CHAPTER V
CONCLUSIONS

The present studies focused on the chemical modification of poly(vinyl alcohol) by coupling with trimethylsilylchlorosulfonate(TMSCS) to obtain PVA-TMSCS by using pyridine as a catalyst and coupling with 3-aminopropyltriethoxysilane via *N,N'*-carbonyldiimidazole(CDI) as a coupling agent. The modified derivatives were prepared for membrane by solvent casting method using glutaraldehyde as a crosslinker in the presence of acid catalyst. Uniformity of the membrane and its thickness was achieved as characterized by FTIR fringe pattern.

The gas permeation studies were designed by using a simple liquid cell and a series of organic solvents as volatile organic compounds with varying solubility parameters. By controlling the inert gas flow rate and temperature in the liquid cell, the simulation of gas permeation study is obtained. The quali/quantitative analysis by 3D-FTIR reveals that the permeation rate of the low solubility parameter VOCs is higher than that of high solubility parameter when the PVA-TMSCS is applied. The new membrane exhibits high permeability for high solubility parameter VOCs. The results indicate that the interaction between the membrane with VOCs substrate plays an important role in the permeation and can be considered as a solubility selectivity mechanism.