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Preparation and Electrochemcial Characteristics of Plasticized Polymer Electrolytes based on Polymer Blends

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There has been a growing interest in the lithium polymer secondary batteries due to their specific advantages such as shape flexibility, high energy density, and relatively low cost.

In this study, the new plasticized polymer electrolytes based on polymer blends were prepared and their electrochemical behavior was investigated. The introdudction of polymer having a good compatibility with liquid electrolyte into a matrix polymer by blending was intended to enhance the ion conductivities of the polymer electrolyte and interfacial characteristics between the polymer electrolyte and electrode.

The polymer electrolyte films were prepared by both solution cast of the blended matrix polymer and liquid electrolyte and dipping of the blended matrix polymer with a microporous structure into liquid electrolyte. The ion conductivities and interfacial characteristics were discussed as a function of the composition of polymer electrolyte. The effect of inorganic particle added on the electrochemical behavior of the polymer electrolyte was also studied. The charge-discharge characteristics of the unit cell based on the blended polymer electrolytes was tested.