**PRODUCTION AND CHARACTERIZATION OF BIODIESEL FROM COCONUT OIL**

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**ABSTRACT**

The biggest challenge for developing countries in relation to energy consumption is to develop and implement technologies that help reduce the emissions of gasses and particulate matter (dust and smoke), which have both local and possible environmental impacts. In order to be more environmentally conscious, renewable energy sources, such as biofuel, solar and hydrogen, are options to be considered. The environmental concern and diminishing reserves of fossil fuels has increased the demand for the study of biodiesel production. Biodiesels are alternative diesel fuels usually obtained from renewable sources, mainly, vegetable and animal oils. This research was based on production and characterization of biodiesel from coconut oil with a view to finding its suitability as alternative fuel for diesel engine. Oil was extracted from coconuts bought from a local market in Enugu State, Nigeria, which is one of the sources of vegetable oil. The coconut oil was extracted using cold method-soxhlet extraction method. Biodiesel of the oil was produced using transesterification process. The biodiesel obtained through transesterification process was characterized to know the fuel properties. Viscosity, flash point, cloud point, pour point, water content, ash content, acid value, fire point, specific gravity and free fatty acid were determined and the results obtained were 4.3Cst, 140oC, 8.0oC, -2.0oC, 0%, 0%, 0.1MgKOH/g, 170oC, 0.877kg/m3, 0.05% respectively. With these readings it is proven that coconut oil is actually a good source for biodiesel production and should be considered.

**Keywords:** Biodiesel, Coconut plant, Coconut oil, Cold-Soxhlet Extraction and Transesterification