

New

CPS Disc Centrifuge UHR

A new standard in high resolution particle size measurement

Distributed in the UK and Ireland by Analytik.

The **new CPS Disc Centrifuge UHR** is an extremely powerful analytical tool for ultra-high resolution, high accuracy measurement of particle size distribution. Offering the unique ability to resolve very close multi-modal particle distributions and to distinguish extremely small shifts in particle size, the practical range of the analyser is from 2nm to 80 micron (depending on sample density).

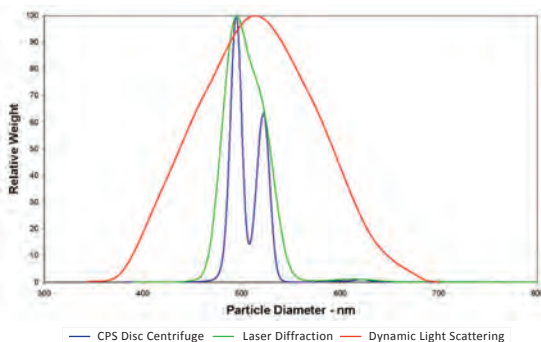
The instrument utilises the particle sizing technique of Differential Centrifugal Sedimentation (DCS). Rather than using a predictive algorithm, the Disc Centrifuge physically separates the nano particles and then measures them as they pass a light source detector - providing full characterisation in real time.

Key features of new 'UHR' model:

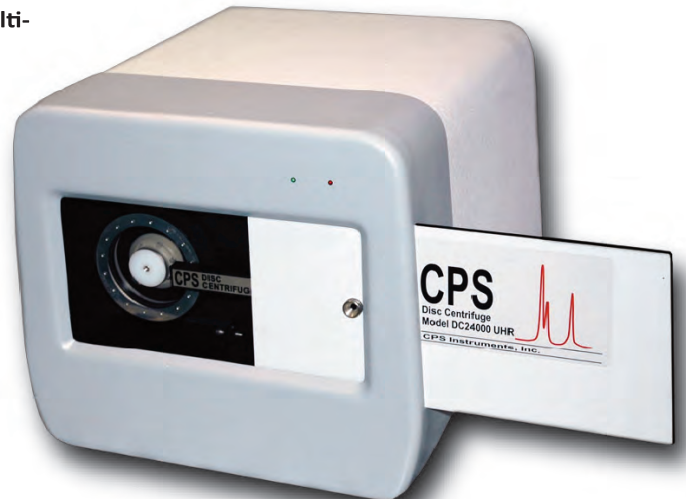
- ◆ Higher Resolution
- ◆ Improved Solvent Resistant Disc
- ◆ Quiet Operation
- ◆ Added Analysis Time Flexibility

Higher Resolution

The detector optics have been re-designed to produce a narrower beam where it passes through the sample. The beam takes the form of a short arc (rather than a straight line) with a radius that matches the radius of rotation where the beam passes through the disc. With radius matching, the effective width of the beam is further reduced, and for most measurements, effective resolution can be significantly improved. The peak width for a perfectly narrow sample can be as low as 1% of the particle size diameter measured. By utilising the improved resolution of the CPS Disc Centrifuge UHR, for typical particles, the instrument output is very close to a perfect representation of the true distribution - approximately 2-10 times better resolution than the best available with other particle sizing methods.



Ultra High Resolution Capability - resolution comparison with Laser Diffraction and Dynamic Light Scattering



*New CPS Disc Centrifuge UHR:
Do you know the real size of
your nano particles?*

Improved Solvent Resistant Disc

The UHR model comes with a standard solvent resistant disc made from CR-39 polymer. The new disc resists attack by virtually all organic solvents and water based liquids. CR-39 polymer is resistant to scratching, will not yellow with age, and has clarity approaching that of optical grade glass. The improved optical quality of the disc eliminates scattering and distortion of the detector beam by the disc, and so maintains improved resolution from the narrower beam.

Quiet Operation

The UHR model uses an improved air flow pattern that reduces cooling fan noise, and has added sound insulation plus a double wall construction to reduce noise from the centrifuge motor and the rotating disc. Audible noise power at the front of the instrument is reduced to 1/6 of the level of earlier CPS Disc Centrifuge models.

