



CHAPTER V

CONCLUSIONS AND RECOMMENTATIONS

The present work proposed the design and synthesis pathway of a series of model compounds for investigating the proton transferring mechanism which consequently performs the efficient proton movement in water- free membrane of PEMFC. The model molecule was designed base on the planar structure for regularly molecular arrangement, more numbers of proton carriers and containing the active group for functionalizing to the polymer chain. 1,4-Di(1*H*-benzo[*d*]imidazol-2-yl)benzene, **1** was successful prepared by the amidation and cyclization reactions between terephthaloyl chloride and 1,2-phenylenediamine as confirmed by FT-IR, ¹H-NMR, MALDI-TOF MS and EA characterization techniques. 3,5-Di(1*H*-benzo[*d*]imidazol-2-yl)benzenamine, **2** was successfully obtained from the pathway with amino group protection. The compound obtained showed colorless crystal. The work also extended to develop the condition for sulfonation of SPEEK. The proton conductivity of **1** and **2** and the single crystal analysis including the blend with SPEEK are the work to be done in the next step.