

**PRODUCTION AND CHARACTERIZATION OF COCONUT (*COCOS NUCIFERA*)  
OIL AND ITS METHYL ESTER****E. I. Bello**Department of Mechanical  
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Technology, Minna, **NIGERIA****ABSTRACT**

This work considers the use of coconut oil for the production of alternative renewable and environmental friendly biodiesel fuel as an alternative to conventional diesel fuel. Test quantities of coconut oil biodiesel were produced through transesterification reaction. To overcome the high kinematic viscosity of the neat oil, a high molar ratio of 4:1 was used to produce the methyl ester (biodiesel). The biodiesel was characterized using the American Society for Testing and Materials (ASTM) D6751-02 limits for biodiesel. The results of the characterization obtained were within the ASTM D6751-02 limits for biodiesel and similar to those of diesel fuel, thus confirming that it can be used as alternative fuel for diesel engines. Chromatography analysis of the coconut oil methyl ester shows that it has a total saturation and unsaturation of 94.8% and 5.2% respectively. The 94.8% level of saturation indicates oxidation stability of the coconut methyl ester while 5.2% of unsaturation indicates the level of reactivity to oxidation which makes it less prone to bacterial growth.

**Keywords:** Coconut oil, biodiesel, characterization, saturation, fatty acid profile.