Potjanee Saeong 2008: Biodiesel Production of Jatropha Oil by Transesterification Using Microwave Irradiation. Master of Engineering (Chemical Engineering), Major Field: Chemical Engineering, Department of Chemical Engineering. Thesis Advisor: Assistant Professor Jarun Chutmanop, D. Eng. 126 pages.

This research investigated the optimum conditions of the biodiesel production from *Jatropha curcus* oil by microwave irradiation to reduce reaction time. The effect of water conttent in oil raw material on methyl ester content and biodiesel yield was studied by using sodium chloride concentration from 0-30 % by weight as an absorben. The results showed that the 20 % sodium chloride concentration by weight increased methyl ester content by 3.37 % and biodiesel yield by 4.60 %. In addition the effect of sodium methoxide concentration varied from 0.5-1.5 % by weight, molar ratio of methanol to oil from 6:1-9:1, reaction time ranged 1-5 minute and heat rate of microwave from 90-360 watt was investigated. It was found that the conditions which the highest methyl ester was achieved were 1.5% by weight of sodium methoxide, methanol to oil ratio of 7.5:1, reaction time of 4 minutes and heat rate of microwave at 90 watt. The percentage of methyl ester in the obtained product was 99.97%. The property of biodiesel at the optimization conditions was 4.51 mm^2/s at 40° C of viscosity, 196 ° C of flash point, 4.0 ° C of cloud point, 1.5 ° C of pour point, 0.28 mg KOH/g of acid value and 99.97% of methyl ester content according to the department of energy business and ASTM D 6751-02 Standards.

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