

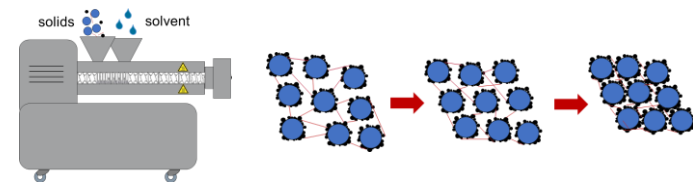
Influence of granulate solids content on the structure and quality of semi-dry processed electrodes

Bachelor-, Studien-, Master-Thesis

Lithium-ion batteries are a key technology for sustainable energy systems and electromobility. However, conventional electrode manufacturing is very energy-intensive, as the solvent must be evaporated during the drying process—a step that contributes significantly to high production costs. Semi-dry electrode manufacturing significantly reduces the amount of solvent required and enables considerable energy and cost savings through direct coating in a multi-roll calender. The further development and scaling of this process requires the targeted characterization of the granules and their influence on the coating quality.

This experimental work focuses on a semi-dry extrusion process for the production of granules, their characterization, and the influence on coating quality. The work packages may include, but are not limited to, the following:

- Literature research on the deformation of granules/powders
- Production of granules with different solids contents
- Characterization of the structural properties of granules and electrodes
- Evaluation of the influence of the produced granules on electrode quality



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Start: By arrangement

Suitable for following study programs:

Mechanical engineering; pharmaceutical, bio, and chemical engineering; sustainable energy technology; battery and hydrogen engineering

