

Project Name: SUBLIME

Solid state sulfide Based LI-MEtal batteries for EV applications



Wide global deployment of electric vehicles (EVs) is necessary to reduce transport related emissions, as transport is responsible for around a quarter of EU greenhouse gas (GHG) emissions, and more than two thirds of transport-related GHG emissions are from road transport. SUBLIME's overall aim is to significantly increase EV adoption by taking on the technical challenges that are presented by the consumer needs - especially the reduction in costs of EVs, increasing their capabilities regarding long distance traveling and fast charging. SUBLIME concept entails development of a complete value chain, from requirements to testing, for new sulfide electrolyte based solid-state battery cells with high capacity and high voltage stability (scalable to mass production) to reach gravimetric energy density of >450 Wh/kg and volumetric Energy density of >1200 Wh/l. SUBLIME proposes the usage of high capacity and high voltage electrode materials. Li metal as anode (LiM), Ni rich NMC material e.g. or NMC90505 as cathode are foreseen to be used to achieve the targeted energy density. The battery will be inherently safe and will be able to operate at room temperature or lower; thus facilitating the start of the vehicle in broad operating conditions. Interfaces showing a fast Li-ion transport will be developed in the project and partners will focus on developing intimate and (electro)-chemically stable interfaces with strong mechanical properties. The interfaces will be specifically designed to increase stability of the component and the malleable nature of the sulfide enables good interfacial contact. SUBLIME will bring the sulfide electrolyte solid-state battery technology to TRL 6. The scale-up to pre-industrial volume will ensure that results are, indeed, scalable to large-volume commercial manufacturing.

Website: <https://sublime-project.eu/>

ABEE Roles:

- Lithium metal protection design and upscaling
- Cell testing and interfacial analysis
- Aging & Life Cycle Assessment
- Cell design and pressure optimizations
- Multiscale mechanistic modeling