CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

In this work,1.0CX-Ag, 0.5CX-Ag and CX were successfully synthesized via ambient drying by using polybenzoxazine as a precursor. Molecular design flexibility of polybenzoxazine, using TETA can be incorporated with the silver ion. The char yield in the degradation of the polybenzoxazinexerogel impregnated with $AgNO_3$ was found significantly increased to the Ag content. The 1.0CX-Ag showed the highest selectivity when compared with CX and 0.5CX-Ag. Increasing the $AgNO_3$ concentrationssignificantly improve the gas permeability. The gases sieved by the interconnected pores and the gas permeation was controlled by the molecular kinetic diameter of penetrant gas.

By considering the gas permeability and selectivity, the future work should be focused on how to design high separation performance carbon membrane, which was suggested to improves by either carbonization polymer blend or changing the starting material of polybenzoxazine precursor (types of amine). The aromatic amine should be studied.

The carbonization polymer blend will lead to the formation of porous structure due to the thermally unstable polymer (pyrolyzing polymer) decomposing to leave pores in the carbon matrix formed from the stable polymer (carbonizing polymer). Much study is needed to identify the suitable pyrolyzing polymers and carbonizing polymers for blending.

In sum, carbon membranes have great potential to replace other inorganic membranes in the market because they have many useful characteristics membranes. However, much research and development effort is needed in order to commercialize carbon membranes in the industrial market.