Special Issue

Si-Based and Graphite Composite Materials for Lithium Batteries Electrodes

Message from the Guest Editor

Lithium-ion batteries (LIBs) are the most promising power sources for electric vehicles and portable electronics. Graphite and silicon are the two most successful commercial anodes for LIBs. Graphite provides stable and efficient lithium-ion insertion due to its unique layered structure. However, its limited theoretical capacity (~372 mAh/g) and capacity degradation during fast charging restrict its development. In contrast, silicon anodes have emerged as a promising alternative for high-energy-density LIBs due to their high theoretical capacity (~3579 mAh/g) and natural abundance. Nevertheless, the large volume changes, unstable interface and low electron/ion kinetics restrict its performance. With the urgent demand for high-rate, long-cycling, high-efficiency, high-capacity, and low-cost anodes, more effort is needed to meet these requirements. Therefore, this Special Issue aims to collect works with potential solutions for high-performance graphite and silicon-based anodes for LIBs, such as material design, interfacial modification, and electrolyte optimization.

Guest Editor

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