CHAPTER V
CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

In this work, the production of bio-jet fuel from jatropha oil was investigated over Pt/Al_2O_3, $Pt/F\text{-}Al_2O_3$, Pt/H-Y, Ir/H-Y, Ru/H-Y, and H-Y catalysts. The liquid products from reaction over Pt/Al_2O_3, $Pt/F\text{-}Al_2O_3$, Ir/H-Y, Ru/H-Y, and H-Y contained hydrocarbons in the range of C15 to C18 as main products. Pt/H-Y catalyst gave hydrocarbons in the range of <C6 to C9 as main products. In addition, the promotion of fluorine resulted in higher selectivity to isomerized products. Among the tested catalysts, Pt/H-Y showed the highest activity for producing bio-jet fuel. Moreover, the optimum reaction condition to produce bio-jet fuel over Pt/H-Y was also investigated. The result showed that hydrocarbons in the range of C10 to C14 which are main components in jet fuel increased with increasing temperature and pressure and decreased with increasing liquid hourly space velocity. The optimum reaction conditions over Pt/H-Y catalyst were 375 °C, 550 psi, and 0.5 h^{-1}, giving 36% hydrocarbons in jet fuel range.

5.2 Recommendations

This study found that Ir/H-Y and Ru/HY can also be used to produce bio-jet fuel but they have high amount of coke deposit on catalyst. Bimetallic PtIr and PtRu catalysts are interesting for bio-jet fuel production because of the coke removal ability of Pt.