NanoSight Pro

Malvern nanoparticle tracking analysis technology

See your particles. Trust your data. Accelerate your research.

Unparalleled
in particle-by-particle analysis

Experience high resolution particle size and concentration with precision you can trust

With over 9,300 peer-reviewed citations, NanoSight is the most widely used NTA solution in biomaterials research. As the latest evolution of the NanoSight family, NanoSight Pro is powered by decades of innovation from the leaders in NTA.

NanoSight Pro delivers high-resolution particle size and concentration data you can trust across a broad spectrum of research applications. Powered by machine learning and advanced algorithms, it brings confident, reproducible results to experts and newcomers alike.

"NanoSight Pro is very quick and easy to use because it can measure size, concentration, and fluorescence. It'll be a huge advantage when looking at non-invasive biomarkers for a particular disease or condition."

Dr Rebecca Dragovic
University of Oxford
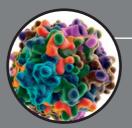**Application: extracellular vesicles**
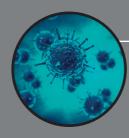
NanoSight measures what matters - across applications

Extracellular vesicles

Verify isolation success and identify EV subpopulations fast. NanoSight Pro delivers high-resolution size and concentration data, with fluorescence to track EV origins and composition, which is essential for understanding disease mechanisms.
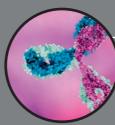
Drug delivery & gene therapy

Assess formulation complexity, monitor stability and ensure batch-to-batch consistency. NanoSight Pro provides rapid size and concentration data for lipid nanoparticles (LNPs), from research and development to final product release.
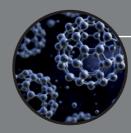
Viruses and vaccines

Speed up vaccine development with accurate viral particle analysis. NanoSight Pro provides rapid sizing and virus titer - supporting process optimization, enhancing your workflow.
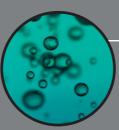
Biotherapeutics

Protect product safety and efficacy. NanoSight Pro detects subvisible aggregates early, supporting thermal stress and stability testing to ensure consistent quality.

Nanomaterials, colloids & nanotoxicology

Stay ahead of regulatory demands. NanoSight Pro delivers number-based particle concentration and detailed size distributions from simple to complex nanomaterials, without any prior information about the optical properties of your sample.

Ultrafine bubbles

Generate nanobubbles with confidence. NanoSight Pro sensitively measures ultrafine bubbles - essential in water treatment, agriculture, medical, and industrial applications.

What is
Nanoparticle tracking analysis ?

Visualizing the invisible

See what other techniques miss in complex, polydisperse samples. Nanoparticle tracking analysis (NTA) delivers high-resolution size and concentration measurements by visualizing and tracking individual particles in real time.

How NTA works

NTA captures light scattered from particles undergoing Brownian motion, providing particle-by-particle tracking for high-resolution data. The natural relationship between particle size and diffusion (smaller particles move faster, larger particles are slower) is directly converted into particle size using the Stokes-Einstein equation – with no external calibration required. Each particle is sized independently and all measured simultaneously, enabling a deep understanding of even very complex samples.

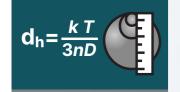### In short, NTA turns the invisible motion into data that you can rely on

