Slot die coating of lithium ion battery electrodes

Understanding and reducing edge elevations at the lateral edges are crucial aspects to reduce reject rates during electrode production for lithium-ion batteries (LIB). Herein, different process conditions to reduce edge elevations at the lateral edges of water-based, shear-thinning coatings in the production of LIB electrodes are ...

Anode slurries for lithium-ion battery electrodes were deposited in a continuously slot die coating process. A laser sensor system was implemented and applied to measure quantitative profiles of the coating edges.

In comparison with the well-known coating defects such as air entrainment, low-flow limit, barring, or swelling, less scientific research has been published on the subject of edge formation during coating of lithium-ion battery (LIB) electrodes, although edge

Slot die coating is a state-of-the-art process to manufacture lithium-ion battery electrodes with high accuracy and reproducibility, covering a wide range of process conditions and material systems. Common approaches to predict process windows are one-dimensional calculations with a limited expressiveness.

An important step in the production of lithium-ion batteries is the coating of electrodes onto conducting foils. The most frequently used coating method in industry is slot die coating. This process allows the reproducible preparation of thin functional films at high velocities.

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Homogenous lithium-ion battery electrodes were slot-die coated at high velocities. Coating defects were found which match but could not be explained by the low-flow limit. The film-roughness increases when the dimensionless gap width increases. A range of coating parameters was found, that defines a "quality window". Previous.

In this study, the application of a very thin primer layer on a copper foil for Li-ion battery anodes via high-speed slot-die coating is investigated. The purpose of this thin primer layer is the improvement of electrode adhesion and reduction of binder content.

The Li-ion battery technology could help to accelerate the transition towards renewable energy sources. In the manufacturing chain, the electrode processing by slot die coating is one...

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