

Cross-linked composite separator for high performance lithium-ion batteries with enhanced safety

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Lithium-ion batteries(LIBs) plays an important role in cellular phones, computers and electric vehicles, etc. LIB separator, placed between cathode and anode, is mainly used to prevent short circuits inducing battery explosion. Commercial polyolefin-based microporous membranes have been used as separator in LIBs because of high tensile, low cost, and advanced electrochemistry. However, poor thermal stability of polyolefin-based separator was one of the reason of poor safety issue in current LIBs. Especially, low melting point and poor wettability limit their applications in large-size batteries or elevated working temperatures. To solve such issue, researchers have been focused on the modification of the separator to improve the thermal stability of polyolefin-based separators. In this study, we investigated the effect of composite coated separator, which was made by crosslinking, on the effect thermal stability behavior.