Characterization of Biodiesel Produced from Multiple Feedstocks for Sustainable Production of Agro-Based Fuels

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Abstract

In this study, biodiesel was derived from multiple vegetable oils mixed with palm oil. Transesterification of vegetable oil was performed using methanol and alkaline catalyst (potassium hydroxide (KOH)) at varying temperature (50– 70 °C). The resulting biodiesel or fatty acid methyl esters (FAME) was evaluated for its chemical bonds and different FAME composition, in which the results from the latter were used to determine its fuel properties. The physico-chemical proper ties of biodiesel from multiple feedstocks were analyzed empirically for calorific value, cetane number, density, and kinematics viscosity. Biodiesel produced exhib ited improved performance in some fuel properties in comparison to biodiesel prepared from single vegetable oil feedstock, especially for

cetane number values and kinematic viscosity.

Author keywords

Biodiesel; Cetane number; Coconut oil; Corn oil; Palm oil; Transesterification

Indexed keywords

Engineering controlled terms

Alkalinity; Bond length; Bond strength (chemical); Covalent bonds; Feedstocks; Hydrogen bonds

Engineering uncontrolled terms

Alkaline catalysts; Coconut oil; Corn oil; Fatty acids methyl esters; Fuel properties; Kinematics viscosity; Multiple feedstocks; Potassium hydroxide KOH; Sustainable production; Transesterifications

Engineering main heading

Potassium hydroxide

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