

A Fabrication of PANi/Nafion Composite Membrane for Methanol Crossover Prevention in DMFCs

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Direct methanol fuel cells (DMFCs) have attracted considerable attention as an alternative to internal combustion engine technology, since they offer numerous benefits, such as high efficiency, high power density, low or zero emissions and reliability. However, the crossover of methanol through the electrolyte membrane in DMFCs still restricts their performance and applications. For the breakthrough of the DMFCs technology, suitable membranes with high proton conductivity and low water and methanol permeability are required.

Recently, we attempted the Nafion modification with polyaniline as conducting polymer for the purpose of reducing methanol crossover. Among intrinsic conducting polymers, polyaniline(PAni) has been attracted much attention as advanced materials because of its good environmental stability, facile synthesis and high conductivity.

In this study, we investigate the characteristics of composite membrane prepared with Nafion 115 and different base of PAni.