

S1-P.8

TEM and Electrochemical Investigation of Different Morphology Silicon Anodes

K. Saleem¹, U. Schürmann¹, S. Hansen², H. Cavers², R. Adelung², and L. Kienle¹

¹ *Institute for Material Science, Synthesis and Real Structure, CAU Kiel, Germany*

² *Institute for Material Science, Functional Nanomaterials, CAU Kiel, Germany*

The volumetric changes and the structural deterioration in Silicon anodes during successive electrochemical lithiation/delithiation cycles limits the utilization of Silicon (Si) anodes in Lithium-based batteries. However, using morphologically modified Si and suitable conducting additives can ensure better electrochemical performance and structural stability even after repeated electrochemical cycles. This research is aimed at comparing the electrochemical performance and solid electrolyte interface (SEI) of different Si anode geometries i.e. powdered Si and Si microwires after cycling. The SEI is analyzed using Transmission Electron Microscope (TEM) methods after cycling in the electrochemical half cell. Si microwires show relatively superior electrochemical performance compared to the powdered Si.