



CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

For silicone rubber membrane, the values of permeance for CO_2 , C_2H_6 , H_2 and N_2 do not correlated either with the kinetic diameter of the gas molecules, or with the critical temperature of these gases. Therefore, the permeance of silicone rubber membrane to these gases studied is not controlled either by the gas diffusivity or the gas solubility in the polymer, but depends to different extents on both the diffusivity and solubility.

Membrane containing PEG shows a better separation performance than silicone rubber membranes due to the enhancement in solubility of polar gases.

The dependence of selectivity on PEG composition indicates that PEG not only acts as an excellent solvent for polar gases but also as plasticizer making polymer soften.

Although mixed matrix membranes selective for polar gases are successfully made, the performance of the membranes needs to be improved. The mixed matrix membrane composed of silicone rubber, polyethylene glycol and silver (I) will be considered as an alternative separation technology for ethylene/ethane separation because it offers a lower energy consumption compared with conventional distillation. This investigation is of importance not only in the application to practical separation processes but also in the understanding of the interaction of ethylene with silver (I) ion complex.