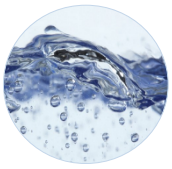
VASCO γ

Nano-Particle Size Analyzer



Extremely wide sample concentration

ppm orders ⟵ **range capability** ⟶ Several 10 %

When knowing particle size counts !

IDEAL FOR

Formulation stability
Nanoparticle aggregation
Emulsions dispersion
Pharmaceuticals
Petrochemicals
Polymers
Liposomes and bio-colloids
Pigments and inks
… and more

www.cordouan-tech.com

CORDOUAN Technologies

Enlight the NanoWorld

VASCO γ

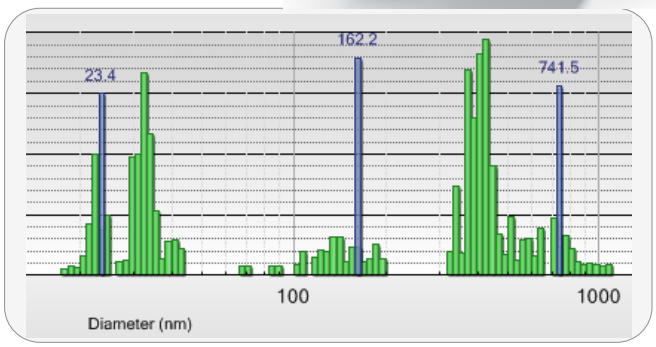
- Particle size : 1nm ~ 10µm
- Concentration: 10^{-4} to 40% wt

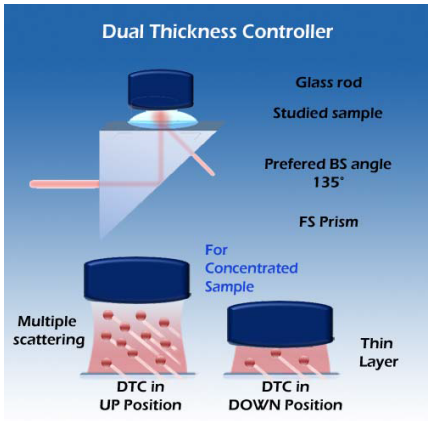
Dedicated to nanoparticle size analysis

The **VASCO™ particle size analyzer** is a unique instrument for nanoparticle suspension and colloidal characterization, based on enhanced Dynamic Light Scattering (DLS) technology. Thanks to a patented technology developed in collaboration with the French Institute of Petroleum (IFP), **VASCO™** is the most efficient solution for concentrated and/or opaque suspension characterization.

Main characteristics

- Based on enhanced Dynamic light Scattering (DLS)
- Embedded sample cell with patented DTC system
- Particle size (diameter) : 0,5nm - 10 µm ;
- Sample concentrations : 0.1ppm - 40%w/wt ;
- NanoQ proprietary software dedicated to particle size
- On-line sample cell option → size kinetics study ;
- Optical filter option to improve measurements on fluorescent samples ;





Technologies & innovations

VASCO™ : a **unique** particle size analyzer

- An embedded sample cell made of a silica prism ;
- Patented Dual Thickness Controller system for accurate sample thickness control ;
- Measurement of **dark / concentrated** samples without dilution.

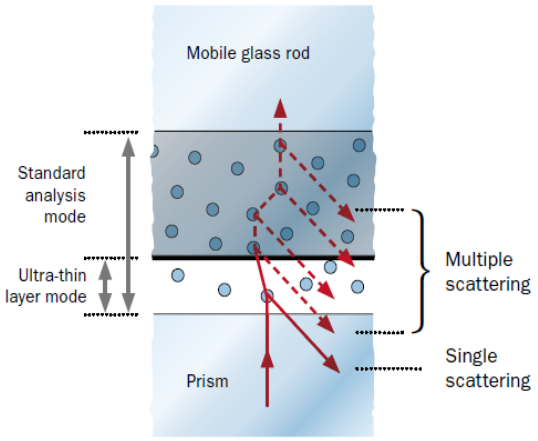
Innovative Cell design : simple, robust, artifact free

Simple : The DTC sample cell design allows simple and easy **sample preparation** and prevents any strong dilution. It is **compatible with organic solvent** and can measure **micro-volume** of sample**.** An upgradable option for **on-line measurement can complete study of kinetics.**

Artifact free: **cell** prevents A simple adjustment of **DTC** is sufficient to reduce the sample layer from 2 mm to 200 µm (ultra-thin layer sample's volume). This Dual Thickness Controller for reducing the measurement volume prevents problems due to multiple-scattering as well as local heating and guarantees reliable measurements of dark media or high particle concentrations. In comparison with cuvette cell concept, sample needs to be strongly diluted and by consequence influence the properties of representation on the size distribution !

