

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusion

The results indicated that the pore size has strong effect on the hydrogenation activity in order from Pd/SiO₂ (Q10) > Pd/SiO₂ (Q30) > Pd/SiO₂ (Q50) > Pd/SiO₂ (Q3) due to the accessibility of FAME molecules into the pore and contact probability between FAME and palladium. TOF of Pd/SiO₂ (Q10) is high because of SiO₂ (Q10) is optimum pore size that high amount of FAME react with Pd sites compare with the same number of loading. From the effect of palladium loading on hydrogenation activity refer that 2 wt.% can convert higher amount of polyunsaturated fatty acid methyl ester to saturated one than 1 wt.% as shown in C18:3 and C18:2 compositions to C18:1 compositions.

Partial hydrogenation using 2 wt.% Pd/ SiO₂ (Q50) under pressure 4 bar, 50 ml/min of H₂ flow rate, 120°C, 500 rpm of stirring rate, and 1.5 wt.% of catalyst compared to starting oil exhibited the best activity which reduce all C18:3 and C18:2 with small increasing of C18:0 and enough to improve the oxidation stability, however is not influence to cold flow property better property.

5.2 Recommendation

Finding the new type of metal, which has good activity in term of partial hydrogenation and low-cost is another attractive study.