Added Analysis Time Flexibility

The improved resolving power of the UHR model means that many analyses of very small diameter samples can be measured in a much shorter time, by trading a slight reduction in resolution for a shorter analysis. For example, the sedimentation depth can often be reduced by a factor of two, which reduces run time by a factor of two. The loss in resolution (e.g. a minimum reportable peak width of 3% of the mode diameter instead of 1.5%) is quite small, and remains far better than any other particle sizing technique.

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The new **CPS Disc Centrifuge UHR** builds on the successful platform of the CPS Disc Centrifuge which has revolutionised particle size characterisation - proving to be an invaluable tool for countless nano applications around the world!

The ground-breaking instrument is used extensively in the UK and Ireland after being launched in 2005 by Analytik. Existing users of the CPS Disc Centrifuge include:

Academic:

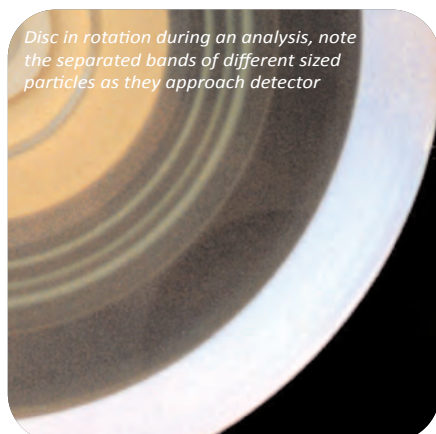
- ◆ Loughborough University (Prof. Richard Holdich)
- ◆ University College Dublin (Prof. Kenneth Dawson)
- ◆ University of Birmingham (Prof. Lynne Macaskie)
- ◆ University of Leeds (Prof. Simon Biggs)
- ◆ University of Liverpool (Dr. Mathias Brust)
- ◆ University of Nottingham (Prof. Stephen Harding)
- ◆ University of Nottingham (Dr. Stephanie Allen)
- ◆ University of Oxford - Begbroke (Dr. Alison Crossley)
- ◆ University of Sheffield (Prof. Steve Armes)
- ◆ University of Warwick (Dr. Stefan Bon)

Industrial:

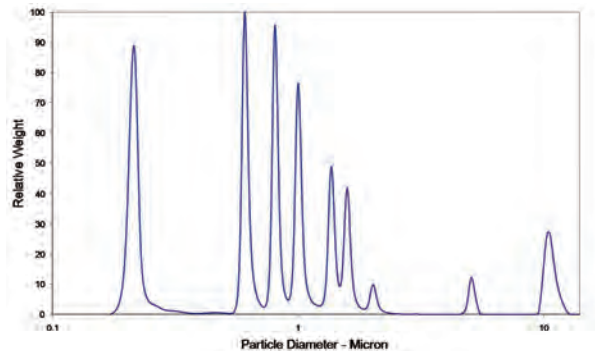
- ◆ AstraZeneca
- ◆ Beckman Coulter Biomedical
- ◆ DuPont
- ◆ Element Six
- ◆ GlaxoSmithKline
- ◆ Intertek MSG
- ◆ Johnson Matthey Catalysts
- ◆ Millenium Chemicals
- ◆ PALL Europe

Governmental:

- ◆ National Centre for Macromolecular Hydrodynamics
- ◆ National Institute for Biological Standards & Control
- ◆ National Physical Laboratory



Disc in rotation during an analysis, note the separated bands of different sized particles as they approach detector



9 PVC Calibration Standards - detect, measure and resolve peaks which differ in size by as little as 2%

Applications

Pharmaceutical / Biological:

- ◆ Gold and silver nano-particles (coated and/or uncoated)
- ◆ Virus and virus-like particles
- ◆ Cells (culture) and cell fragments
- ◆ Protein clusters
- ◆ Liposome's
- ◆ Micro-encapsulated drugs

Chemical:

- ◆ Polymer latexes and emulsions
- ◆ SiO₂ dispersions
- ◆ Fillers (CaCO₃, clay, barites, etc.)
- ◆ Abrasives (of all types)
- ◆ Carbon Nanotubes
- ◆ Quantum dots

Printing and painting:

- ◆ Pigments - water and oil based
- ◆ Micro-fibre paint viscosity modifiers
- ◆ Printer/copier toner powders
- ◆ Inkjet inks
- ◆ Carbon black
- ◆ Magnetic iron oxide

Semiconductor:

- ◆ Micro-abrasives
- ◆ CMP compounds

Other:

- ◆ Micro-spheres
- ◆ Agglomeration patterns
- ◆ Starch/flour particles