

## **COMPARATIVE CHARACTERIZATION OF THE PYROLYSIS PROCESS OF TWO BIOMASSES**

Pyrolysis process characterization in a batch reactor of native biomasses of Ecuador: sugarcane bagasse (*Saccharum officinarum*) and balsa wood (*Ochroma pyramidale*). The purpose of the study is the characterization of the different flows of the slow pyrolysis process.

The pyrolysis process is carried out with a exposure time of 4 hours at 450 ° C, N<sub>2</sub> atmosphere, and a pressure between (2,76 - 3,10) MPa. For the characterization of the incoming biomass and the solid (Carbon), an elemental analyzer (Elementar Vario Macro Cube) was used. Characterization techniques like, SEM and BET were applied to the solid for the areas of function and elemental composition acknowledgment. For the gaseous flow, CO, CO<sub>2</sub>, O<sub>2</sub>, CH<sub>4</sub>, H<sub>2</sub>, the analyzer NOVA gas combustion was utilized.

The flow characterization determines the application that can be given to each flow current based on the biomass samples, focused on the energetic value of the gaseous current. The solid component is studied with the possibility of increasing the surface area, the use in water treatment, and electrodes of wide surface.

The study includes, the energy source of 15.69 MJ / kg and 14.67 MJ / kg for bagasse and balsa respectively. The balsa pyrolysis gas obtained a higher production of hydrogen that reached 10.8% v / v against 7.5% for bagasse gas. The carbon and oxygen contents in the solid for both biomasses is high, making it suitable for its activation and increasing the surface area of the material.