

Effects of Additives on the electrochemical and rheological properties of PEO-based Solid Polymer Electrolytes

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For fabricating better performance solid polymer electrolyte (SPE), we used two additives, i.e., ionic liquids (ILs) and silica nanoparticles (SiNPs). ILs act as free charge carriers and improve the mobility of polymer chains by a plasticizing effect. SiNPs reduce polymer crystallinity without deterioration of mechanical property. To study the effects of ILs and SiNPs on PEO-based SPE, we examined the rheological properties of PEO-based electrolyte suspension and electrochemical property of PEO-based SPE (dried film state). Furthermore, we investigated the morphology of suspensions with cryo-transmission electron microscopy (cryo-TEM) image analysis.