1 A laser beam illuminates nanoparticles suspended in a liquid

2 A camera records the scattered light from each particle in real time

3 The system tracks the Brownian motion of each particle
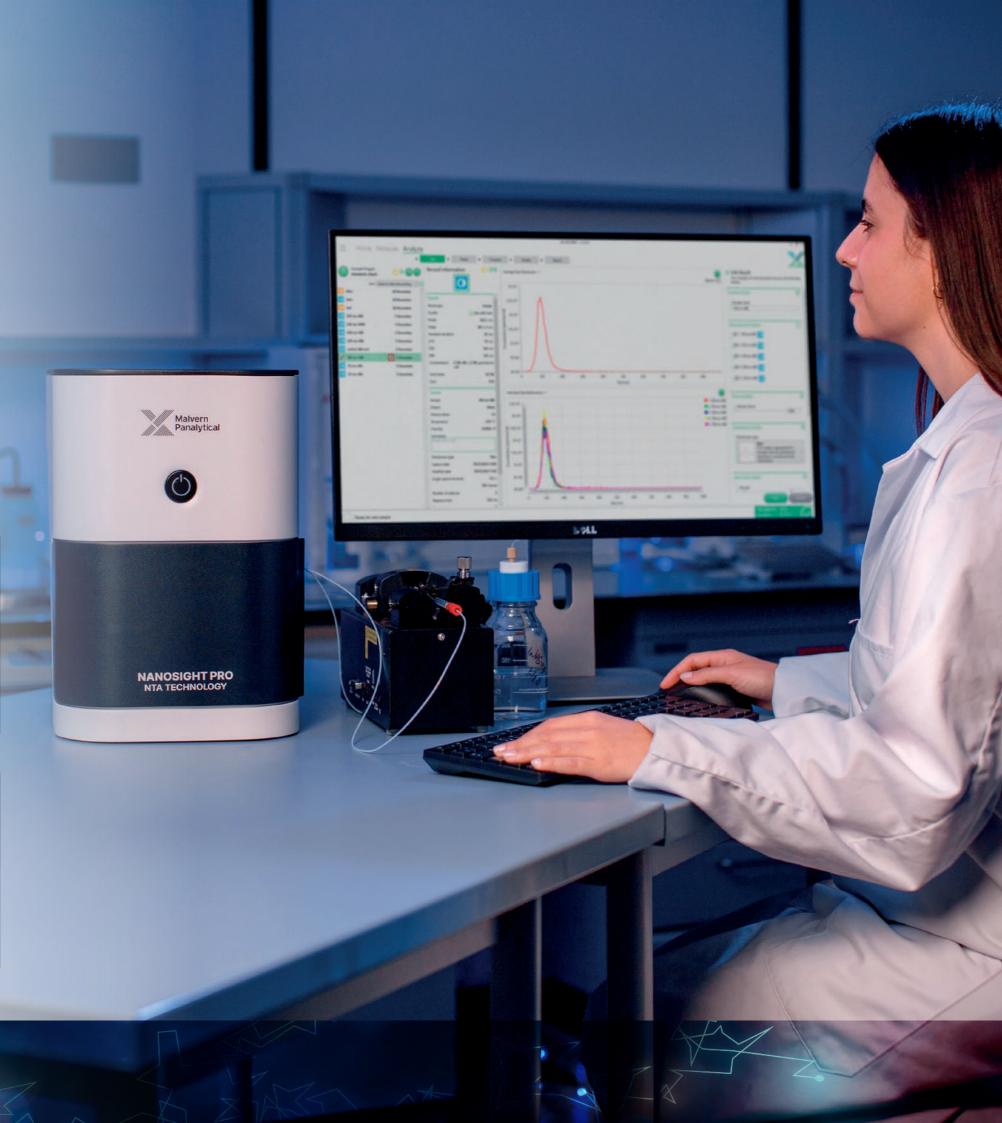
$$d_h = \frac{kT}{3nD}$$

4 The hydrodynamic diameter of each particle is calculated using the Stokes-Einstein equation

5 Concentration is determined by counting the number of particles in a known volume

6 Fluorescent labels can be used to identify and analyze specific subpopulations

Why choose **NanoSight Pro?**

Seeing is believing
(See what is being tracked)

See your particle in motion with real-time video capture, providing immediate validation of results and helping reduce troubleshooting time.

Robust Flow-based NTA
(Don't miss out, scan more)

NanoSight Pro's flow-based NTA technology ensures statistically robust data by continuously introducing particles into the sample chamber with no manual repositioning required

High-Resolution Sizing &
Heterogeneity Analysis

Track each particle individually and all simultaneously for detailed, high-resolution size data. NanoSight Pro's particle-by-particle approach reveals subtle differences in sample composition with precision.

Fast, Reliable Concentration
Measurements

Direct particle counting within a dynamically measured volume enables rapid and reproducible concentration data. Monitor product quality, batch consistency, and formulation stability with confidence, ideal for shelf-life studies and stress testing.

Subpopulation detection
with fluorescence

NanoSight fluorescence detection provides more insight into sample characteristics and identify subpopulation across wide range of applications.

Advanced Temperature
Control for Deeper Insights

Thermal ramp your formulations up to 70°C to simulate stress environments. NanoSight Pro identifies small changes due to aggregation, helping you assess purity, stability, and manufacturing consistency, all with minimal sample prep, and results in minutes

Malvern Panalytical

NANOSIGHT PRO
NTA TECHNOLOGY

NS Xplorer-
NanoSight Pro central control
with intuitive interface

**Confidence without complexity
Eliminate user bias**

NanoSight Pro's new Auto set up and processing optimizes your image to achieve best quality results, eliminating user bias. Say goodbye to subjective interpretation - NanoSight Pro ensures unbiased data you can trust.

