

Solutions for Particle Characterisation

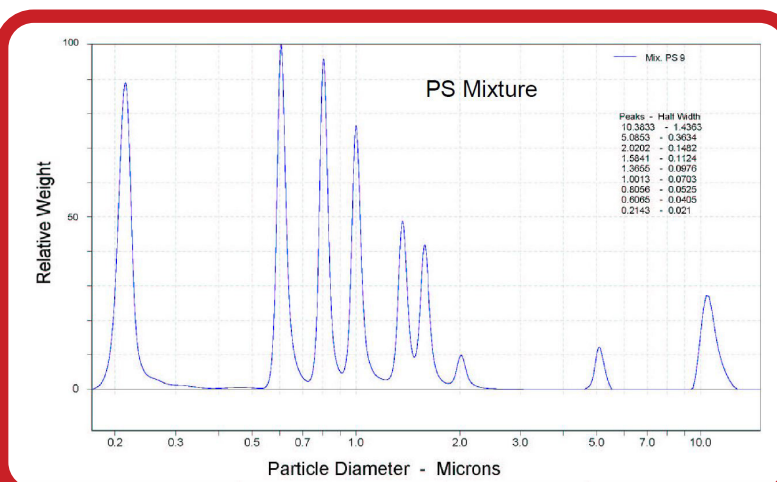
- **Differential Centrifugal Sedimentation (DCS)**
- **Nanoparticle Tracking Analysis (NTA)**
- **Single Particle Extinction and Scattering (SPES)**



Differential Centrifugal Sedimentation

The **CPS Disc Centrifuge** is an ultra-high resolution particle size analysis instrument, based on the principle of **Differential Centrifugal Sedimentation (DCS)**. Rather than using predictive algorithms, the CPS physically separates and characterises particles of different sizes, allowing resolution of peaks with as little as **2% difference in size**.

Highly poly-dispersed particles can be measured in the size range of $\sim 3.0\text{nm}$ to ~ 60 microns, at 2 to 10 times better resolution than any other particle sizing instrument.



The chart demonstrates the ultra-high resolution capabilities of the DCS technique in being able to clearly separate the 9 peaks of a multi-modal Polystyrene sample.

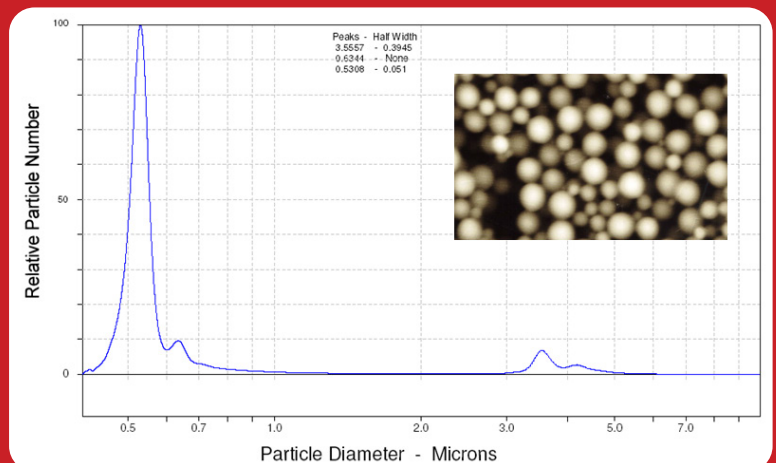
Performance

- ✓ **Ultra-high resolution particle sizing** - detect & measure subtle differences in particle size
- ✓ **Wide dynamic range** - broad & multi-modal distributions
- ✓ **Highly reproducible results** - consistent across different instruments & users

Key Applications

- Protein clusters
- Cell fragments
- Silica dispersions
- Oil emulsions
- Carbon nanotubes
- Inks/pigments
- Gold/silver nanoparticles
- Micro-spheres

The CPS Disc Centrifuge is able to measure samples with a wide dynamic range, evidenced here in a measurement of a bi-modal silica sample, verified by TEM analysis.



