Particle size

Zeta potential

Molecular weight

Zetasizer nano ZS90

ZS90

The ultimate in desktop particle characterization

detailed specifications from www.malvern.com/zetasizernano

MALVERN INSTRUMENTS

A routine analysis system for particle characterization

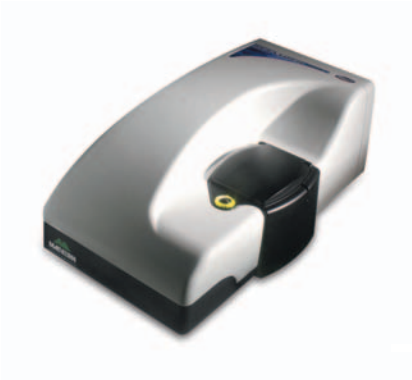
The Zetasizer Nano ZS90 brings you the practicality of a maintenance-free system with the versatility to offer precision measurement for your laboratory's particle characterization needs in a single compact unit.

Particle Size

The ZS90 uses the technique of Dynamic light scattering to measure the size of a wide range of materials in the size range of 1nm to 3 microns.

The measurement technique is absolute, no calibration is required and the measurement itself is simple. The results are accurate and repeatable.

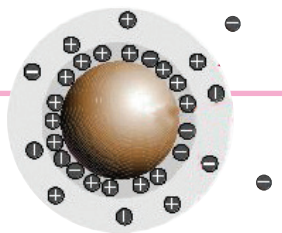
- Pharmaceutical dispersions and emulsions
- Nanoparticles
- Chemicals – surfactant micelles
- Colloid size and size distribution
- Liposomes / vesicles



Zeta potential

The Zetasizer Nano ZS90 offers the highest ever sensitivity, accuracy and resolution for the measurement of zeta potential. This is achieved by a combination of laser Doppler velocimetry and phase analysis light scattering (PALS) in Malvern's patented M3-PALS technique. Even samples of very low mobility can be analysed and their mobility distributions calculated.

- Emulsion stability
- Formulation stability
- Water treatment
- Pigment performance



Quality control and Research

Standard Operating Procedures (SOP) ensure that measurements are simplified and results are repeatable between operators and sites. Compatibility with ISO13321 and optional 21 CFR part 11 compliant software ensures all current recommendations and regulations are met.

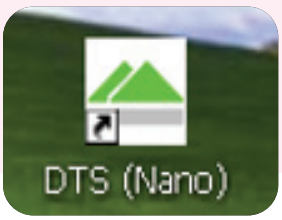
An optional research software package gives access to further control of the system and analysis algorithms. A research grade correlator and sensitive Avalanche Photodiode Detector (APD) are standard.

How easy?

- Uses standard and low volume cuvettes for size
- Unique maintenance-free zeta potential cell
- No alignment, calibration or maintenance required
- Zeta potential and size can be measured in the same cell

1 Power up the Zetasizer Nano ZS and launch the software

An automatic complete system self-check ensures that all components are ready for operation.



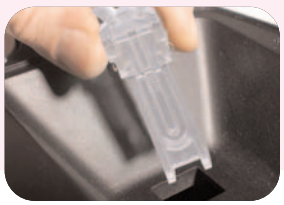
2 Fill the size or zeta potential cuvette

The low volume, folded capillary cell is the first ever for zeta potential which does not require cleaning.

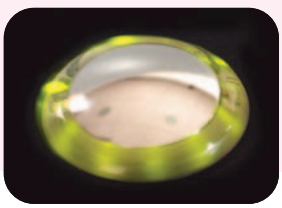
To eliminate cross-contamination; fill it, measure and, instead of cleaning, use a new one.

3 Load the cuvette

Simply insert the cuvette, close the lid and it's ready to go.



4 Run the measurement

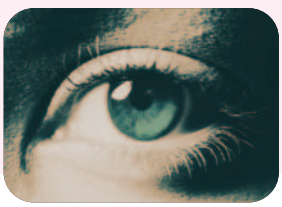


From the menu, select the standard operating procedure (SOP) you need or set your own conditions and click the 'start' button.

