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Production of bio-diesel from used groundnut oil from bosso market, Minna, Niger state, Nigeria

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Biodiesel is a clean burning diesel fuel processed from natural and renewable biological sources such as waste cooking oil, rape seed, Jatropha seed, animals fats and refined bleached deodorized palm oil. The transesterification of used cooking oil with short-chain alcohols in the presence of base catalyst sodium hydroxide (NaOH) and methanol as solvent by means of single step batch transesterification process in order to obtain biodiesel fuel was studied using a reaction ratio of 6:1 for alcohol to oil ratio. The oil was heated in a water bath. The process variables that were investigated are catalyst concentration and reaction time. The variable that was fixed throughout the whole experiment was quantity of used vegetable oil, mixing degree of mechanical stirrer at 1300 rpm and alcohol to oil ratio. The oil was divided into three samples namely, 1, 2 and 3. The biodiesel yield for the samples are 58 ml, 79 ml and 70 ml respectively while the glycerine yield for the samples were 19 ml, 19 ml and 20 ml respectively. The reaction times for the three samples are 60, 90 and 120 minutes respectively. The best result for highest yield and highest purity is at 90 minutes reaction time and 1.5 g catalyst concentration. Sample 2 was found to have the highest cetane rating closer to the ASTM standard which implies that sample 2 will be a more efficient fuel than the other two samples, guarantee smooth running of the engine as well as burn cleaner.

Biography

Alabadan B A was born in Ikere-Ekiti, Nigeria. His scholarly voyage saw him attend St. John's African Church Primary School, Ikere-Ekiti (1976), the famous school without failures, African Church Comprehensive High School, Ikere-Ekiti (1982), the Federal University of Technology, Akure (1989) for a Bachelor of Engineering degree in Agricultural Engineering, the prestigious University of Ibadan (1992,2002) for his postgraduate programmes in Agricultural Engineering. He was two times MASHAV scholar to the Research Institute, Volcanic Campus, Bet Dagan, Israel (2007) for Certificate in Research and Development in Postharvest Practices and Shefayim, Israel (2015) for Certificate in Climate Change and Agriculture.

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