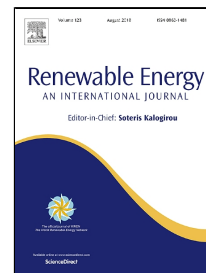


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Second generation biofuels production from waste cooking oil via pyrolysis

process

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ABSTRACT

The thermal cracking of waste cooking oil (WCO) via pyrolysis was performed using a laboratory scale fixed-bed reactor. The effects of the final pyrolysis temperature (from 550 to 800 °C) and the heating rate (5°C/min, 15°C/min, 20°C/min, 25°C/min) on pyrolysis products distribution has been investigated and a maximum bio-oil yield of 80 wt% has been obtained at 800 °C and 15°C/min.

The bio-oil fuel properties shows that this pyrolytic oil has high caloric value (HHV around 8843 Kg/Kcal) promoting its use as a liquid fuel but some other properties (high acidity index around 126.8 mg KOH/ g sample and high viscosity about 8.95 cSt) need to be upgraded. The GC/MS characterization of the bio-oil highlights its high molecular complexity allowing it to be used as source of chemical products and of active molecules. The syngas heating value (reaching 8 MJ/Kg)

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