

Conversion of Used Cooking Oil Into Biofuel as Alternative and Renewable Energy

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Abstract

Food supply services such as restaurants, hotels, households use a large amount of oil for frying. After use, the cooking oil constitutes a waste whose management become an environmental issue. Huge quantities of used cooking oil are poured into the environment and contaminate water resources with severe consequences. There is a growing interest in its use in producing renewable energy to achieve potential benefits. Used cooking oil can be processed into biodiesel, an alternative to fossil oil. In fact the continuous depletion of fossil fuel and petroleum products, their limited resources and environment concerns are a matter of concern (Kumar and Sharma, 2008). This tendency in energy sector represents a challenge as well as an opportunity to look for alternatives of fossil fuels for sustainable development and environmental benefits (Bozbas, 2008). Used cooking peanuts oil was collected from hotels, restaurants and several food sellers in Conakry, the capital City of Guinea. Used cooking oil samples were settled during a week at ambient temperature and filtered by sieves of hole size 100 nm to remove suspended solid particles and other inorganic residues. Beside free fatty acids, used cooking oil contains water which leads to the formation of soaps. Pre-treatment of waste cooking oil is necessary in order to prevent soap formation. In order to remove the water content and prevent saponification, the oil, samples were heated at a temperature of 110 °C during 3 hours. After cooling the oil was subjected to transesterification process in methanol using NaOH pellets as catalyst. Gas Chromatography and Mass Spectroscopy were used to determine the physicochemical properties and the fatty acid composition of the resulting product. The values are in the limits of AST and EN standard.

References

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