CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

The clay after acid treatment showed higher specific surface area than before acid treatment. The chemical composition, the structure and the texture of the clay and organo clay after acid treatment influenced the specific surface area of the clay. Clay treated with acid will be incorporated into polyHIPE polymer to increase surface areas, improve mechanical and thermal properties of poly(DVB)HIPE.

Surface areas of S80DCI decreased from 550 to 251 m^2/g. Compressive modulus of the obtained poly(DVB)HIPEs increased from 2.59 to 3.50 MPa with 0 to 5 wt% acid-treated clay content, and decreased to 2.07 MPa when acid-treated clay content was 15 wt%. Decomposition temperature of S80DCI increased from 444.76 to 459.67 °C.

Surface areas of S80DCII with 0 to 10 wt% of added acid-treated clay increased from 198 to 523 m^2/g. Compressive modulus increased from 2.61 to 3.00 MPa with 0 to 5 wt% acid-treated clay content. Surface area and compressive modulus were decreased to 346 m^2/g and 1.99 MPa when amount of added acid-treated clay content was 15 wt%. Decomposition temperature of S80DCII increased from 443.99 to 462.03 °C.

CO_2 adsorption tests were carried out on the obtained poly(DVB)HIPE and it was found that CO_2 adsorption were between 2.43 to 18.2 mmol/g. Highest adsorption was obtained from S80DCI with 1 wt% acid-treated clay.

A new method of polyHIPE preparations were challenged to enhance the CO_2 gas adsorption capacity by changing surfactant mixture ratios and changing monomer. To accomplish the goal, polyHIPE should adsorb other toxic gases such as SO_2, CH_4, and H_2 beside only CO_2.