



## Master Thesis

# Oxide-based Coating of Active Material for Lithium-ion Batteries

### Field of Science

- Batteries
- Solid Oxide Cells
- Electrocatalysis

### Focus

- Material Synthesis
- Material Characterization
- Process Development
- Setup Development
- Electrochemistry
- Literature Research

### Background

- Materials Science
- Chemistry
- Chemical Engineering
- Electrical Engineering
- Mechanical Engineering

### Starting Date

As soon as possible

### Contact Persons

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### Motivation

A long cycle life, high power and energy density are the main objectives when designing novel material systems for Lithium-ion batteries. The challenge is combining different materials at the interface, where side reactions take place that may over time impede the battery cell performance. Coating cathode active materials with an oxide-based compound helps to tailor the particle surface, allowing application of high-voltage materials and reducing interfacial degradation. In addition to the novel material design, a new coating technology is explored. The technology promises cost effective and energy efficient particle coating for a wide range of applications.

### Your Tasks

- Literature research and oxide-based material design
- Active material coating
- Structural and microstructural characterization
- Battery cell integration of coated active materials
- Electrochemical testing

### About our Team

We are a multidisciplinary and international team bridging the gap between research and application. The close collaboration with industrial partners provides a real-world perspective and shapes our innovations. The collaboration between the different faculties and institutes at KIT strengthens our expertise. Independent work and motivation to tackle pivotal research topics for society and industry are required. If you would like to join us, please send a motivation letter, your curriculum vitae, transcript of records and certificate of matriculation.