

Study on conductivity of PEO/PMMA blend based composite polymer electrolytes prepared by adding modified filler containing ionic liquid

이훈규, 김 석*

부산대학교

(seokkim@pusan.ac.kr*)

Polymer electrolytes have been the area of active research and development for their application in the electrochemical devices, particularly in secondary lithium-polymer batteries and electrochemical super-capacitors. Among the polymers available on the market, polyethylene oxide is still widely studied as a promising base for electrolyte. However, the PEO-based polymer electrolytes are prone to crystallization resulting in low ambient-temperature conductivities ($<10^{-7} \text{ Scm}^{-1}$) and Li transference number (~ 0.2).

In this work, PEO-based composite polymer electrolyte containing silica modified fillers were studied in order to enhance the ion conductivity and interfacial properties. The structure and crystallinity of the polymer electrolytes were evaluated using X-ray diffraction/differential scanning calorimeter and scanning electron microscope. The electrochemical properties were measured by an AC impedance method. This study indicated that electrochemical properties were dependent on the reduced crystallinity by the addition of modified filler.