

# Effects of Fluorinated Linear Carbonates on High-Voltage Performance of Lithium Ion Cells

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## ABSTRACT

Safe lithium ion batteries (LIBs) with long life and high energy density have long been a promising energy storage technology for emerging applications in automobiles and smart grids. Development of functionalized electrolyte additives is an effective approach to dramatically improve the performance of high-voltage LIBs. Fluorinated carbonates have been spotlighted to form robust solid-electrolyte interphase on the surface of active materials and thereby improving cycle performance and safety.

In this study, we hereby synthesized fluorinated linear carbonates and tested their electrochemical performance on lithium ion cells under high-voltage (4.5V) operating conditions. The effects of the additives were characterized by linear sweep voltammetry (LSV) and cyclic voltammetry (CV). Overall, the additives were found to improve the electrochemical performance of the lithium ion cells especially at 4.5V cut-off condition.