5 View the results

Predefined reports make reading, comparing and analyzing the results straightforward.

Remove the cuvette and you are ready for the next sample.



That's how easy

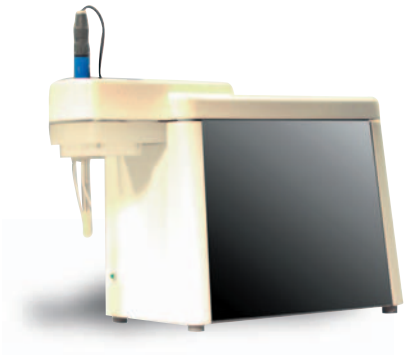
Meeting your needs

At Malvern we strive for improvement in every instrument we design and produce. This process is made possible because we continually ask our customers what they think and what they need before turning those wishes into reality.

You asked for	We give you
Simple operation	Standard Operating Procedures (SOP) which ensures that measurements can be repeated using exactly the same parameters to give confidence in the result
Comparability with results from existing systems with 90 degree optics	90 degree scattering optics to ensure the result from polydisperse samples larger than 100nm give comparable results with existing systems
Elimination of sample cross contamination and no need to clean cell or electrodes	A unique maintenance-free folded capillary cell. The world's first disposable zeta potential capillary cell
Ability to measure zeta potential in high salt systems and non-aqueous media	Patented M3-PALS (phase analysis light scattering) technology gives operators improved resolution as well as automating the process of measurement
Best quality data	The best laser for DLS measurements and a research grade correlator fitted as standard to maximise the quality of the data collected
Flexibility of data manipulation	Software which incorporates a wide range of features as standard to display and recalculate results. An optional research software package to give additional data processing options, graphs, tables and reports for the light scattering scientist
Help with data interpretation	Quality reports that give an assessment of the data and the first Expert System incorporated into a light scattering instrument to give real time advice about the data quality
Compliance with regulatory standards	Compatibility with the requirements of 21 CFR Part 11 and the ISO13321 standard for dynamic light scattering measurements

Accessories and cell options

Autotitrator



While zeta potential alone is often used to make comparisons between materials and formulations, measuring zeta potential as a function of pH, conductivity or concentration of an additive, provides much greater insight into the processes involved in stabilizing or flocculating disperse systems.

Using the MPT-2 autotitrator these measurements can be made automatically using samples of less than 3mL, which allows comprehensive analysis of even scarce biological materials.

Operation is fully automated and protocols can be specified as part of standard operating procedures.

SV-10 Viscometer accessory

An accurate size measurement requires an accurate dispersant viscosity

- **The SV-10 has a 1% accuracy over its whole range**
- **Measurements take 15 seconds**
- **Exceptionally easy to use, just dip the probes in the sample and press start**
- **Compatible with all fluids as sensors are gold plated**

Autodegasser accessory

- **Simplify the use of the MPT-2 with the autodegasser accessory**
- **'Fit and forget' operation**

Range of cuvettes for size, zeta potential and molecular weight

The range covers disposable cuvettes, glass for chemical compatibility, and low and micro volume for precious samples

Cuvettes for zeta potential

Disposable capillary cell

- **No maintenance – use for a series of experiments then discard**
- **Cross contamination is eliminated**

Universal 'Dip' cell

- **Uses inexpensive polystyrene cuvettes**
- **Can be used for both aqueous and non-polar dispersants such as hydrocarbons**
- **Construction using PEEK and solid Palladium electrodes ensures chemical compatibility**

Cuvettes for size and molecular weight

- **Wide range of disposable polystyrene or quartz cuvettes**
- **Volumes as low as 12µL**

Software to make it happen

The excellence of the Zetasizer Nano ZS90 hardware can only be fully utilised with similarly advanced software. The operating software provides the flexibility required for measurement design and data analysis while retaining simplicity of operation.

The software is packed with features to aid the new and experienced user alike to get the most out of the system and give confidence in the data.

