Evaluation of the pyrolysis process and co-pyrolysis of palm and tires used in an atmosphere of CO2

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Abstract

This research is in its final stage of development and aims to evaluate the effect of the percentage of mixture of reagents on the distribution of the pyrolysis products generated (solids, liquids and gaseous), when a lignocellulosic residue (cuesco) is combined with tires used. For the development of this project there is a proven methodology for the case of pyrolysis and covering: bibliographic review, characterization of raw materials and products, reaction, thermodynamic analysis of the reactive system. The literature research shows that the distribution of products is altered in the case of a pyrolysis, favoring the liquid phase from which valuable fuels and / or chemical intermediates of wide industrial use can be obtained, with an overall calorific value of 42 MJ / kg.

Keywords

Biomass, biofuels, carbon, pyrolysis.

1. Introduction

With the strong global increase in the use of the automobile, the generation of waste such as tires has increased exponentially, in Bogota "an average of 441,978 tires are produced monthly, that means a value annually of 5,303,739, which in large part, have an inadequate disposition and end up in wetlands, streets, parks and in general public spaces "[1]

The tires discarded once their useful life has ended in the vehicle, they are a non-destructible and non-biodegradable waste over time, which makes post-treatment and recycling difficult [2]. It is necessary to find an alternative route to take advantage of their high potential as an energy and raw material source. There are many different manufacturers and countless different formulations available all over the world; the composition of the tires influenced by both the tire grade and manufacture processes. Consequently, tire pyrolysis, as a process to recover tire energy, offers products that may also vary in terms of yield, chemical composition and characteristics. [2][3]

The experimental study that is being carried out in the project, seeks to analyze the use of biomass elaborated based on palm kernel and used tires by means of pyrolysis in a CO2 atmosphere, determining the energetic influence of the acquired fuel.

References

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