Own your results from the start

Take control of your analysis. NSXplorer reviews your image in advance and provides expert guidance to ensure good quality results from the beginning. Intuitive and Logical workflow interface guides user throughout analysis.

Track intelligently

Visualise particles in motion with real-time video capture, backed by hassle free particle identification and intelligent algorithms to minimise noise and maximise data integrity. NSXplorer delivers accurate tracking and reliable data for confident analysis.

Powerful data visualization tools

Spot trends and outliers instantly with dynamic size and count graphs.

Decay graphs reveal fluorescent properties and photobleaching effects, offering deeper insight into particle behavior and sample integrity.

From sample to result in seconds

Rapid measurement in as little as 11 seconds, powered by a high sensitivity camera and adaptive frame rate tailored to your sample.

**Empower your team with
NS Xplorer - Expert level
insights, instantly**

NSXplorer doesn't stop at capture. It delivers post-analysis feedback that gives you deeper insight into your sample, helps you optimise both settings and preparation, and drives more accurate, reliable results.

See more: combine light scatter and fluorescence for deeper insights

NanoSight Pro switches seamlessly between light scatter and fluorescence modes - giving you a global view of your sample and deep insight into specific subpopulations.
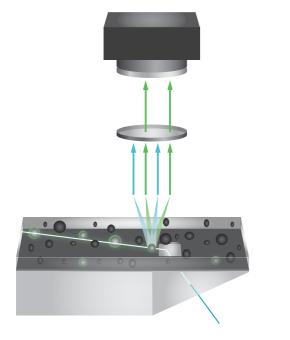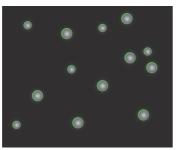
Light scatter mode

Use light scatter mode to visualize and measure individual nanoparticles in real time - assessing the whole sample, particle concentration, and aggregation state.
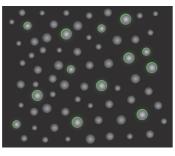
Fluorescence mode

Use fluorescence mode to detect and analyze labeled subpopulations, track specific biomarkers, or quantify labeled cargo.

Together, these complementary modes give you a more complete understanding of your sample - ideal for complex formulations, biologics, and advanced delivery systems where both total particle behavior and subpopulation insights matter.

"The labeling method and subsequent analysis proved to be swift, straight-forward, and illuminating providing direct visual confirmation of the CD63 marker within the EV population."
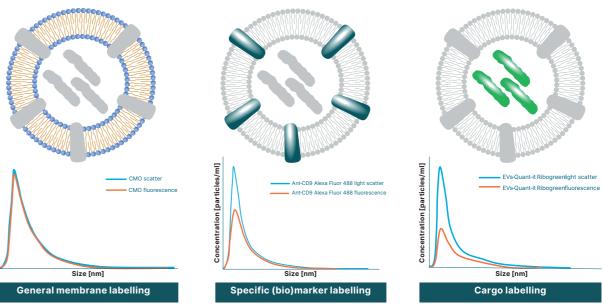
Dr Joshua Price,
Postdoctoral Researcher, University of Birmingham
Application: extracellular vesicles

Precise subpopulation detection

Detect & characterize specific subpopulations and phenotypes with advanced fluorescence characterization.

Identify specific populations within complex mixtures instantly. NanoSight Pro's dedicated fluorescence mode takes you beyond size and concentration to explore specific subpopulations within your sample. Whether you're identifying surface markers of extracellular vesicles, labeling gene therapy vectors, or tracking lipid nanoparticles, fluorescence detection reveals details invisible to conventional analysis.

Applications

General membrane labelling | Specific (bio)marker labelling | Cargo labelling

Flexible laser configuration

NanoSight Pro's interchangeable laser modules (405 nm, 488 nm, 532 nm, 642 nm) adapt to your application needs - from diverse particle types to fluorescence studies. This flexibility supports a wide range of sample types and minimizes downtime - modules can be quickly swapped or upgraded on-site, keeping your system running and your data flowing.

405 nm | **488 nm** | **532 nm** | **642 nm**

OmniTrust

OmniTrust ensures robust data integrity and regulatory compliance across your MP instruments: Mastersizer, Zetasizer Advance, Aeris, Empyrean and NanoSight Pro - so you can focus on science, not paperwork.

