Contribution ID: **75** Type: **Poster**

In Operando Neutron Reflectometry Study of SEI Formation on Lithium Metal Anodes Modified with PS-b-PEO Thin Films

Wednesday 9 December 2020 17:35 (25 minutes)

Due to the high theoretical capacity (3860 mAh g-1) and the lowest discharge/charge potential (-3.04 V vs. standard hydrogen electrode) of the lithium metal anode, rechargeable lithium metal batteries have been identified as one of the most advanced energy storage systems, which hold great promise for practical applications. However, lithium metal batteries suffer from serious safety concerns and poor cycling stability, which can be attributed to the uncontrolled growth of lithium dendrites and the unstable formation of the solid electrolyte interface (SEI). Interface property engineering by surface modification of the lithium metal electrode is one of the most promising methods to improve the electrochemical performance of lithium-metal batteries. Using amphiphilic block copolymers to modify the lithium metal anode is regarded as an effective method to enhance its electrochemical performance. Therefore, we are aiming to study the effect of the amphiphilic block copolymer modification and its morphology on the SEI formation and the final electrochemical performance. Due to the sensitivity to light elements in the SEI compounds, neutron reflectometry (NR) is an ideal technique to investigate the layer thickness, roughness, and the layers scattering length density (SLD) of the SEI. By comparing the experiment data, the effect of block copolymer modification layer on the Li metal anode on the formation of SEI can be elucidated clearly.

Primary authors: Mr LIANG, Suzhe (E13, Physik-Department, TUM); Prof. MÜLLER-BUSCHBAUM, Peter (E13, Physik-Department, TUM)

Presenter: Mr LIANG, Suzhe (E13, Physik-Department, TUM)

Session Classification: Joint poster session of MLZ User Meeting and DN2020

Track Classification: UM: Materials Science