

## Novel Ion Conducting Materials Based on Poly(ethylene oxide) and Lithium Montmorillonite

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A single ion conductor with a cationic conduction can be realized by incorporation of the anion into the polymer chain. In this work, composite polymer electrolytes (CPEs) comprising of a poly(ethylene oxide) (PEO)-LiClO<sub>4</sub> complex dispersed with Li-MMT were described. The results of the studies based on transmission electron microscopy (TEM), X-ray diffraction (XRD), differential scanning calorimetry (DSC), and impedance analysis were presented and discussed. As a result, a gradual decrease in the degree of crystallinity and in the size of the PEO spherulites was observed, as Li-MMT was added. The reduction in T<sub>m</sub> of the CPEs due to interaction between the added Li-MMT and lithium cation seemed to be a main reason for the initial increase of the ionic conductivity with the increase in the Li-MMT. Also, the CPEs showed a conductivity of one order magnitude higher than that of the PEO/LiClO<sub>4</sub> system as a consequence of the decrease in crystallinity after heating.