

CHAPTER V

CONCLUSION

The object of this research is to synthesize dinitrate compounds which could be easily prepared by direct nitration reactions. These dinitrate compounds were triethylene glycol dinitrate, 1,5-pentane dinitrate, 1,4-butane dinitrate, and 1,2-ethane dinitrate.

The advantages of these dinitrate compounds were as follows : These compounds were easily soluble in base diesel fuel, when they were in the form of blended composition at the concentration of 0.05 and 0.10 % by weight, the cetane number would be increased approximately for 1.0 to 5.6 units, respectively. Particularly, at the concentration of 1.0 % by weight of triethylene glycol dinitrate, the cetane number could be increased by 1.6 units compared with isooctyl nitrate, the commercial available cetane improver.

Further study.

Since triethylene glycol dinitrate is a good potential candidate to be used as cetane improver, therefore, further study of this compound should be done on its thermal stability, effect on exhaust emission, heat of combustion, storage stability and toxicity. Moreover, other ethylene glycol such as monoethylene glycol, diethylene glycol etc. should be investigated for their dinitrate compounds as cetane improver.