

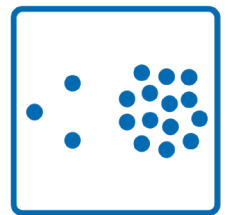


# ZetaView®

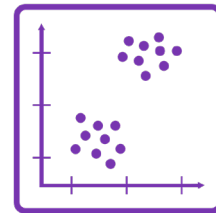
## Nanoparticle Tracking Analyzer



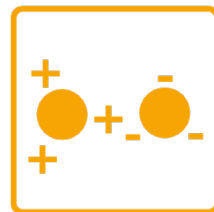
Size



Concentration



Subpopulations



Zeta Potential



Fluorescence



**BETATEK** INC.  
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# ZetaView®

## Nanoparticle Tracking Analyzer



ZetaView® is a nanoparticle tracking analysis (NTA) instrument for measuring hydrodynamic particle size, zeta potential and concentration.

### Key Features & Benefits

- ✓ **Scanning NTA** – automated measurements are taken at 11 positions through the sample cell, providing a thorough and robust interrogation of samples, without need for additional accessories.
- ✓ **Auto-alignment & auto-focus** – the optical setup is automatically optimized by the software, saving the user time preparing the instrument for use and removing subjective user input bias.
- ✓ **Fast measurements** – analysis of over 1,000 particles in as little as 60 seconds.
- ✓ **Quick and simple cleaning** – cleaning between samples requires only a quick flush (less than 1 minute), saving time.
- ✓ **Intuitive software** – traffic-light system gives an instant indication of whether the sample is at a suitable concentration for measurement and what the dilution factor of the samples is.
- ✓ **Compact all-in-one design** – compatible with the laboratory environment; small footprint and data files. Measure size, concentration, zeta potential and fluorescence with one instrument.
- ✓ **Fluorescence analysis** – fluorescence NTA measurements allow interrogation of sub-populations in the sample. A sensitive camera (CMOS), selective filters, and low bleaching performance yield high fluorescence sensitivity.
- ✓ **No high-cost consumables** – just syringes and reference standards for scattering and fluorescence measurements (if applicable).
- ✓ **No calibration** – size measurements do not need to be calibrated as the method is absolute.



The 10x objective of the ZetaView allows analysis of up to 200 particles in the field of view – yielding superior concentration results.

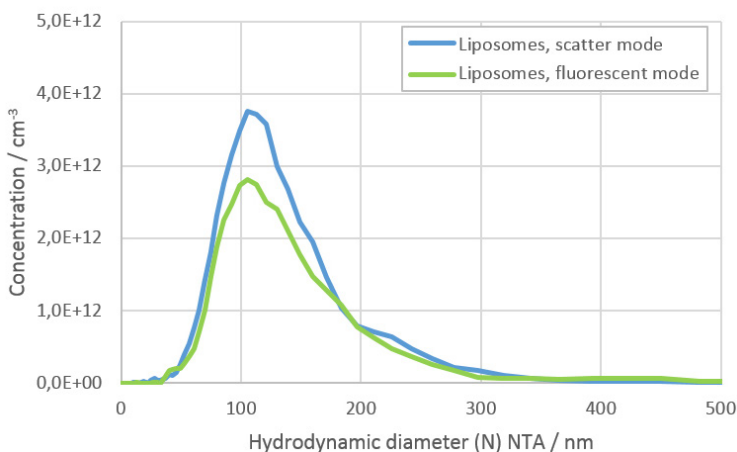
### Key Applications

- **Bio-nanoparticles:**
  - Extracellular Vesicles (EVs)
  - Exosomes
  - Liposomes & Micelles
  - Protein Agglomerates
  - Viruses & Virus-Like-Particles (VLPs)
  - Drug Delivery
  - Fluorescent-labelled NPs
- **Low Concentration Samples:**
  - Nanobubbles
  - Trace Particles

## ZetaView and Fluorescence (F-NTA)

With NTA, particles are viewed by detection of the light that they scatter. Due to the physical nature of this detection method, a chemical discrimination is not provided. In order to add specificity to particle characterization, Fluorescent Nanoparticle Tracking Analysis (F-NTA) can be employed.

Nanoparticles such as vesicles can be labelled with a specific antibody bearing a fluorescent molecule (fluorophore). ZetaView® has a LWP filter option to block scattered light from the laser, allowing through only fluorescence of a longer wavelength, generated by excitation of the fluorophores by the laser. As a result, only the fluorescent-labelled particles will be detected and measured by the camera.



### Example - Characterisation of Liposome Staining Efficiency using F-NTA

In this example, liposomes were stained with the membrane dye DiO and then characterized in both scattering and fluorescence mode. In fluorescence mode, the laser light is blocked, allowing only fluorescent light from the stained liposomes to be detected. Therefore, only the labelled liposomes appear and we are able to calculate the proportion of particles successfully stained as 79% of the total.

**NEW: ZetaView® TWIN Laser NTA System**

**Please ask for details**

**The ZetaView is now available as a twin-laser model, giving users a choice of two lasers to use for fluorescent labelling and excitations. Two different fluorophores can be used on the same sample, for identification of TWO different sub-populations.**

## Zeta Potential (Z-NTA)

ZetaView® uses micro-electrophoresis to calculate zeta potential; a measure of particle surface charge. Zeta potential distribution is calculated from the electrophoretic mobility results at the two stationary layers in the sample cell, or from an electrokinetic velocity profile obtained by scanning at all 11 positions throughout the sample cell.

Zeta potential provides information about the surface chemistry of a particle. As a general rule, the higher the magnitude of zeta potential, the more particles repel each other in solution and remain stable. It is therefore of interest with respect to agglomeration and stability. ZetaView® is available with two interchangeable cell assemblies – with and without zeta potential functionality.



## Zetaview® Standard Technical Data

For more details please see separate datasheet

### Measurement Principles

- Precision-engineered motorized scanning NTA instrument for tracking movement of individual visualized nanoparticles in suspension
- Real-time visualization of Brownian Motion and electrophoretic mobility, for measuring size, concentration and zeta potential in scattering and fluorescence mode.
- Fast scanning to acquire and analyze typically 1000 particles in ~ 1 minute

### Samples

- Nanoparticles suspended in polar liquids (e.g. water, alcohols) for size, concentration, fluorescence and zeta potential studies
- Nanoparticles suspended in polar and organic solvents for size, concentration and fluorescence studies

### Size / Concentration

- Concentration range:  $10^5 - 10^9$  particles/ml
- Particle size: 20nm – 1000nm (dependent on sample & laser)
- Accuracy:  $\pm 5$ nm (for 100nm polystyrene latex)
- Reproducibility:  $\pm 2$ nm (for 100nm polystyrene latex)

### Lasers

- Available laser wavelengths: 375nm, 405nm, 488nm, 520nm, 640nm, 660nm at typical laser power of  $>30$  mW
- Pulse duration 0.1 ms up to continuous

**For more information on the ZetaView®, or to discuss your requirements, please contact us.**

## Contact Us

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