



**Malvern
Panalytical**
a spectris company

ZETASIZER ADVANCE RANGE

Light Scattering for every application



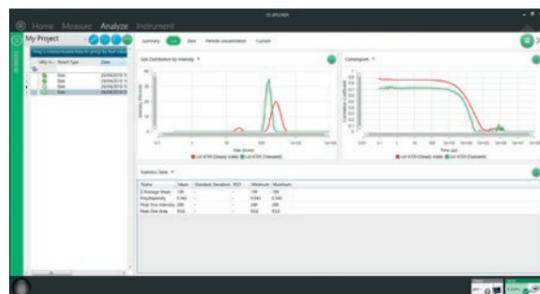
WELCOME TO THE ZETASIZER ADVANCE RANGE

Building on the legacy of the industry-leading Zetasizer Nano Series, the Zetasizer Advance family of light scattering instruments brings increased versatility and expertise to your laboratory. The extensive range of six Zetasizer Advance systems provides a perfect fit for every application and every workflow challenge.



- **Dynamic Light Scattering (DLS)**
Determine the size of particles in your sample, from <math><1\text{ nm}</math> to $10\text{ }\mu\text{m}$
- **Electrophoretic Light Scattering (ELS)**
Understand sample stability and propensity to aggregate
- **M3-PALS with Constant Current Mode**
Reduce errors in your data associated with electrode polarization at high ion concentrations

- **Adaptive Correlation**
Generate robust data quickly and increase measurement repeatability
- **ZS Xplorer Software**
Automate even the most complex analysis without expert knowledge, thanks to the sample-centric workflow
- **Data Quality System**
Get instant feedback and actionable advice on how to improve data quality



This feature intelligently identifies and separately classifies rogue large particles so that they do not influence the consistently-present particle size result, providing a more representative view of the sample.

COMPREHENSIVE, VERSATILE AND COST-EFFECTIVE

Zetasizer Lab

Our entry-level model, the Zetasizer Lab, utilizes 90° measurements to generate high quality particle size and zeta potential data, especially when measuring larger-sized particles.

Zetasizer Pro

The Zetasizer Pro utilizes Non-Invasive Back Scatter (NIBS) technology, delivering a wider range of sample concentration and particle size measurement capabilities.

Zetasizer Ultra

Multi-Angle Dynamic Light Scattering (MADLS®) technology, for the highest resolution sizing data, makes the Zetasizer Ultra the ultimate research model.

Each model is available in either a Blue Label version for routine sample investigation or a Red Label version for use with more challenging samples.



A ZETASIZER FOR EVERY NEED

Now you've been introduced to the Zetasizer Advance family, how do you find out which system best fits your requirements?

Here are some application examples to help you decide:



Colloidal Silica

Sizing of colloidal silica is a critical requirement. This is easily and reproducibly measured using the Zetasizer Lab Blue Label.

| Measurement | Z-Average (nm) |
|-------------|----------------|
| 1 | 35.04 |
| 2 | 34.67 |
| 3 | 34.90 |
| 4 | 35.44 |
| 5 | 34.97 |
| Mean | 35.00 |
| % RSD | 0.80 |

Titanium Dioxide

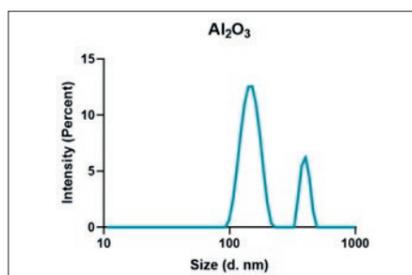
Titanium dioxide use is wide-ranging. When used in paints or inks, agglomerate or aggregate formation can diminish product performance.

The Zetasizer Pro Blue Label, used alongside the MPT-3 Autotitrator, characterizes the impact of salt concentration on the stability of TiO₂ and identifies the most stable pH region.



Ceramics

The strength of ceramics is linked to particle size, and the Zetasizer Ultra Blue Label is ideally placed to measure this. Al₂O₃ samples are often made of differently-sized particles which can easily be identified using MADLS. In this 0.1% w/v sample, the two particle size populations would not be distinguishable with a single angle DLS measurement.



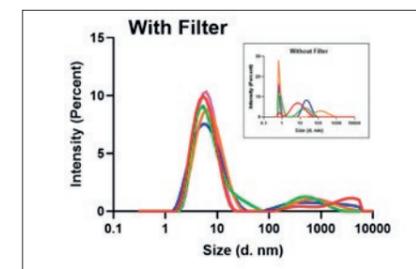
Proteins

For protein researchers, early access to characterization data can be a challenge, due to low sample volumes. This is easily overcome using the Zetasizer Lab Red Label with the capillary cell to confirm that samples meet quality requirements and that production and purification processes are optimized.



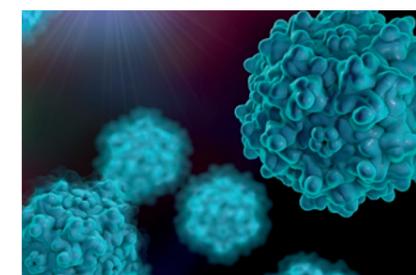
Carbon Dots (C-dots)

Photoluminescent C-dots are considered safer alternatives to quantum dots. Measuring fluorescent samples by DLS can be challenging due to additional photons emitted by the fluorophore. Available with NIBS on Zetasizer Pro Red Label, a filter removes this interference to provide accurate and reliable data.



