

The aim of this study is to develop the proton exchange membrane for DMFC in order to replace the Nafion membrane which is expensive and proved to be a poor barrier to methanol crossover. EB type of polyaniline was sulfonated by sodium hydride (NaH) and 1,3-propanesultone (C₃H₆O₃S) in dried N-Methyl-2-pyrrolidone (NMP) with different react conditions to form a series of sulfonated polyaniline. In order to improve the mechanical properties, the sulfonated polyaniline was blended with Nafion solution. On the other hand, the sulfonated polyaniline could improve the methanol crossover of Nafion. Thus sulfonated polyaniline was blended with Nafion in various compositions to observe their differences.

The various films were discussed their thermal properties through thermogravimetric analysis (TGA), and we could get the protonic conductivity by AC-Impedance. Other properties can be obtained via several methods, ex: ion-exchange capacity (IEC) · water uptake · methanol uptake. Finally, scanning electron microscopy (SEM) can help us to observe the morphologies of the proton exchanged membranes.