Swabian instruments

DLScat

Nano Particle Sizing

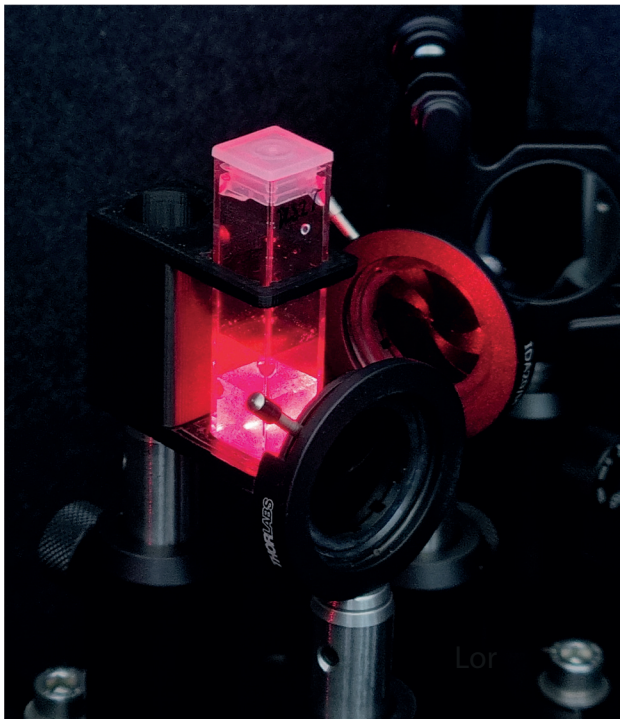
Precise. Flexible. Reliable.

DLScat

The DLScat is an enhanced particle size measurement solution, which exploits multi-angle dynamic light scattering combined with an intelligent intensity spike filtering algorithm. It determines particle sizes more accurately and reliably in a large variety of samples, especially those containing contaminants, agglomerates, or polydisperse particles.

Dynamic Light Scattering - Benefits and Challenges

Dynamic Light Scattering (DLS) is a fast, convenient, non-invasive optical method for assessing particle sizes in solution, widely used for sample quality validation. The main limitation of existing DLS systems is susceptibility to large particles such as dust or agglomerates, which bias the apparent particle size towards erroneous larger values. Our DLScat offers not only a solution for such contaminated samples but also gives you unparalleled control over advanced analysis parameters, allowing you to access the latest capabilities of DLS.



DLScat Applications

Industries

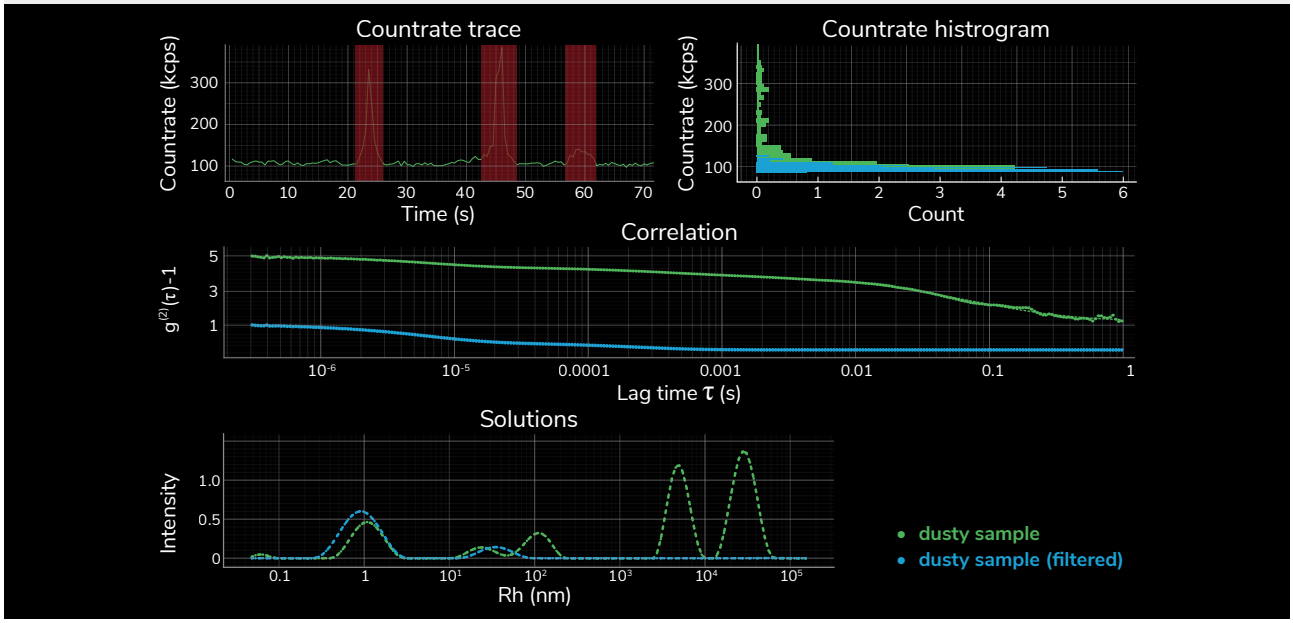
- Life sciences
- Food industry
- Beauty industry
- Pharma industry
- Nanotechnology