Adeno-Associated Virus (AAV)

Monitoring viral concentration is important during development and production optimization. By using the Multi-Angle DLS (MADLS) based particle concentration measurement in the Zetasizer Ultra Red Label, both the size distribution and titer of the virus can be measured within a few minutes.



A ZETASIZER YOU CAN INSTALL YOURSELF

Get up and running fast with self-install

Get your new system up and running rapidly, when you self-install. There's no need to wait for an engineer to visit.

- Multilingual video installation guides
- 15 months' access to exclusive e-learning materials
- Extended 15-month warranty



Find out more at:

malvernpanalytical.com/self-install

Easy, on-site upgrades

Upgrade your Zetasizer Advance system to a higher specification model at any time. Upgrades can be performed onsite* to minimize downtime.

With Zetasizer Advance, you can be confident that, should your needs change, you can upgrade to adapt easily and improve the value of your system.

21 CFR Part 11 functionality

Coming soon: Malvern Panalytical's new solution for regulatory compliance, 21 CFR Part 11 and GMP Annex 11. This will provide flexible configuration of roles and permissions to fit your workflow, supporting electronic records and signatures.

*Upgrades can be performed onsite when you upgrade between models (Zetasizer Lab, Zetasizer Pro or Zetasizer Ultra); upgrading from Blue Label to Red Label versions cannot be performed onsite.

ZETASIZER ADVANCE SPECIFICATIONS

| | Zetasizer Lab | Zetasizer Pro | Zetasizer Ultra |
|-----------------------------------------------------------------------|-------------------------------------------------|-----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| Size Measurement Principle | Classical 90° Dynamic Light Scattering | Non-Invasive Back Scatter (NIBS) Dynamic Light Scattering | Non-Invasive Back Scatter (NIBS) Dynamic Light Scattering (90° and 13°) Multi-Angle Dynamic Light Scattering (MADLS [®]) |
| Zeta Measurement Principle | ELS with M3-PALS and Constant Current Zeta Mode | ELS with M3-PALS and Constant Current Zeta Mode | ELS with M3-PALS and Constant Current Zeta Mode |
| Molecular Weight and B22 ¹ | Static Light Scattering (90°) | Static Light Scattering (173°) | Static Light Scattering (90° and 173°) |
| Optical Filter Wheel (Fluorescence/DDLS) | No | Yes | Yes |
| Low Volume Disposable Sizing Cell with Extended Size Analysis Support | Yes | No | Yes |
| MADLS [®] (High Resolution DLS) | No | No | Yes |
| MADLS [®] - Particle Concentration/Titer | No | No | Yes ² |
| 21 CFR Part 11 compliant software ³ | Optional | Optional | Optional |
| Size | | | |
| Range ⁴ | 0.3 nm to 10 µm | 0.3 nm to 10 µm | 0.3 nm to 10 µm |
| Minimum Volume | 3 µL | 12 µL | 3 µL |
| Zeta potential | | | |
| Size Range | 3.8 nm to 100 µm | 3.8 nm to 100 µm | 3.8 nm to 100 µm |
| Minimum Volume ⁵ | 20 µL | 20 µL | 20 µL |

¹ Hardware capable; Software support coming soon
² Red Label only
³ 21 CFR Part 11 software features coming soon
⁴ 10 µm by default. Option to extend for Zetasizer Lab and Zetasizer Ultra coming soon
⁵ Patented Diffusion Barrier method in capillary cell



WHY CHOOSE MALVERN PANALYTICAL?

We are global leaders in materials characterization, creating superior, customer-focused solutions and services which supply tangible economic impact through chemical, physical and structural analysis.

Our aim is to help you develop better quality products and get them to market faster. Our solutions support excellence in research, and help maximize productivity and process efficiency.

Malvern Panalytical is part of Spectris, the productivity-enhancing instrumentation and controls company.

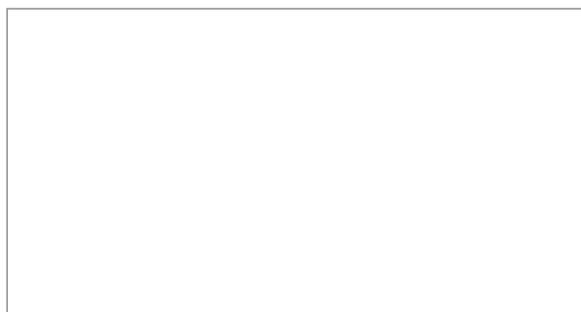
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SERVICE & SUPPORT

Malvern Panalytical provides the global training, service and support you need to continuously drive your analytical processes at the highest level. We help you increase the return on your investment with us, and ensure that as your laboratory and analytical needs grow, we are there to support you.

Our worldwide team of specialists adds value to your business processes by ensuring applications expertise, rapid response and maximum instrument uptime.

- Local and remote support
- Full and flexible range of support agreements
- Compliance and validation support
- Onsite or classroom-based training courses
- e-Learning training courses and web seminars
- Sample and application consultancy



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