

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

In this work, the production of the hydrogenated biodiesel from triglyceride based feedstocks over 1 wt% Pd/TiO₂ catalyst has been investigated. All feedstocks can be converted into desired products, hydrogenated biodiesel (C15-C18) via deoxygenation reaction. The main products of all feedstocks are n-pentadecane (n-C15) and n-heptadecane (n-C17) resulting from the decarboxylation/decarbonylation reaction. The conversion of triglycerides in jatropha oil is higher than those of chicken fat, pork fat, beef fat, and palm oil, respectively. The higher concentration of metal impurities in the feedstock exhibited the lower conversion due to the deposition of impurities on the catalyst surface. Moreover, the higher concentration of phosphorus gave the higher carbon deposition on the spent catalyst due to the oligomerization reactions catalyzed by phosphoric acid.

Recommendations

From all feedstocks, jatropha oil gave the highest conversion and selectivity to hydrocarbons in the range of biodiesel. The stability should be studied in the further work for purpose of optimization and improvement of hydrogenation biodiesel production. Moreover, others impurities like moisture or sulfur content should be studied.

GC×GC-TOF should be used to estimate the unknown composition in palm oil feedstock.