

Optimizing Solid Electrolyte Interphase for Enhanced Lithium Ion Battery

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Lithium-ion batteries have become an important part of modern society. Essentially used in mobile phones, electric vehicles, drones, etc. In this research, we report a novel and efficient battery system, which is conducted by implanting method on the graphite electrode with high specific capacity. Especially, we focused on electrolyte and the Solid Electrolyte Interphase (SEI) layer, which is formed on the surface of the electrode, affecting the performance of the battery. The SEI implanted graphite electrode is made using LiTFSI (lithium bis(trifluoromethanesulfonyl)imide)-based electrolyte, and cycled with LiBF₄ (lithium tetrafluoroborate)-based electrolyte, representing the synergetic combination of SEI and electrolyte. The proposed electrode system shows the enhanced electrochemical properties. The system also offers high capacity and good stability.