

CHAPTER 6

RECOMMENDATIONS

6.1 Conclusions

The conclusions emerged from this research are as follows:

- 1 The transesterification reaction of palm oil and rice bran oil in supercritical condition require very short reaction time compared to other reaction technique.
- 2 A reaction temperature of 350°C, with the molar ratio of ethanol to palm oil and rice bran oil being 1:50 and the reaction time of 240 seconds were considered as the best condition with this study.
- 3 The rate of reaction of palm oil could be expressed as:

$$-rate = C_A(2.527 \times 10^5) \exp\left(\frac{-86461.44}{RT}\right)$$

$$\text{where: } R = 8.314 \frac{J}{mol \cdot K}$$

C_A = The concentration of palm oil at any time

T = Reaction temperature (K)

An activation energy of this reaction was found to be 86.46 kJ/mol.

- 4 The rate of reaction of rice-bran oil could be expressed as:

$$-rate = C_A(6.454 \times 10^7) \exp\left(\frac{-117156.73}{RT}\right)$$

$$\text{where: } R = 8.314 \frac{J}{mol \cdot K}$$

C_A = the concentration of rice-bran oil at any time

T = Reaction temperature (K)

An activation energy of this reaction was found to be 117.16 kJ/mol.

6.2 Recommendations

The following subjects are recommended for future study:

- 1 The kinetics study at higher temperature should be tested.
- 2 The reaction at the narrow range of temperature rather this big range of temperature should be examined to obtain a precious an activation energy.