CHAPTER 5

CONCLUSIONS

Thai community biodiesel was extensively produced and used in many areas [7]. This community biodiesel fuel was aimed to supply for agricultural diesel engine even though sometimes there was found the uses in vehicular diesel engine in transportation sector. Hence, their exhaust emission was concern as diesel fuel emission especially, 1-NP emission. 1-NP is found on surface of soot or particulate matters that produced during the combustion process. Furthermore, 1-NP study is not well known as PAHs but their toxicity is related and suspected toxic to human health.

From the results of $PM_{2.5}$ mass, community biodiesel fuels showed reduction when compared to CD(B2) (9.4-39.0%) and the determination of 1-NP in the extracts of PM emission of each test was detected and found that 1-NP emissions from CBFs reduced when compared to CD(B2). The highest emission change occurred in using CBS(CB50) as a tested fuel (-78.43 % reduced).

Community biodiesel fuels had higher in kinematic viscosity, density, flash point, cloud point and pour point, but lower in gross heating value than CD(B2). However, these viscosity and flash point of almost community biodiesel fuels are completely acceptable with Thai community biodiesel standards for agricultural diesel engine. The higher in density and viscosity of these community biodiesel fuels could not influence to the level of 1-NP emissions but may affect to the engine performance. In this case, the higher in fuel consumption was attributed to higher in density and lower heating value; consequently, decreasing of thermal efficiency.

Using of community biodiesel fuels was confirmed in CBU and CBS that can use with transportation diesel engine without engine problems. Blending CBU and CBS fuels were available to used and from the results of 1-NP and $PM_{2.5}$ could be confirmed that using of community biodiesel as fuels are good for environment.