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Obtaining and Evaluation of Synthesis Gases from Biomass Gasification using Finite Element Analysis

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Abstract

Given the need to implement non-conventional sources for the generation of energy, it is necessary to characterize the natural or residual agro-industrial resources that can be used for the conversion of energy. In this work, a study is carried out to obtain the synthesis gas produced in a bioreactor using the gasification of biomass, such as pinewood, rice husk, coconut husk and palm shell, to analyze its potential as synthesis gas. This gas is obtained using a finite element software for the parameterization of the relevant models for the calculation of its production by biomass gasification through its final composition and the chemical analysis obtained from studies carried out on the physicochemical properties of biomass. As a result, the CO and H₂ production components are obtained for each biomass sample, evaluated at 1020K. These results are similar to those obtained by experimental designs, showing that using computational techniques a good approximation is received from the analysis of residual material for use as fuel.

Keywords: *synthesis gases, Biomass Gasification, finite element.*