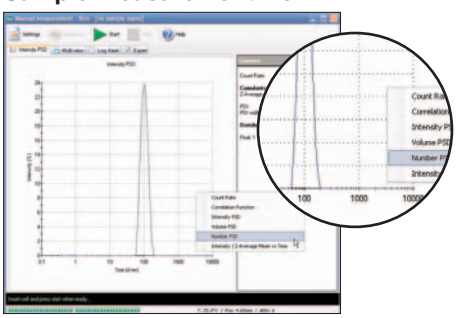
Quality reports provide an overview of the quality of the data and results – and advice about how to improve the measurement.

An 'Expert System' running in real time, examines the data from single and repeat measurements, and informs the user as the measurement progresses, an 'Expert standing with you' at all times.

A high degree of automation in the measurement process ensures simplicity of operation and avoids inappropriate settings.

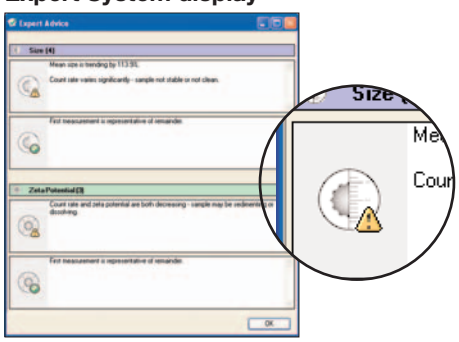
- **fully automated operation – for ease of use**
- **SOPs – for repeatability between operators, systems and sites**
- **custom report generator – to meet the requirements of every laboratory**
- **temperature trend analysis**
- **time trend analysis**
- **selected parameter trend analysis**
- **overplotting of results for direct comparison**
- **full range of statistical plots**

Sample measurement view



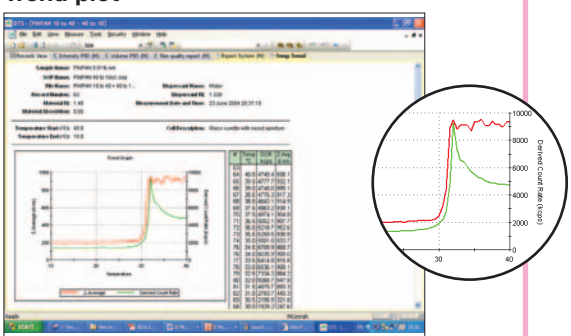
During data acquisition, status messages keep the operator informed of progress and an evolving distribution is displayed

Expert System display



The 'Expert System' continually monitors data quality and gives continuing information as the measurement progresses

Trend plot



Data can be plotted as a function of a wide range of parameters to investigate trends

Overview

Zetasizer nano ZS90

Measurement of size and zeta potential of particles, emulsions and molecules

Size measurement	
Size range	1nm - 3microns*
Minimum sample volume	12µL
Measurement angle	90 degrees
Zeta potential measurement	
Minimum sample volume	0.75mL
Maximum sample conductivity	200mS/cm
Molecular weight measurement	
Molecular weight range	1 x 10^4 to 2 x 10^7 Da*
Minimum sample volume	20µL
Minimum sample volume for automated measurement using titrator	3mL
Automated trend measurement	
Standard software	Time and Temperature
Using optional MPT-2 autotitrator	pH, conductivity or additive
General specifications	
Temperature range	2ºC to 90ºC
Condensation control	Purge facility using dry air
Laser	4mW He-Ne, 633nm
Product laser class	Class 1 compliant, EN 60825-1:2001 and CDRH
Size	320mm, 600mm, 260mm (W,D,H)
Weight	19kg
Options	50mW 532nm laser High temperature option 2ºC to 120ºC Narrow band optical filter, 633nm or 532nm MPT-2 Autotitrator Autodegasser for MPT-2 Research data processing software 21 CFR part 11 operating mode software

* Sample dependent

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Zetasizer nano ZS90

Advanced technology made easy

distributor details

MALVERN INSTRUMENTS

detailed specifications at www.malvern.com/zetasizernano

MRK824-01

Designed and produced by Dark Horse Agency, Malsemore, Glos, UK.