Ionic Liquid Electrolyte for Energy Storage Devices.

유지영†
경북대학교
(beeryoo@gmail.com†)

As new markets using energy storage devices increase, various types of energy storage devices are striving to enter the market. Li ion batteries (LIBs) and supercapacitors (SCs) are representative energy storage devices. LIBs are emerging as the most promising candidates because of their high energy density and technical maturity, however there is a problem of unsafety. SCs have been applied to electric bus using regenerative break and electric train. Because large power density of SCs are suitable for intermittent power supply. However, SCs are facing with critical challenge of low energy density. ILs are thermally stable and have large electrochemical stability window. Additionally, ILs composed only ions, that means ILs play a role both salts and solvents, so there are no additional salts or solvents. As these reasons ILs are have been widely investigated as electrolyte material. Here in, we proposed advanced ILs based electrolyte for energy storage devices; LIBs : Solid electrolyte to enhance safety, SCs : Redox active electrolyte and high voltage electrolyte for high energy density. Though ILs based electrolyte, electrochemical properties and reliability were proved.