

## Preparation and Mechanical Properties of Organically Modified Layered Silicate/PEO Polymeric Composite Electrolytes

황은주, 김 석, 박수진<sup>1,\*</sup>  
한국화학연구원; <sup>1</sup>인하대학교  
(sjpark@inha.ac.kr\*)

Intensive interest in inorganic-organic solid polymer electrolytes (SPE) arises owing to their merit in solid-state electrochemical devices, such as good mechanical strength, higher ionic conductivity, and low interfacial resistance with electrodes in the devices. In this work, PEO/organoclay polymeric composite electrolytes (PCEs) has been prepared using monomorillonite modified with octadecyl amine and poly(ethylene oxide). From the results of X-ray diffraction (XRD) and transmission electron microscopy (TEM), it was found that the layered silicate was dispersed in polymer matrix. Also, the crystallinity of the PCEs composites was evaluated using differential scanning calorimeter (DSC). The ionic conductivity of the PCEs composites was measured by the frequency response analyzer (FRA). As a result, the addition of organoclay into the polymeric mixture prohibited the growth of PEO crystalline domain. The PEO/EC/LiClO<sub>4</sub>/organoclay electrolytes show an increased ion conductivity as a function of organoclay content up to 10 wt.% and a slightly decreased conductivity over 10 wt.%.