

**Topic:** A Comparison of Thermal Behavior of Selected Biomass in Thailand for Effective Energy Utilization under Thermogravimetric Analysis.

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### **ABSTRACT**

Due to the decrease of primary energy sources especially fossil fuels, and concerns about CO<sub>2</sub> emissions, biomass is currently being widely used for renewable energy sources. However, uncertainty of biomass characteristic plays significant problem in technology development and operation design.

Generally, biomass has high oxygen and low sulfur contain in chemical composition. Heating value of biomass of biomass vary for 10-23 MJ/kg depend on type of biomass. During thermal process, biomass release high volatile matter when compare with coal. Biomass has high chlorine content which depends on local of plant case high corrosion problem at high temperature. Differences in alkaline/alkaline earth deposit in biomass which case of slagging and fouling problem can be primary assessment by slagging index. Other thing that should be concerned when used biomass for thermal conversion process is degradation behavior of biomass. Different type of biomass contain different chemical structure deposition is major effect for degradation behavior of biomass.

In this thesis, Thai biomass properties (i.e. HHV, ultimate analysis, proximate analysis etc.), thermal behavior of biomass and kinetic of reaction under TGA (pyrolysis and combustion) are present that will support decision making in terms of energy conversion technology selection and operating condition setting.