

## Preparation of Fuel Cell Membranes Based on Blends of PPO with PS Block Copolymers

조창기\*  
한양대학교

(cgcho@hanyang.ac.kr\*)

In this study, we synthesized two polystyrene (PS) block copolymers, such as poly(styrene-*b*-styrenesulfonic acid sodium salt) (PS-*b*-PSSNa) and phosphorylated poly(vinyl alcohol-*b*-styrene) (P-PVA-*b*-PS) by controlled/living radical polymerization. Then, the block copolymers were blended with poly(2,6-dimethyl-1,4-phenylene oxide) (MPPO) respectively, for fuel cell membranes. The block copolymers were confirmed by <sup>1</sup>H-NMR, FT-IR, and titration, and the performance of blend membranes was characterized by ion conductivity, methanol permeability, and thermal stability. The PS-*b*-PSSNa/MPPO blend membrane shows higher ion conductivity (0.053 S/cm), low methanol permeability and good thermal stability, and the ion conductivity of P-PVA-*b*-PS/MPPO blend membrane shows 0.0065 S/cm at 60°C.