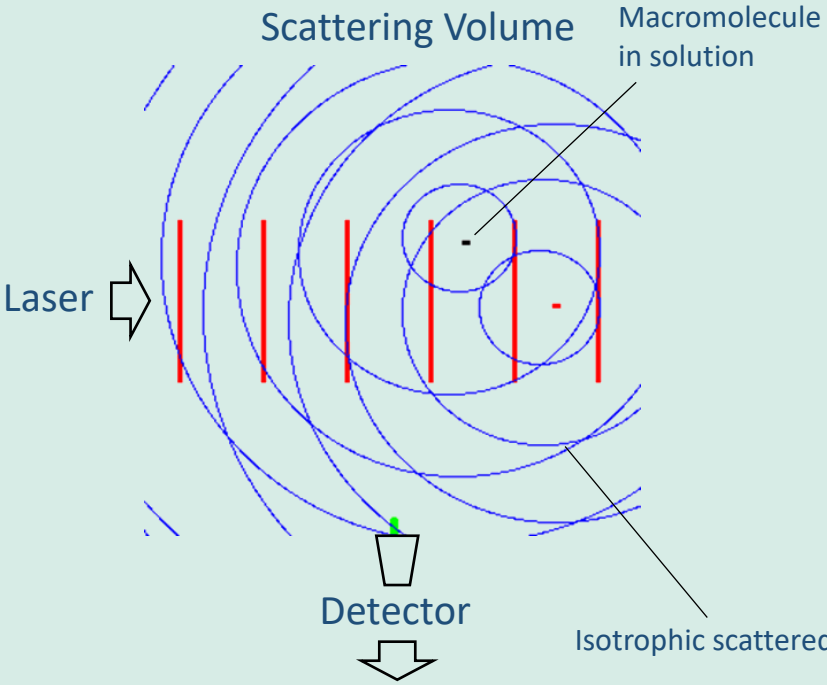
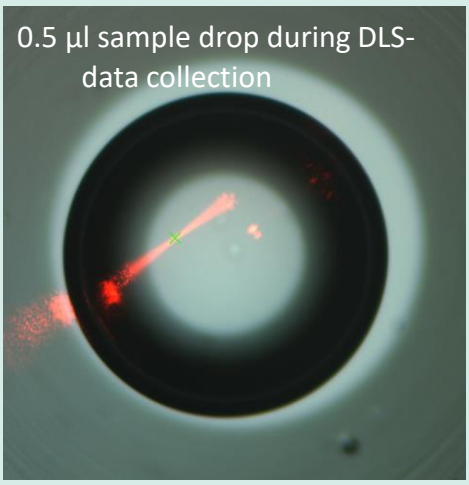
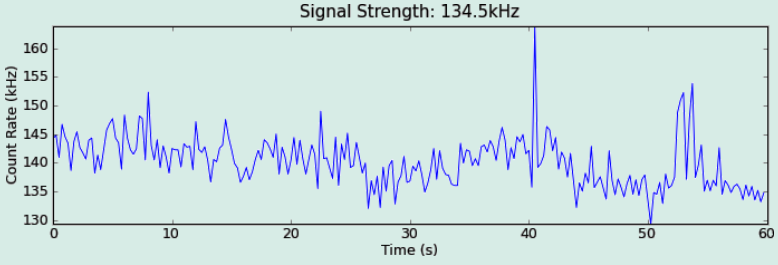
SpectroLight 600 In situ DLS working Principle

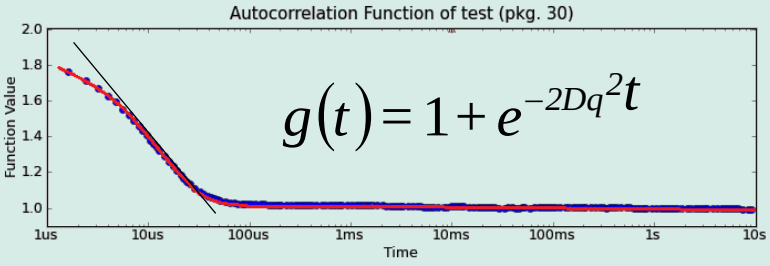


Sample





The light scattered by the particles forms an interference pattern. Due to the Brownian movement of the particles this pattern changes permanently.



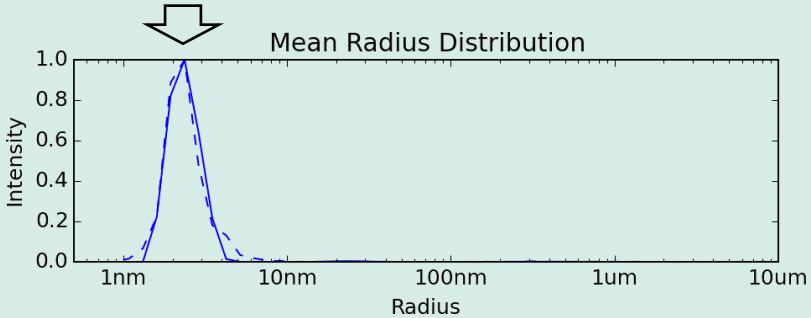
For a given particle size the ACF can be described as an exponential decay. The decay time is now a measure for the intensity fluctuation Velocity. As an intermediate result, the diffusion constant D is obtained.

$$D = \frac{k_b T}{6\pi\eta r_h}$$

Stokes-Einstein-Equation

k_b: Boltzmann constant
T: temperature
η: viscosity
r_h: particle radius

With D, the hydrodynamic radius can be calculated, based on the Stokes-Einstein-Equation.



The final result is a size distribution of particles from the sample. An assessment of the concentration ratios, based on the scattered light intensities of each particle population, can be obtained as well. Data collection is thereby non-invasive.