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## STUDY OF PHYSICOCHEMICAL PROPERTIES OF BIO-OIL

One way to give new life to vegetal residues, which lead to pollution or take a long time to degrade, is using them as raw materials to obtain biomaterials and methane that can be used in several ways, reducing the degradation time. On the other hand, citrus is a highly consumed product worldwide with an estimated market of 28 billion US dollars, whereas orange stands out from it. In this work, orange residues, locally obtained, were mixed with water in a 1:1 ratio. Water acts as a fatty acid catalyzer. The hydrothermal conversion process is as follows: the mixture is heated from 180° to 290° C using a 5 MPa pressure. An aqueous solution is obtained with solid and liquid fractions. The liquid fraction containing fatty acids is then obtained by filtering, resulting in bio-oil. It is important to know its characteristics, such as absorption spectrum, thermal properties, and biochemical parameters, to know beforehand if the bio-oil obtained from the reactor is suitable for various uses. Some of the features obtained from the bio-oil are PH=3.36 (considered acid), total solids =2.57, volatile solids=78.68, total chemical oxygen demand =57.28, soluble chemical oxygen demand =51, ash of 17.37 and moisture of 97.42%. With thermal parameters thermal effusivity=1561 Ws<sup>1/2</sup>/ mK,  $\rho$ = 0.001026985 Kg/m<sup>3</sup> and an absorption spectrum where the higher absorption is observed in the ultraviolet region. Therefore, the bio-oil can be used as fertilizer, feed for bioreactors, or extract fatty acids by various methods, and it has a high aroma.

### Keywords

Bio-Oil, Thermal properties, Biochemical, Hydrothermal conversion

### Reference

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