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## Preparation and Characterization of Blends of PPO with PS-*b*-PSSA for Fuel Cell Membrane

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Poly(styrenesulfonic acid) (PSSA) is well-known proton conducting material.[1] There are several reports in this material for proton exchange membrane(PEM). However, most of them reported grafting system but performance of PEM is not effective in fuel cell operating because of their bad mechanical properties. Also, degradation of the membrane generates because of low oxidation resistance at cathode site. In this study ,the system of styrene sulfonic acid and blending was used for solving these problems. Polystyrene-*b*-poly(styrene sulfonic acid) sodium salt (PS-*b*-PSSNa) was synthesized via stable radical polymerization (SFRP) using TEMPO and the block copolymers were blended with poly(2,6-dimethyl -1,4-phenylene oxide) (MPPO) and then prepared fuel cell membrane. Block length ratio and total MW of PS-*b*-PSSA were varied differently and blend ratio of MPPO/PS-*b*-PSSA was also controlled. Influence of molecular structure of PS-*b*-PSSA and blend ratio on ion conductivity, morphology, and MeOH permeability of cast membranes were studied. Other characters for fuel cell membrane such as phase separation behavior and conductivity etc. will be discussed.

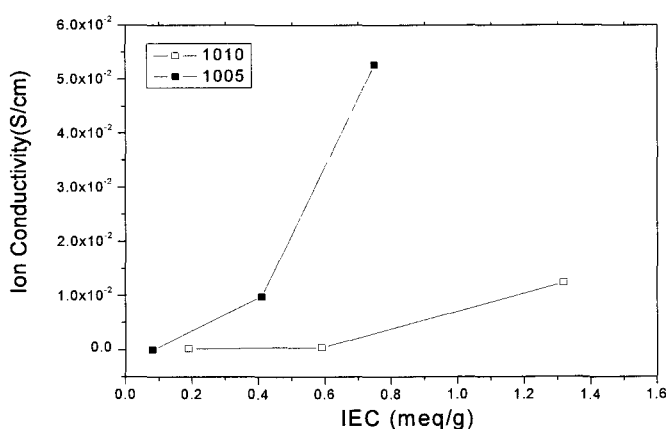


Figure 1. The ion conductivity of membrane vs. IEC

1. Jingrong et al. J. Power Sources 1-6 4937(2002)