HORIBA Scientific

N E W

Nanoparticle Analyzer

nanoPartica SZ-100V2

New Nanoparticle Analyzer

nanoPartica SZ-100V2 series

Unravel the nano-universe with HORIBA's highest level of nanoparticle analysis*

This new model from nanoPartica series with even high sensitivity consolidates measurement of three major elements that characterize nanoparticles into a single unit: particle size, zeta potential and molecular weight!

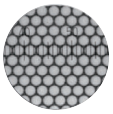
*Compared to conventional HORIBA products

High-power Laser Lineup (100mW)

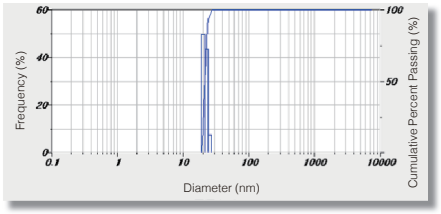
Measurement of Dilute Samples

A new high-power laser in addition to dual optics improved the measurement sensitivity to low-concentration samples, which is about 15 times more powerful than the previous model (SZ-100).

This enables highly accurate and reproducible measurement, even for dilute samples or samples with weak scattered light intensity.



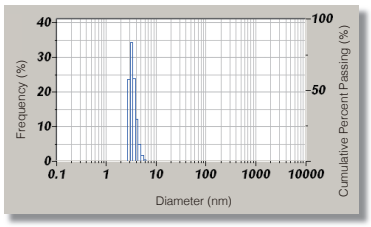
Standard polystyrene polymer particles



Measurement of 20 nm standard polystyrene polymer particles diluted to 0.2 ppm

Measurement of single nanoparticles

Equipped with HORIBA' s unique high-precision and high-speed correlator and low stray-light 90° optics to enable highly accurate measurement of single nanoparticles.



Diameter measurement of a 2 nm gold colloidal particle* with a 100 mW high-output laser

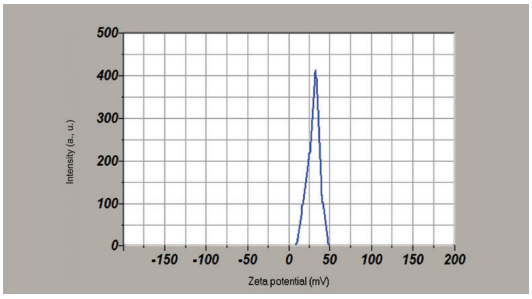
*Sample: Provided by Dr. Tai, National Institute of Advanced Industrial Science and Technology. TEM diameter: 1.8±0.3 nm

Wide Range of Applications

NIST SRM 1980 α-FeO O H Zeta Potential Measurement Results

The SZ-100 measures zeta potential of particles using the iontophoresis laser doppler method so that both average value and the zeta potential distribution can be obtained.

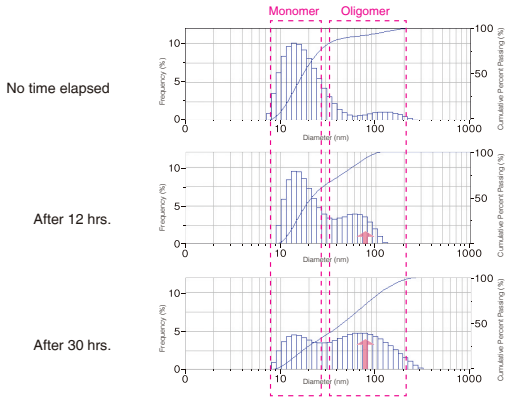
Additionally, using the pH controller enables easy detection of the isoelectric point.



Sample concentration: 50ppm, pH = 2.5, mobility (standard): 2.53±0.12μm・cm/V・s
Measured result: Mobility = 2.53μm・cm/ V・s, zeta potential = 32.9mV

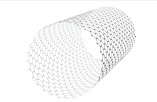
Measurement of Antibody Pharmaceutical Temperature Control

Chronologically measured the rate of oligomerization (aggregation) in immunoglobulins G (IgG) at 60°C.



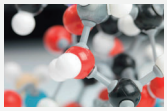
*Measured in cooperation with Tsumoto Laboratory, (University of Tokyo)

Expanding Application in a Wide Range of Fields



Functional Nanomaterials

Metal Nano Colloidal Particles
Catalysts
Carbon Nanotubes

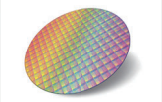


Polymers

Cellulose Nanofibers
Electrolytes
Adhesives

Bio/Life Sciences

Antibody Pharmaceuticals
Nano-capsules
Viruses
Proteins



Semiconductor

CMP Slurries

Ceramics

Titanium Oxide (Titania)
Silica
Aluminum Oxide (Alumina)

Environment and Agriculture

Fine bubbles

Gel Materials

3D Printer Materials
Medical Materials
(Artificial Cartilage, etc.)
Automobile Materials
(Sealants, Vibration Proofing, etc.)

nanoPartica SZ-100V2 series: lineup and main specifications

	Type	Particle size	Zeta potential	Molecular weight	High-power laser
SZ-100	S2	○		○	
	Z2	○	○	○	
	HS2	○		○	○
	HZ2	○	○	○	○

Measurement principle	Particle size: Photon correlation Zeta potential: Laser doppler electrophoresis Molecular weight: Static light scattering Debye plotting
Measurement range	Particle size: 0.3 nm – 10 μm (diameter) Zeta potential: -500 mV - +500 mV (Particle : 2.0 nm - 100 μm*1) Molecular weight: 1000 - 2 x 107 (Debye plotting), 540 - 2 x 107 (MHS *2)
Particle size measurement angle	90° and 173° (depending on sample concentration)
Sample cells	Cuvette cells (particle size, molecular weight), cells with electrodes (zeta potential)
Measurement optics	Light source: 532 nm 10 mW or 100 mW semiconductor excitation solid-state laser Detector: Photomultiplier tube (PMT)
Set/adjustable holder temperature	0 - 90°C (up to 70°C for plastic cells and cells with electrodes)
Laser class	1

*1: Depends on sample
*2: Calculated with the Mark-Howink-Sakurada equation (depends on sample)

Options and Accessories

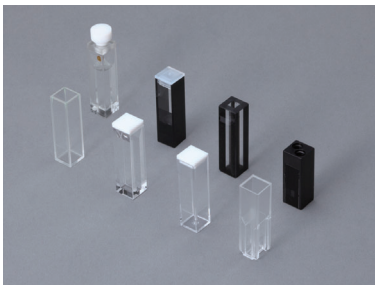
- pH Controller
- Various cells
- 21CFR part11 software
- IQ/OQ/PQ compatibility

Customized Accessories

- Flat surface zeta-potential measurement cells
- Fluorescence Filter

(It is necessary to confirm the specification to HORIBA group)

Two kind of zeta potential measurement cells
(For zeta potential and particle size measurement, 100 μL, Aqueous sample and Organic solvent)



Various sample cells

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