

Energy Storage

R&D Project Title : Deeply supercooled Li salt electrolytes for next-generation Li secondary batteries

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Summary :

Li ionic liquids are a promising liquid electrolyte of next-generation Li secondary batteries owing to their properties such as non-flammability, high electrochemical stability, Li ion transference number of unity, and good fluidity/processability allowing facile formation of electrode/electrolyte interface. This project aims to develop highly ion-conductive Li ionic liquids based on a deep supercooling technique for Li salts. We investigate Li plating/stripping behavior in the electrolytes and demonstrate their potential use in Li metal batteries. Efficient battery production process incorporating the Li ionic liquid composite gel electrolytes is also developed to achieve safe, low-cost, and high-energy density batteries. This battery is expected to further promote widespread use of electric vehicles and stationary energy storages that can store renewable energy, contributing to a carbon neutral society.

