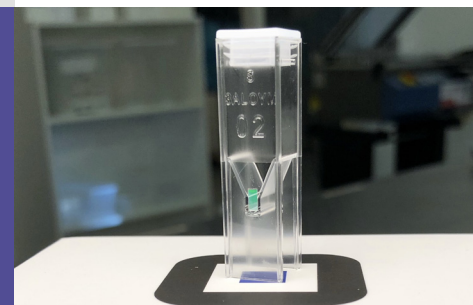


NanoCuvette™ S

Achieve easy, fast and reliable particle/cell size and concentration analysis



Key uses

Label-free measurements at different volumes (100 μ L - 200 μ L)

Size analysis of particles from 50 nm to 3000 nm with concentration detection limit of 0,0001% to 0,1% .

Surface refractive index range measurements at 1.0 - 1.6 nD

Turbidity and impurity QC-measurements

Key Benefits

Improved and affordable upgrade for your existing UV-Vis spectrophotometer

Reusable cuvettes

Less sample needed for analysis

Made in Denmark with unique ID for traceability

Easy to use with no training required

One cuvette with multiple functionality

+ All basic cuvette features

Overview

The NanoCuvette™ S allows for spectrophotometric quantification of particle/cell size and concentration analysis in numerous industries such as biotechnology, pharmaceuticals, life science, foods, including various industrial applications for quality control.

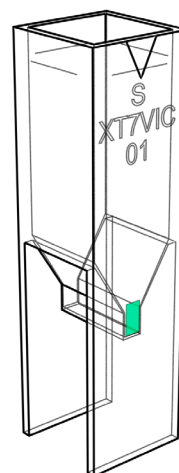
The capacity of NanoCuvette™ S goes far beyond any product currently on the market in terms of achieving easy, fast, and reliable particle/cell size analysis and concentration determination. With the NanoCuvette™ S you have the functionality to determine small particles down to 50 nm, while simultaneously quantify their concentration.

SpectroWorks™



Automated spectrum analysis included

NanoCuvette™ S



Traceable ID engraved

Photonic crystal optical filter

The NanoCuvette™ S expands the capabilities of your spectrophotometer and allows you to perform combined angle-resolved light scattering and absorbance at 190-1100 nm. Integrated in the surface is a patented photonic nanocrystal (optical filter), that register light scattering such that it measures particle sizes near the photonic crystal surface.

With NanoCuvette™ S particles can be quantified in minutes with enhanced sensitivity, reliability, and reproducibility. It measures concentrations and sizes in a standard spectrophotometer without expensive specialized instrument. Together with the unique user-friendly online software SpectroWorks™ it automatically analyses the results in minutes. Labwork has never been easier. Furthermore, NanoCuvette™ S have the free "Basic cuvette" spectrum file functionality in SpectroWorks™ which you can use for automatic standard curve processing, using our free report template in Colab Notebook.

NanoCuvette™ S key uses:

Less sample needed for analysis

Research compounds from biotechnology, pharmaceutical and chemical industries can be expensive and scarce, some equipment needs up to 1-2 mL of samples for size and concentration analysis. The NanoCuvette™ S can measure volumes with as little as 100 µL, while utilizing the benefits of full traceability and the power of cloud computing to reach enhanced sensitivity, reliability, and reproducibility.

Particle size and concentration determination

The optical filter in NanoCuvette™ S works together with SpectroWorks™ to determine both the size and concentration of particles in suspension by angle-resolved light scattering in a method like Surface Plasmon Resonance (SPR). The calculation factors in both Rayleigh and Mie scattering, thus yielding a high dynamic range ideal for research & development or QC as an alternative to DLS.

Refractive index measurement

NanoCuvette™ S's optical filter measure refractive index and together with SpectroWorks™ it will calculate the refractive index like SPR. Refractive index does not require any coloration (dye or indicator) to be measured. Thus, it is possible to measure concentrations with a spectrophotometer of a transparent solution.

Static light scattering and cloud computing

Particle can be measured since light scattering depends on angle and wavelength. NanoCuvette™ S utilizes Rayleigh and Mie scattering at any given time to precisely determine the sizes in the dispersion of both large and small particles. SpectroWorks™ use the scattered light to model the size and concentration within the sample using more than 500 million light simulations.

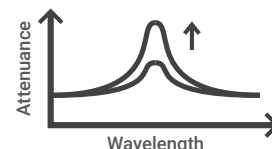
Minimum requirements

Continuous absorbance spectrum range from 550 nm to 800 nm with minimum 3 nm resolution.

Absorption versus label-free spectroscopy

With absorption spectroscopy, the Beer–Lambert law relates the attenuation of light to the properties of the material through which the light is travelling:

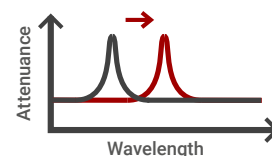
$$A = \epsilon cl + A_0,$$



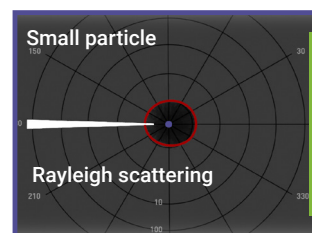
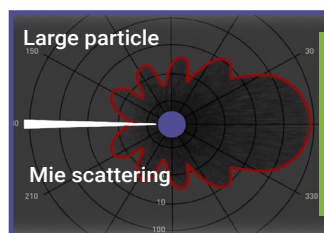
where A is the absorbance, ϵ is molar extinction coefficient, c is the concentration, l is the path length and A_0 is the background absorbance.

In contrast, when light hits a nanoscale photonic crystal, the resonance wavelength is related to the refractive index or concentration close to the surface:

$$\lambda = \beta(ac + n_s) + \lambda_0,$$



where λ is the wavelength, β is a coefficient, a is the specific refractive increment, c is the concentration, n_s is the solvent refractive index and λ_0 is the reference resonance wavelength. This is called label-free spectroscopy.



Why do we upgrade UV-Vis spectrophotometry?

Traditionally, spectrophotometry laboratory work has been limited by lack of robust methods to determine size and concentrations. We upgrade UV-Vis spectrophotometry around the world and across all major instrument brands to create new ways to determine particle size analysis, perform refractive index measurements in a label-free, fast, cheap, and reliable method.