

Abstract

Importance of materials testing of components for novel solid state batteries and arising challenges

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For electro mobility, all solid-state batteries (ASSBs) are increasingly gaining importance due to their higher operational reliability and potentially higher energy densities compared to conventional lithium-ion batteries. However, ASSBs only allow an increase in energy density by rethinking the cell design and using a lithium metal anode which causes a relatively low technology maturity compared to established Li-Ion cells. The knowledge of the exact material properties of the components used in ASSB is decisive for a suitable process and plant design and, as a result, an economical series production. Due to the high moisture sensitivity of various ASSB components the determination of characteristic mechanical material properties in accordance with the standards is challenging. This contribution shows the need for adaption of a conventional material testing system to these specific requirements and demonstrates a novel procedure that can be used to test lithium foils with a thickness of only a few micrometers