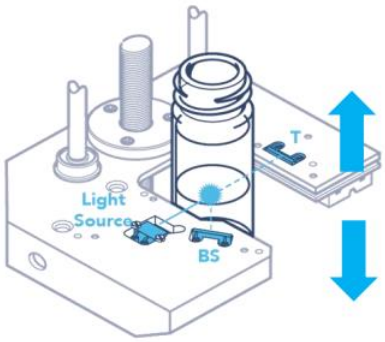
STABILITY OF CATHODE SLURRY FOR LITHIUM-ION BATTERY

CONTEXT

Lithium-ion batteries have applications in laptops, mobile phones, cars, and even airplanes as they offer a high energy density and low self-discharge. However, aqueous cathode slurries are prone to strong particle agglomeration, altering the electrode's mechanical properties and reducing shelf life. Polymers such as Poly(acrylic acid) (PAA) are commonly used to improve particle stability via adsorption. In this application note, the stability of the cathode slurry was investigated for dispersions of LiFePO4 (LFP) and Carbon Black (CB) particles supplemented with PAA as a function of pH to understand the effect of polymer adsorption on stability.

TURBISCAN: How it Works

TURBISCAN technology, based on Static Multiple Light Scattering, consists of sending a light source (880 nm) on a sample and acquiring backscattered (BS) and transmitted (T) signals all over the height of a sample. By repeating this measurement over time at an adapted frequency, the instrument enables monitoring physical stability. The signal is directly linked to the particle concentration (φ) and size (d) according to the Mie theory:



BS and T = f(φ, d, np, nf)