

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The production of hydrotreated renewable jet fuel from hydrogenated biodiesel was investigated over extruded catalysts with various percentages of pseudo boehmite binder (20, 40, 60, and 80 wt %) and type of acids in peptization (acetic acid and nitric acid). The extruded HY zeolite added with pseudo boehmite binder certainly increased the mechanical strength of the catalyst. It was found that adding with pseudo boehmite binder for formulation influenced the hydrogenation-to-acidity ratios, resulting in a higher selectivity towards hydrocarbon in gasoline range. All of the extruded catalysts gave high isomerized paraffins as a result of hydrocracking and hydroisomerization over Pt/HY catalysts. The use of nitric acid in peptization step resulted in a higher mechanical strength as compared to those obtained with acetic acid. The extruded catalyst with 60 wt% pseudo boehmite formulated using nitric acid exhibited the highest yield of jet fuel with 30.29 %. The optimum reaction condition to maximize the jet fuel was found at 310 °C, 500 psig, LHSV of 2.5 h⁻¹, and H₂/feed ratio of 30.

5.2 Recommendations

To obtain the higher activity and selectivity yield of jet fuel, the sequence of preparation are interesting for hydrotreated renewable jet fuel production for example, loading of Pt before shaping. Moreover, various acid solutions for shaping can affect the mechanical strength and activity of extruded catalysts as well.