

Electrophoresis

Principle

Charged colloidal particles will move in an electrical field. From the velocity per unit of electrical field strength, called the electrophoretic mobility, the zeta potential can be calculated within certain assumptions. The zeta potential is the electrical potential around the particle at the plane of shear. It is an important parameter, which is related to the electrostatic repulsion between colloidal particles and thereby to the stability of the particles against aggregation. Also the zeta potential is a direct measure of the adsorption of charged molecules or ions on the surface of the particles. By measuring a concentration series the point of zero charge can be determined.



Figure 1: The Malvern Zetasizer 2000



Figure 2: Interior of the Zetasizer with fully mounted capillary M3 cell

Instrument

Our electrophoresis instrument is a Zetasizer 2000 of Malvern Instruments. It measures the electrophoretic mobility of colloidal particles in an ionic solution and then calculates the zeta potential within certain assumptions. The velocity of the particles is measured by laser Doppler velocimetry. The correction for electro osmosis is done by the new M3-technique, so that adjusting the measurement cell to the stationary plane is not necessary.

Further information: J. Buitenhuis