

Bachelor / Master Thesis

Processing of Li-La-Zr-O-based solid electrolyte for all-solid-state Li ion batteries and the influence on the electrical properties

Garnet-type Li-La-Zr-O-based solid electrolytes have shown a good conductivity of lithium ions at room temperature. This material is considered as electrolyte for all-solid-state batteries due to its chemical, electrochemical, thermal and mechanical stability compared to those of liquid electrolyte. This project is focussed on the processing of polycrystalline solid electrolytes as well as their structural and electrical characterization.

The powder of ionic electrolyte will be grinded, pressed and sintered using different processing parameters in order to study the influence of the porosity, grain size and micro structure on the electrical properties, mainly the ionic conductivity.

The following processing methods will be used:

- Grinding
- Granulation
- Pressing
- Sintering

The obtained samples will be characterized by:

- Laser diffraction (Particle size distribution)
- BET (pore size and specific surface area)
- Microscopy: optical, SEM
- Impedance spectroscopy

The candidate will be supervised and assisted during the project and will gain experience in ceramic processing technology and characterization methods. Master students with outstanding qualifications (e.g. prior research experience, excellent grades in relevant courses) will be supported to apply for a fellowship.

For more information about the project please contact:

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