# Fundamental Analysis of Intermolecular Interactions between Zwitter-Type Ionic Liquids and Lithium Salts

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Recently, research into the development of new ionic liquids (ILs), particularly in the design of zwittertype ionic liquids (ZILs) composed of covalently tethered cations and anions, has been further driven to overcome the disadvantages of conventional ILs. ZILs serve as a dissociation enhancer to enhance the ion conductivities of polyelectrolytes as well as an immobilizer of carriers for molecular separation. In particular, the specific interactions between ZILs and target materials should be investigated to obtain maximum performance of electrolyte as a result of balancing the number of carrier ions and their mobility as well as exhibit unique thermal behaviors. Herein, we report on the changes in thermal behavior and lithium-ion transport of ZILs attributed to the intermolecular interactions with lithium salts, using density functional theory (DFT), two-dimensional infrared correlation spectroscopy (2D IR COS), differential scanning calorimetry (DSC), temperature gravimetry analysis (TGA), and nuclear magnetic resonance (NMR).