCESS
Mode
Aquisition
Time
Analysis
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