

Dynamic light scattering analyzer

Description/Parameters

The Dynamic Light Scattering Analyzer is an instrument based on photon correlation spectroscopy. It allows the measurement of particle size, molecular weight, and zeta potential.

Principle of Particle Size Measurement: The sample is introduced into a standard spectrometric cell and illuminated by a laser. The fluctuations of scattered light due to Brownian motion of particles are detected by a highly sensitive PMT detector. This signal is processed with an autocorrelation function, and the Stokes-Einstein equation is used to calculate the particle size distribution.

Principle of Zeta Potential Measurement: The sample is placed in a specially designed cuvette with two electrodes, to which a very low voltage is applied. The speed of the charged particles is determined by laser Doppler electrophoresis with frequency shift detection. This speed is converted into electrophoretic mobility, and using Henry's equation, the zeta potential is calculated. Measurements can be conducted at various pH values – titrations.

Adjustable parameters:

- Particle size: 0.3 nm – 10 μm (DLS) / 5 nm – 100 μm (Zeta potential)
- Sample volume: 12 μl – 2 ml (DLS) / <100 μl (Zeta potential)
- Sample concentration: 1 ppm – 40 % (DLS)
- Environment: water, ethanol, organic solvents (DLS) / water (organic solvents) (Zeta potential)
pH titration range: 1 – 13 (Zeta potential)

Utilization/Services

Characterization of powdered materials.



nanoPartica SZ-100V2 Series
Nanoparticle Analyzer