

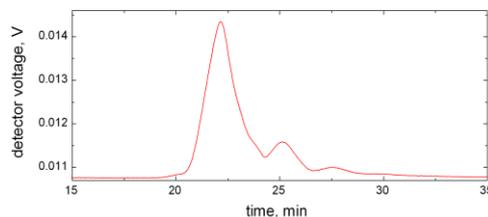
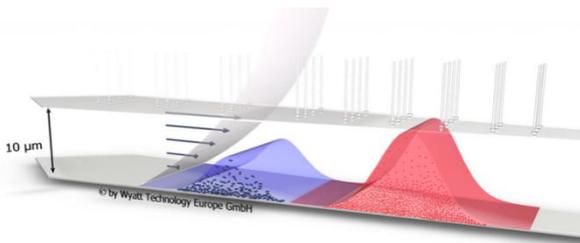
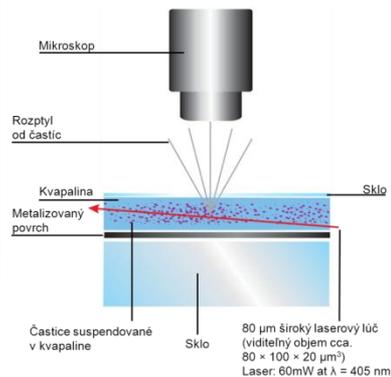
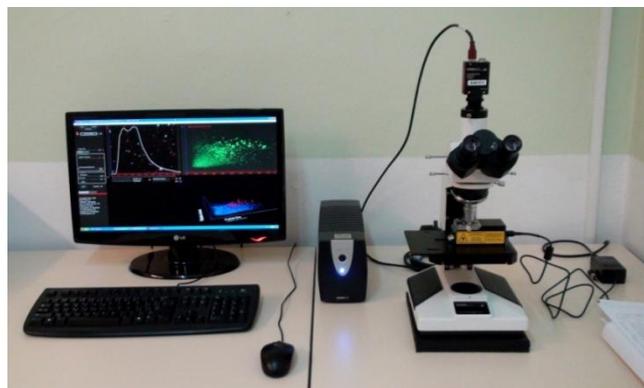
Methods for the characterization of nanoparticle and macromolecular systems - 1

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Nanoparticle tracking analysis

Dynamics of nanoparticles sized under the Abbe diffraction limit is monitored utilizing optical microscopy in 405 nm laser beam. Number (concentration) of nanoparticles and their size distribution is then determined by diffusive motion analysis. Nanoparticle size limit is 20nm.



Asymmetrical flow field-flow fractionation AF4



Fractionation of macromolecules or nanoparticles in asymmetric-flow field and subsequent simultaneous measurement of their concentration, size and molecular weight (Wyatt, USA). Extremely high resolution, for example, fig. to the left: BSA in form of a monomer, dimer, trimer, and higher associates.

Methods for the characterization of nanoparticle and macromolecular systems - 2

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Preparative and analytical centrifugation combined with laser light scattering

Centrifuge KR22i with swinging rotor SWK100.13 (Jouan, France) allows preparative separation of nanoparticles based on application of precisely programmed centrifugal force and subsequent sedimentation/flotation as well as analytical separation based on the unique combination of off-line laser light scattering with gradual centrifugation up to 25,000 g. Latter can be used to measure nanoparticles density and to study interaction forces responsible for stability in case of weak nanocomplexes or nanoassociates/clusters.