Combining intuitive software with expert service solutions, OmniTrust reduces administrative overhead and simplifies your path to 21 CFR Part 11 compliance.

The software suite includes:

- **OmniAccess** – Secure authentication and authorization with flexible role configuration
- **OmniTrail** – Comprehensive audit trails for systems and records
- **Central Management** (optional) – Centralized control of users, roles, and audit data

Backed by decades of regulatory expertise, our service offering supports seamless implementation and compliance readiness - giving you peace of mind and operational efficiency from day one.
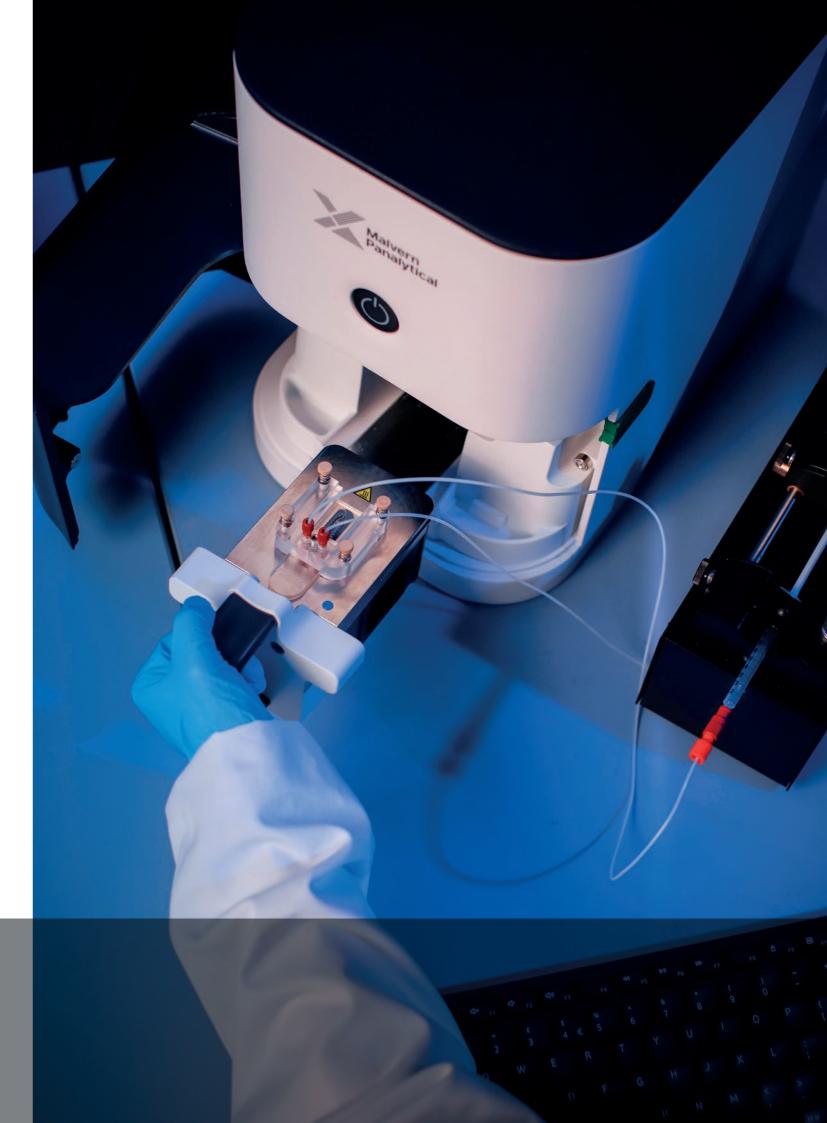
OMNI**TRUST**

Self-Install

Get up and running fast with Self-Install

Get your new system up and running rapidly, when you self-install.

Theres no need to wait for an engineer to visit.

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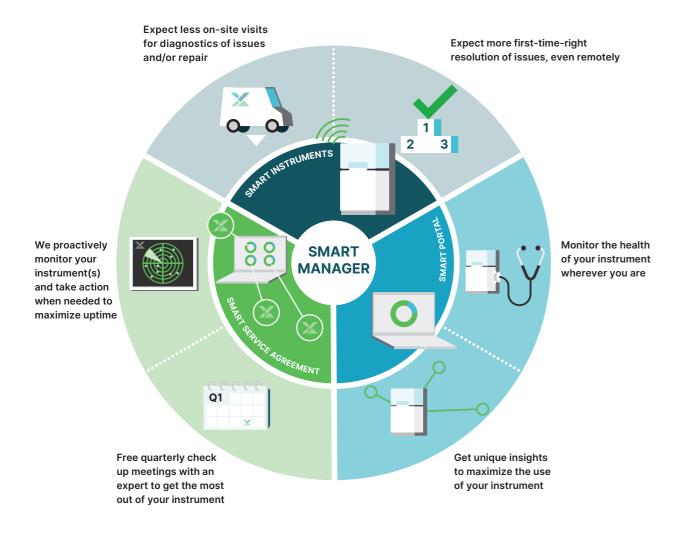- Extended 15-month warranty

