

# SYNTHESIS AND CHARACTERIZATION OF PEEK CONTAINING IMIDAZOLE MOIETY AND EFFECT OF FUNCTIONAL GROUPS

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Anion exchange membrane fuel cells (AEMFCs) are considered as one of the alternative power generation systems due to their high efficiency. Anion exchange membrane (AEM) is a key component in fuel cells for the transfer of anion which is effect to the performance of the fuel cell system. \Therefore, it needs to have high chemical, mechanical, and thermal stabilities, as well as excellent electrochemical properties. For these reasons, various types of novel polymeric materials have been developed for the anion exchange membrane fuel cells. Especially, hydrocarbon based polymer materials such as poly(arylene ether sulfone), poly(ether ether ketone)(PEEK), polybenzimidazole (PBI) have been fabricated for use as electrolytes in fuel cell systems. Also, a number of preparation methods have been developed to enhance the performance of fuel cell membranes. In this study, we modified the monomer by chemical modification reaction and we synthesized the PEEK based polymer with different amination degree. Also we compared the chemical stability of the PEEK based membrane with different functional groups such as ammonium and imidazolium. Finally, the effect of the contents of the anion exchange groups in the PEEK based polymer was evaluated in terms of morphology, water behavior, mechanical properties, chemical stability and ion conductivity.

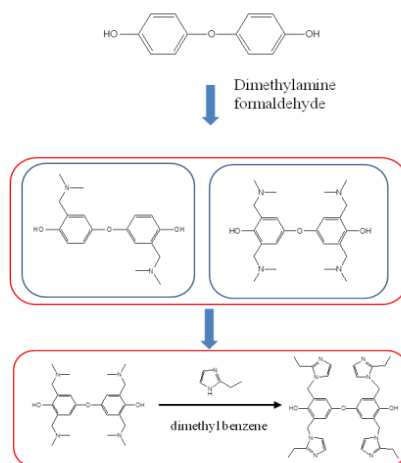


Figure 1 – Synthesis Process of dihydroxy monomers containing imidazole