VASCO$^{\gamma}$ technology led to its best

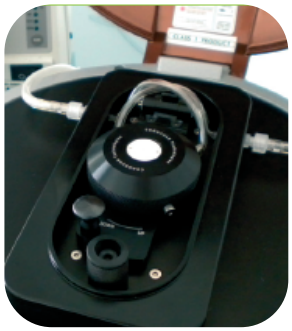
Think « out of the box »



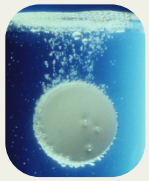
VASCO offers the extremely wide sample concentration range capability, from very dilute sample or poor contrasted particle to high concentrated and/or opaque formulation. Cordouan technologies unique optical design patented makes exceptionally wide sample concentration range measurements practical. This enables use in a wide range of applications an industries that needs to be close on the end product without dilution.

Key benefits

- **Higher detection efficiency** in **opaque/dark** media , as well as in **diluted** ;
- Limited sample preparation
- Solvent-proof embedded sample cell : **no consumable** ;
- Proprietary Padé Laplace algorithm for polymodal sample analysis.
- Extended range concentration samples that limited time preparation.
- 2 to 3 decades concentration range improvement over classical DLS.



High performances for advanced applications



Pharmaceutical

Cosmetics

Chemistry

Advanced colloids

Polymers

- NP synthesis and functionalization study
- Drug delivery optimization
- Quality control in manufacturing process
- Fundamental study of electrophoretic physics
- Cosmetic and industrial emulsion stability study
- Nanoparticle formulation and synthesis optimization
- Advanced colloidal stability analysis and optimization
- Ink pigment dispersion and aggregation characterization
- *And more….*

VASCO γ

Nano-Particle Size Analyzer

Specifications	
Particle size range (Hydrodynamic size)	0,5 nm to 10 µm (sample dependant).
Sample concentration range	Min. 0.0001% - Max. 40% w/% (Sample and Vasco model dependant).
Sample volume	Min.15 µL (one drop) – Max. 400µ L.
Temperature control range inside the cell	10°C to 70°C +/-0,1°C.
Sample Type	Aqueous & organic solvents – pH: 1-14.
Accuracy / repeatability	Better than +/- 5% with reference latex material at 100 nm.
measurement time	30 seconds to few minutes (sample dependant)
Sample Cell	Innovative and patented Dual Thickness Controller concept : extended concentration range; no need for disposable cuvette – All solvent proof (aqueous and organic)
Signal processing	
Measurement technology	Enhanced Dynamics light Scattering (DLS) – Patented Dual Thickness Controller (DTC).
Laser source	Highly reliable 65 mW (Programmable) diode laser (DPSS) @635 nm coupled to optical fiber with maintain of polarization. Laser life time > 10,000 hours
Scattering angle detection	Single angle for DLS at 135° (See VASCO FLEX series for other angle)
Data processing algorithm	Proprietary inversion algorithm “PADE LAPLACE” and “Cumulants” included. Wizard Intelligent Simulation (WIS) mode for comparison with experimental results. Results display in real time in Intensity-Volume-Numbers distribution.
Detectors type	Avalanche Photodiode (APD).
Correlator	Linear Type - Min. sample time 125 ns, max. delay time 100µs. Max. 1000 channels.
Options	
On-line measurement (Flow mode)	
Alternative wavelength laser	Highly reliable 30 mW diode @532 nm coupled to optical fiber with maintain of polarization.
Narrow band fluorescence filter	@635 nm or @532 nm - Improves signal ratio for samples that fluoresce.
High temperature control	Extends upper temperature range to 90°C
21 CFR part 11 software option	Enables an operating mode that assist with ER/ES compliance
Zeta potential measurement	See WALLIS analyzer.
General	
Computer interface	USB 2.0 – Windows XP, Seven
Dimensions	30 cm x 33 cm x 28 cm (HWD)
Weight	12 kg
Power	100-115/220-240 VAC, 50/60 Hz, 100 W max
System Compliance	
CE certification	CE marked product - Class I laser product, EN 60825-1:2001, CDRH
ISO norm	ISO 13321 : 1996 – Particle size analysis - photon correlation spectroscopy ISO 22412 : 2008 – Particle size analysis – Dynamic Light Scattering (DLS)
Patent granted	Reference: FR2947339 (A1) – Improved particle size analyzer

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