Smart Manager:
Remote support to optimize uptime

Smart Manager is the cloud-based instrument monitoring service that looks after the health of your Malvern Panalytical instruments 24/7 - including NanoSight Pro. Smart Manager connects your system to our Tech Support Center, automatically alerting engineers to potential issues before you even notice them.

Expect less on-site visits for diagnostics of issues and/or repair

Expect more first-time-right resolution of issues, even remotely

We proactively monitor your instrument(s) and take action when needed to maximize uptime

Monitor the health of your instrument wherever you are

SMART INSTRUMENTS

SMART PORTAL

SMART MANAGER

SMART SERVICE AGREEMENT

Free quarterly check up meetings with an expert to get the most out of your instrument

Get unique insights to maximize the use of your instrument

Specifications

NanoSight Pro	
Technology	Nanoparticle Tracking Analysis
Size range (diameter)[1]	10 nm – 1000 nm [(1)]
Particle concentration[2]	$10^6 - 10^9$ particles/mL [(2)]
Advanced concentration algorithm	Dynamic observation volume-based concentration algorithm
Minimum sample volume	250 µL
Camera	High sensitivity sCMOS USB-3
Laser wavelength (max power)	405 nm, <65 mW; 488nm, <45 mW; 532 nm, <50 mW; 642 nm, <40 mW
Temperature control range	10 C below ambient up to 70 C
Syringe pump	Continuous sample flow with 1 mL disposable syringes
Dimensions (HxWxD)	34 × 35 × 25 cm
Weight	11 kg (instrument), 1.6 kg (Laser module)
Power requirements	AC 110–240 V, 50-60Hz, 4.0 A
Fluorescence	Automatic selection for up to 5 filters [(3)]

Notes: [1]Dependent on sample and instrument configuration; [2]Sample dependent; [3]Optional functionality

With Smart Manager, you'll get:

- Proactive alerts before failures occur, preventing failures from occurring
- Part re-ordering without the need for on-site visits, maximizing instrument uptime
- By reducing the number of service visits, Smart Manager reduces downtime and emissions associated with travel

"The software is not complicated; it saves time for training the new users and running the experiments. It has auto-focus and a camera that is easy and convenient. Also, the data was precise and accurate"

Panida Punnabhum,

Research Technician, University of Strathclyde

Application: Nanoscale materials

About Malvern Panalytical

Malvern Panalytical, Micromeritics and SciAps; a powerful and highly complementary combination of market leading technologies.

We are the toolmakers for the world's most innovative companies, academic institutions, and government laboratories. Customers see the difference when they use our instruments and feel the difference when they deal with our people.

Malvern Panalytical instruments analyze the chemical, physical and structural nature of materials, from proteins to polymers and semiconductors to minerals. Our leading technologies measure particle size, shape, concentration and zeta potential, biomolecular interactions and stability, elemental concentrations and crystallographic structure.

As a powerful combination our customers have access to technology leadership and an unwavering commitment to customer support with a 1:1 ratio of sales to applications engineers, our customers' analysis is our priority – global expertise with local support tailored to their needs and access to an extended product portfolio.

With Micromeritics, customers can also measure surface area, porosity, density, adsorption and particle activity. With SciAps, our Center of Excellence for handheld instruments, customers can also access portable X-ray fluorescence (XRF), laser-based (LIBS), and near-infrared (NIR) analyzers to measure any element in any environment.

We have a global footprint with R&D and manufacturing sites in North America, Europe, and Asia. We are more than 2,500 employees in a customer-focused organization with sales and service offices in 20 countries, all committed to delivering expert and responsive customer support.

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, and ensure that as your analytical requirements grow, we're 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.

- Proactive local and remote support
- Full and flexible range of service agreements
- Compliance and validation support
- Onsite or classroom-based training courses
- e-Learning training courses and web seminars
- Digital services, including MyStore and My Customer Support Portal
- Sample analysis, method development, and applications consultancy

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