



## LI-ION BATTERY

# STABLE AND HOMOGENEOUS ELECTRODE SLURRY

### Context

To cover our increasing demand for communication and mobility, there is an exponential demand for energy storage and batteries. To cover this need, Lithium-ion-based battery is the most widely used technology. However, for powerful, longer-lasting, and safer batteries, the manufacturing process still presents many challenges. The slurry formulation is one of the key steps. This layer provides the major final battery's mechanical and electrical properties. Being a complex formulation, over time, the dispersion tends to become heterogeneous with particle agglomeration. These destabilizations have a huge impact on the coating layer and the final battery performance.

This application note presents a technology to detect destabilization and measure slurry stability in the function of the different parameters (formula, raw material, process) ... considering all the different parameters in a view to develop more powerful batteries.

### Li-ion batteries principle

A Li-ion cell principle is based on reversible exchanges of lithium ions between the negative (Anode) and positive (Cathode) electrodes during charge/discharge cycles.

Electrodes are composed of active anode/cathode materials, binders, and conductive additives (carbon, graphene) mixed in a solvent or mixture of solvents (NMP, water). Once mixed, the slurry is

coated by tape casting on the current collector and then dried.

The suitable **particle cohesion** and the slurry's strong **adhesion** on the **current collector** are key elements for a homogeneous coating layer and therefore battery performance with optimum charge/discharge cycles.