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A thermolysis of macroalgae gracilaria affected by temperature pyrolysis

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Abstract

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Abstract

Pyrolysis is one of thermolysis technology used to obtain some alternative sources of hydrocarbon energy. It is almost similar with combustion technology, however, without involving oxygen in the combustion process. In addition to renewable resources, the pyrolysis products are substances that are environmentally friendly and have many benefits. The pyrolysis products are such as tar, char and gas. Fuel source of the pyrolysis is derived from renewable resources such as biomass or plant. A macroalgae gracilaria is one of biomass can be used as raw material in the pyrolysis process. It is due to Indonesia has vast waters that have a wide range of aquatic products, so it is appropriate if the macroalgae is used to be a biomass feedstock of pyrolysis. In addition, the ability of macroalgae to breed is very high, so that it makes the macroalgae feedstock will be abundant. The macroalgae

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chemical composition consists mainly of crude fiber (cellulose, hemicellulose and lignin) of 32.15% hemicellulose, 17.04% cellulose, and 3.05% lignin. The aim of study was to investigate the thermal decomposition of macroalgae expected to produce some substances that can be used as an alternative fuel. In the experiment, the macroalgae samples were dried to reduce the moisture content. Afterwards, it was weighed 400 grams and put in a pyrolizer. The sample was pyrolyzed with variations in temperature of 250°C to 800°C for 3 hours. The results showed that the higher pyrolysis temperature, the less mass and volume char products, and the smaller the char heating values that differ from another biomass research. Meanwhile, an increasing of pyrolysis temperature also causes an increasing of mass and volume tar. The heating values of tar also incline. For the generated gas production, an increasing pyrolysis temperature result an enhancement of gas flow rate. © 2019 Author(s).

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
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