Systems

- Nanoparticles
- Micelles
- Colloids
- Vesicles
- Proteins

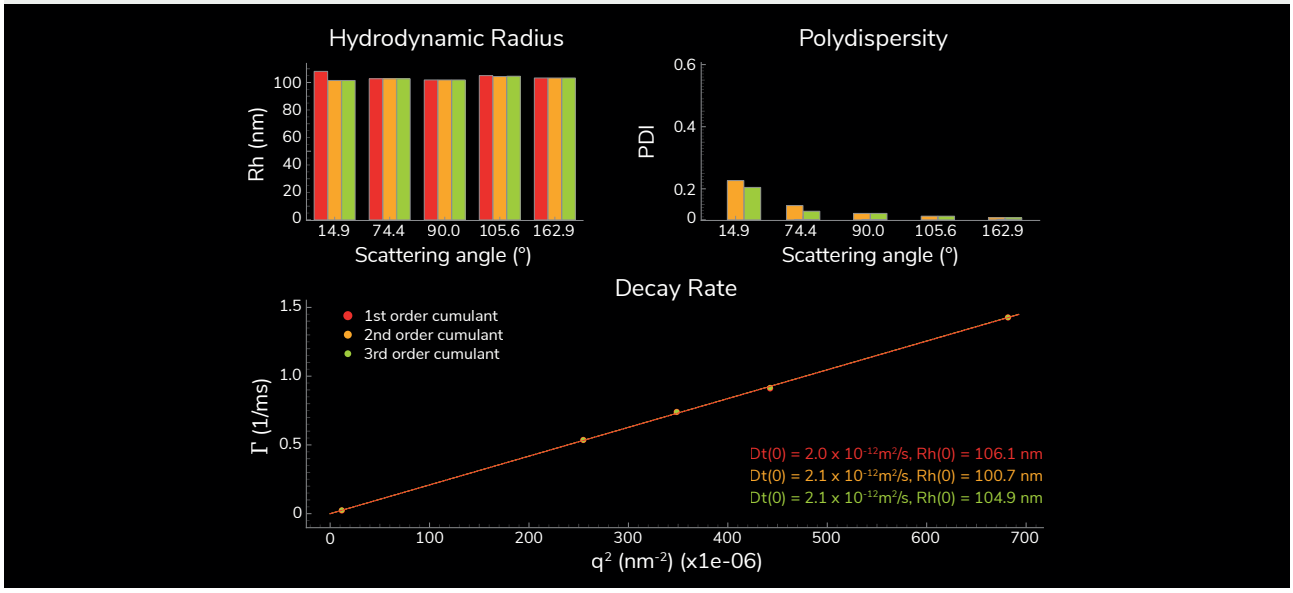
Maximize Accuracy with Intelligent Intensity Spike Filtering

Contaminants and agglomerates are some of the most common problems in DLS measurements and can lead to significantly distorted measurements. In traditional DLS solutions, a single "spike" by such a contaminant or agglomerate is enough to result in erroneously large particle size measurements. The intelligent intensity spike filtering developed by Swabian Instruments for the DLScat effortlessly eliminates these spikes from the scattered light. This recovers the correlation function and ensures precise measurement without cumbersome sample filtering procedures, saving the researcher valuable time.



Immediate Consistency Checks with up to 5 Scattering Angles

The most stringent method to confirm that a DLS particle size measurement was correct is to check the similarity of the measurements across multiple scattering angles. Existing DLS instruments allow to measure only one angle at a time. Therefore, a multi-angle measurement is tedious and time-consuming, preventing users from performing this valuable consistency check. Our DLScat measures at up to 5 angles in one shot, enabling effortless consistency checks promptly and routinely.



Support & Software

Our customers are entitled to personalized support from our dedicated team of application scientists. We provide rapid responses within one business day to accommodate your experimental needs. We continuously develop our system architecture and user interface, and we regularly release software updates to expand functionality and push performance boundaries.

Swabian Instruments empowers scientists around the globe to perform groundbreaking research.
Tell us your experimental goals, and we will tailor our systems to your specific needs

Specifications

Particle Size Specifications

Size Range	0.3 nm – 10 µm hydrodynamic diameter *
Geometric Angles	20° (forward scattering); 69°, 90°, 111° (side scattering); 157° (back scattering)
Analysis	CONTIN, Cumulant analysis, Intensity spike filtering, Kinetics
Temperature Range	16 °C – 100 °C (+/- 0.1 °C) **

Sample Characteristics

Minimum Concentration	0.1 mg/mL (lysozyme), 0.1 ppm (latex 100 nm diameter) *
Maximum Concentration	40% w/v *
Minimum Volume	12 µL (1-angle), 50 µL (3-angles), 100 µL (5-angles)

Optics - Laser

Laser Wavelength	633 nm (561 nm and other wavelengths available upon request)
Laser Power	tunable, 3 – 30 mW (wavelength-dependent)
Laser Safety Class	Class 1
Laser Warmup Time	1 min

Optics - Detector

Detector Type	Single-mode fiber coupled with high-performance SPAD
Number of Detectors	1-angle, 3-angle, 5-angle configurations available
Attenuation Range	1 – 1000
Number of Bins	Up to 500

System & Interface

Dimensions	L: 485 mm, W: 330 mm, H: 230 mm, weight approx. 16 kg
Correlator	Time Tagger, auto- or pseudo-cross-correlation
Digital Communication	USB 2.0 Type C connection
Computer	Included, Mini PC
Software	Windows 11, Graphical user interface

A controlled working environment is required to meet all the specifications mentioned.

* Sample performance metrics are sample-dependent.
** Temperatures down to 0 °C are achievable with external dry-air purging to prevent condensation.

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