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Thermal and structural behavior of graphite battery anodes

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High-performance graphite evolved to the most common anode material and is used in nearly every commercial Li-ion battery nowadays. However, there is a clear lack of information about the structural stability of Li_xC_6 and its phase diagram. In literature, temperature-resolved phase stability of lithiated graphites is therefore studied poorly and the results are often controversial. Hence, the structural evolution of lithiated graphites was studied at high temperatures showing the decomposition of the lithiated anode and a corresponding loss of intercalated lithium ions, resulting in the evolution of phases like LiF and Li_2O, which are strongly correlated with the degradation of the solid electrolyte interface (SEI).

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