

Air gasification of Malaysia agricultural waste in a fluidised bed gasifier

ABSTRACT

Hydrogen production from agricultural waste has been investigated experimentally using a bench-scale fluidised bed gasifier with 60 mm diameter and 425 mm height. During the experiments, the fuel properties and the effects of operating parameters such as gasification temperatures (800–900°C), fluidisation ratio (2.0–3.33 m/s), static bed height (10–30 mm) and equivalence ratio (0.16–0.46) were analysed. Increasing temperatures favoured hydrogen yield and composition (up to 67 mol %) but only minor effects for other parameters. As conclusion, agricultural wastes are potential candidates as an alternative renewable energy source to fossil fuels.

Keyword: Hydrogen production; Air gasification; Malaysia; Agricultural waste; Fluidised bed gasifiers; Renewable energy