Nanostructured Si Alloys for Li-ion batteries

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Abstract

Increasing the energy density of Li-ion cells through the use of silicon has been an ongoing challenge across academia and the Li-ion industry for more than a decade. Successful implementation of Si-based materials is a surprisingly complex problem requiring consideration of challenges spanning multiple length scales from the nanoscale up to system-level interactions within the cell, while remaining cost compatible with a competitive industry. Solutions centered on nanostructured Si alloys will be discussed including recent findings on the evolution of the morphology of nanostructured Si alloys during cycling in a Li-ion cell.

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