

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The toluene alkylation with methanol was studied over HZSM-5 ($\text{SiO}_2/\text{Al}_2\text{O}_3=280$) modified by either the CLD treatment with TEOS or the dealumination with oxalic acid. The results showed that the catalyst modified via the CLD with a TEOS concentration of 1 ml/g.cat. at 2-cycle of CLD treatment exhibited the highest *p*-xylene selectivity in product from 66.83 % to 84.84 % as compared to the other prepared catalysts. Furthermore, In case of dealumination with oxalic acid, although the differences in textural and acidity properties were observed, the modified catalyst gave a similar catalytic activity of the parent one.

5.2 Recommendations

To enhance the *p*-selectivity after CLD modification, the metal loading should be further investigated and for the dealumination method lower $\text{SiO}_2/\text{Al}_2\text{O}_3$ should be considered as the optimum $\text{SiO}_2/\text{Al}_2\text{O}_3$ molar ratios.