**Temperature profile of produced gas in oil palm biomass fluidized bed gasifier: effect of fibre/shell composition ratio**

ABSTRACT

Malaysia is known to be one of the largest palm oil producers and also generates huge amounts of oil palm biomass, which is mainly treated as bio waste. One of the efficient methods to recycle this potential oil palm biomass could be gasification technology. Gasification is a process involving conversion of solid carbonaceous fuel into combustible gas using directly heated biomass. From processing of Fresh Fruit Bunch (FFB) (a biomass example), Empty Fruit Bunch (EFB) fibre, shell etc. are produced. In this study, a laboratory scale fluidized bed was developed, an appropriate fibre/shell composition ratio was studied and analysis on profiles of gas produced in the oil palm biomass fluidized bed gasifier was conducted. The effects of fibre/shell composition ratio and rate of reaction on temperature profiles were investigated. Temperature reaction rate and calorific value of oil palm biomass with gas compositions were also analyzed.

**Keyword:** Composition ratio; Oil palm biomass; Gasification; Fluidized bed gasifier; Temperature profiles; Empty fruit bunch