Preparation and Physical Properties of PVDF-HFP/PEG polymer electrolyte for Lithium Secondary Battery

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Porous poly (vinylidene fluoride - co - hexafluoropropylene) / poly (ethylene glycol) (PVDF-HFP/PEG) hybrid type polymer electrolytes were prepared by partially extracting the PEG molecules during the film casting process. Thermal, mechanical, swelling, and electrochemical properties of the prepared polymer electrolytes were significantly affected by PEG content, as it changed the structure and size of pores produced. The ion conductivity was dependent on the amount of electrolyte salt and liquid incorporated. The temperature dependence of ion conductivity is well described by Williams-Lewis-Ferry(WLF) equation. The polymer electrolyte systems are electrochemically stable up to about 5V.