ARCHIMEDES

MASS MEASUREMENT ON A DIFFERENT SCALE

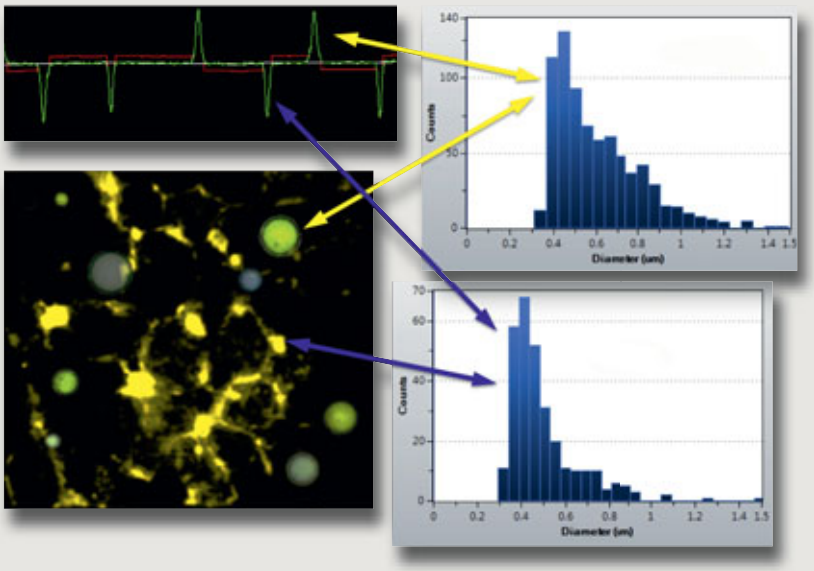
Malvern

Archimedes harnesses the technique of resonant mass measurement to provide new insights into particles in the size range 50nm - 5µm. With simple yet powerful technology, driven by MEMS fabricated sensors, Archimedes is able to detect and count particles, and measure their mass and size.

A key application of Archimedes is the detection, quantification and characterization of protein aggregates in the submicron to micron range, highlighted as a significant concern in terms of immunogenicity and drug efficacy and safety.

Archimedes is also uniquely able to differentiate between negatively buoyant and positively buoyant particles, enabling the discrimination of such particles as protein aggregates and droplets of silicone oil, regular contaminants of biopharmaceutical final formulations stored in prefilled syringes.

Archimedes particle metrology system



Archimedes distinguishes between protein aggregates and silicone oil droplets in a biopharmaceutical formulation

Key Benefits of Archimedes

- The first truly quantitative measurement of particles in the 50nm - 5µm size range
- High sensitivity, resolution and reproducibility for nanoparticles and proteins
- Able to distinguish between protein aggregates and particles with negative buoyancy, such as contaminating silicone oil droplets
- Simplicity of operation and maintenance, together with intuitive ParticleLab software, provides a powerful tool for particle characterization
- Shortens development and optimisation time required for biopharmaceutical formulations
- Provides precise assessment of biotherapeutic formulation stability
- Gives an immediate, reliable assessment of protein aggregation state
- Suitable for use with high concentration, high viscosity samples
- Minimal sample consumption
- Fast, NIST-traceable calibration

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SPECIFICATIONS

Particle Size	
Measurement Range	50nm - 5µm*
Accuracy	Better than +/- 1% on NIST traceable latex standards
Precision/Repeatability	Better than +/- 1% on NIST traceable latex standards
Resolution	Better than +/- 20nm at 1µm, polystyrene beads in H_2O
Particle Mass	
Lower Limit of Detection	350ag*
Accuracy	Better than +/- 3% on NIST traceable latex standards
Precision/Repeatability	Better than +/- 3% on NIST-traceable latex standards
Particle Counting/Sample Concentration	
Measurement range	10^4 particles/mL – 10^9 particles/mL*
Accuracy	Better than +/- 10% on NIST traceable latex standards
Precision/Repeatability	Better than +/- 5% on NIST traceable latex standards
General Instrument Specifications	
Measurement Principle	Resonant Mass Measurement
Drawn Sample Volume (minimum)	100µL
Measured Sample Volume Range	10nL - 10µL
Sample Viscosity Range	<1cP -100cP
Accuracy in Fluid Density	<0.002g/cc for densities in range 0.8g/cc – 1.2g/cc
Weight and dimensions	
Dimensions (W, D, H)	610mm x 585mm x 305mm
Weight: (kg)	23.6
*Sample Dependent	

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Malvern Solutions: Advanced technology made simple - distributor details

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