

## **Potential of upgrading domestic biomass into a higher energy density via torrefaction process**

### **Abstract**

Torrefaction is a thermal treatment step in a relatively low temperature range of 240-300°C, which aims to produce a higher energy biomass in terms of low heating value (LHV) and light weight properties. Biomass in wood (sawdust) was used in this work due availability in tropical climate and relatively cheap. LHV of torrefied sawdust was found to be increases as heating temperature increased, in absence of oxygen content. This is enhanced by way of decomposing the hemicelluloses fraction. The thermogravimetric analysis (TGA) records the changes occurred in fixed carbon, volatile and ash in which it was recorded that an increase of fixed carbon and ash is seen in the increases of temperature and a decrease of volatile is vice versa. The study provides a clearer picture of the result obtained from TGA and HHV which improvise the biomass into higher energy output.

### **Keywords**

Energy Properties; Fuel Biomass; Torrefaction