

Blending Polysulfon dengan Poli Eter-eter Keton Tersulfonasi untuk Sel Bahan Bakar Metanol Langsung

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Abstrak

Application of polymer electrolyte membrane for hydrogen fuel cell is frequently not suitable for DMFC. Therefore, many researches are developing new materials. In order to select for DMFC applications, it is needed to make initial prediction by conducting analysis such as water and methanol swelling, ion exchange capacity, ionic conductivity and methanol permeability. Polysulfone (PSJQ) and Polyether-ether ketone (PEEK) are interesting aromatic polymers which are mechanically and thermally stable. To form electrolyte polymer, sulfonic acid group should be added to PEEK by sulfonation with concentrated sulfuric acid. The objective of blending sulfonated polyether-ether ketone (SPEEK) with PSf is to decrease methanol permeability. The morphology of surface membrane (cross-section) was studied by SEM analysis. Experiment results showed that blending of PSf and SPEEK produced a non porous membrane. Adding 10% of PS_f produced the best membrane with ion exchange capacity of 1.9 meq/g polymer, ionic conductivity 0.0017 S/cm and methanol permeability 6.4×10^{-2} cm²/s, water swelling 18% and methanol swelling 17%.