

### Preparation of Solid Electrolytes based on MCM-41 filled Polymeric Composites

강진영, 김 석, 박수진\*  
한국화학연구원  
(psjin@kRICT.re.kr\*)

In this work, the ionic conductivity and rheological properties of MCM-41 filled electrolytes were investigated. These electrolytes were composed of poly(vinyl chloride) /poly(methyl methacrylate) blends, mesoporous MCM-41 molecular sieves, and lithium salts. The MCM-41 was synthesized using a solution of sodium silicate as silica source and cetyltrimethyl - ammonium chloride (CTMACl) as template. The MCM-41 was prepared by the chemically oxidation treatment to enhance the interaction with lithium cation. The chemical solutions used in this experiment were sodium hydroxide. The effects of the oxidation treatment of the MCM-41 were observed with pH, acid-base value, FT-IR, and XRD analyses. The influences of the MCM-41 on the ionic conductivity and interfacial characteristics were determined by the frequency response analyzer (FRA), DSC, NMR, and FT-IR. The addition of MCM-41 into the polymer mixture was made in the polymer mixture and increased the uptake amount of the liquid electrolyte. The ion conductivity of the electrolyte was discussed in the specific intermolecular interaction between solid electrolytes and lithium salts.