<u>High performance solid-state lithium metal batteries</u>

Solid-state electrolytes are considered essential for enabling the use of metallic anodes such as lithium, as they can potentially suppress dendritic metal growth. These materials also offer improved safety, good processability, and strong adhesion to the metal electrode surface. In the future, high-energy-density battery system, which can store more electrical energy at a lower weight, will be in high demand, particularly for applications in electromobility.

The advertised Master's thesis includes manufacturing and optimizing polymer-based solid-state electrolytes that are operable at ambient temperatures and compatible with advanced lithium-ion cathode materials, such as NMC 811. Furthermore, a deeper understanding of charge transport mechanisms and interfacial processes at the metallic anode is required. This will be pursued using operando scattering techniques and electrochemical modeling.