

**THERMAL DEGRADATION AND KINETIC ANALYSIS OF WASTE  
SAWDUST BIOMASS**

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## **ABSTRACT**

### **THERMAL DEGRADATION AND KINETIC ANALYSIS**

#### **SAWDUST BIOMASS**

Renewable fuel that derived from the plant biomass was the one of the good alternatives to replace the limited and non environmental friendly fossil fuel. The research presents the physical characteristics of sawdust biomass using TGA and ATR- FTIR instrument. In TGA, the degradation of biomass component such as hemicellulose and cellulose occur in two stages that release volatile components. By ATR-FTIR, the volatile components can be determined by interpreting the spectrum peak produced. In the proximate analysis, the moisture content, ash, fixed carbon and volatile matter were calculated as 9.77, 4.01,16.81 and 69.41 wt.% respectively. While, the result that obtained from TG/DTG curve were used for the kinetic analysis sawdust biomass. In this analysis two kinetic model which is Kissinger-Akihira-Sunose (KAS) and Flynn-Wall-Ozawa (FWO) model were used to obtain the activation energy,  $E_a$ . From the result, the average of activation energy for FWO model was  $63.92 \text{ kJ.mol}^{-1}$  and for KAS was  $57.24 \text{ kJ.mol}^{-1}$  were obtained. This result can be compared to the previous research to know the potential of sawdust biomass as renewable fuel

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