

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Four isomers of butanediols were incorporated in silicone rubber to form mixed matrix membrane. Like PEG, 1,2-butanediol and 1,3-butanediol were found to have the capability of improving propylene to propane selectivity. The propylene selectivity was not enhanced when 1,3-butanediol and 1,4-butanediol were added to silicone rubber. It was postulated that the position of hydroxyl group of the butanediols plays important role in the selectivity improvement.

NaX zeolite incorporated to silicone rubber did not improve the propylene selectivity since the adsorption of gas molecule in zeolite pores caused time lag in reaching steady-state permeation.

The adsorption of PEG into NaX pore could prevent PEG leakage from mixed matrix membrane. The propylene selectivity was enhanced and this was attributed to the presence of PEG in NaX pores.

In the future works, The other longer carbon chain glycols, such as triethylene glycol and hexaethylene glycol, or the mixture of them should be used in place of PEG to improve olefin selectivity. Moreover, mixed matrix membrane comprised of an effective carrier K_2CO_3 and glycerol should be developed for CO_2/N_2 separation in order to investigate the coupling effect of facilitated transport and solubility.