

## **CHAPTER V**

### **CONCLUSIONS AND RECOMMENDATIONS**

In this study, refined palm kernel oil or refined palm oil was used to blend with high-speed diesel at various ratios. Because of the different compositions, the kinematic viscosity, pour point, flash point and carbon residue of the two palm oils are higher than those of the diesel. Some properties, which are kinematic viscosity, density, and surface tension of the blends were investigated to predict their atomization characteristics. Due to the limitation of the kinematic viscosity values of the high-speed diesel standard, only 8 vol% of the refined palm kernel oil and 0.20 vol% of the refined palm oil can be added in the diesel. The addition of one of the two palm oils in the high-speed diesel highly affects some properties of the diesel such as kinematic viscosity and carbon residue, while the specific gravity and surface tension are almost constant. However, most properties of the blends, which have acceptable kinematic viscosity, meet the high-speed diesel standard. Equations were proposed to represent the relationship of the blend properties, concentration of the blends and temperature. The equations can be used to represent the experimental data well. By theoretical calculation, the atomization shall be achieved after the addition of any of the two palm oils within the studied amounts in the high-speed diesel.

It would be of interest to investigate how the vegetable oils can be used as a lubricity additive in diesel engine.