Nanoparticle Tracking Analysis

The **ZetaView®** is a next generation **Nanoparticle Tracking Analysis (NTA)** instrument for measuring hydrodynamic particle size, zeta potential and concentration through analysis of a video sequence at 11 separate positions in a flow cell.

Each individual particle in the 3nL field of view is counted and tracked in short video clips, creating accurate concentration calculations and particle size distributions. The ZetaView® combines these Brownian Motion measurements with classical micro-electrophoresis to determine **zeta-potential**. These parameters can be measured both in scattering mode and in fluorescence mode, for the determination of fluorescently labelled sub-populations.



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

Key Applications

- Fluorescently labelled nanoparticles
- Extracellular Vesicles (EVs) and Exosomes
- Drug delivery
- Liposomes and Micelles
- Viruses and Virus-like Particles

Performance

- ✓ **Scanning NTA** - measurements taken at 11 different positions in the sample cell
- ✓ **Auto-alignment & focus** - automatically optimised, saving time & removing bias
- ✓ **Fast measurements** - size & concentration readings can be achieved in just 90 seconds
- ✓ **Quick, easy cleaning** - a quick flush, which takes less than a minute!
- ✓ **Intuitive software** - traffic-light system for instant indication of suitable sample concentration
- ✓ **Compact all-in-one design** – highly compatible with the laboratory environment; small footprint and data files
- ✓ **Discrimination power** - by fluorescence measurements

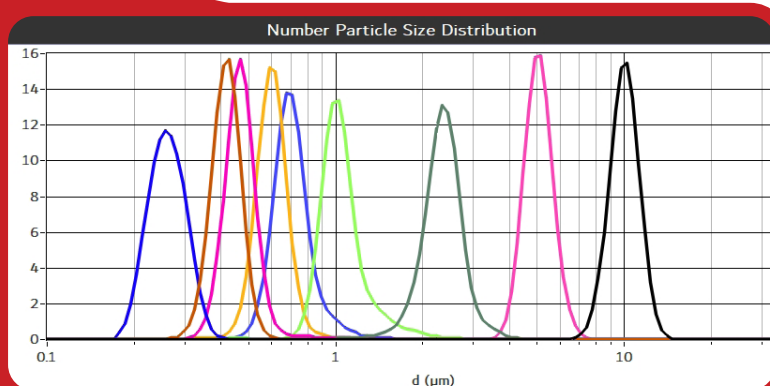
Single Particle Extinction & Scattering

The **Classizer ONE** is a cutting-edge particle analysis platform that utilises the patented **Single Particle Extinction and Scattering (SPES)** method for the analysis, characterisation, and measurement of particle size distributions of **heterogenous particle mixes**.

Used for research, tailored **particle development**, **dispersions formulations**, and **quality control** in life sciences, nutraceuticals, cosmetics, pigments, inks, cements, abrasives, agrochemicals & environmental sciences.

Key Applications

- **Gold & Silver nanoparticles**
- **Liposomes & emulsions**
- **Encapsulations**
- **Drug delivery**
- **Pigments & inks**
- **Environmental studies**
- **Abrasives & slurries**
- **Fine chemicals**
- **Shelf-life optimisation**



Particle size distribution and number concentration are calculated for different materials in a heterogeneous solution, even for overlapping particle size distributions (PSDs).

Performance

- ✓ **Fully resolved overlapping Particle Size Distributions** for mixtures containing different particle materials
- ✓ **Number concentration** of each particle type characterised
- ✓ **High resolution particle size** across a wide range (**0.1 to 20 microns**)
10% - 20% resolution (>70nm for metals)
- ✓ **Particle composition & particle agglomerations** identification
- ✓ **Characterise internal particle loading & external particle coating**
- ✓ **Real time statistical analysis** & customisable system tailored to application
- ✓ **Fast measurements** (typically done in minutes) or continuous mode



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