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*Hempseed Oil Biodiesel Transesterification Production
and Mid-size Reactor Operational Condition Studies*

Abstract

Fossil fuel is depleting quickly as the world's energy consumption has been significantly increasing. In the current climate changing crisis, more sustainable green energy is needed to supply global demand. Biofuel has 150 years of history, and as a renewable energy source, is a perfect replacement or blend to petroleum produced diesel. Biodiesel produces less air pollutants and it requires no modifications to the engine for combustion while retaining similar energy content to diesel. Furthermore, biodiesel is the only fuel available in commercial quantities in the United States that meets the definition of biomass-based diesel under Renewable Fuels Standard (RFS2).

In the United States, commercial biodiesel is mainly produced from soybean oil. To not compete with the land use for food crops, a non-edible feedstock would be ideal for large scale biodiesel production. Previous research has shown that more than 30 feedstocks can be used to produce biofuel through a transesterification reaction. However, little research had been conducted on hemp, due to legislation obstacles and many still confuse hemp with its intoxicating relative marijuana. Industrial hemp can be cultivated to produce various products, such as hemp seeds, hemp oil, clothing, rope, paper, insulation, cosmetics, biodegradable plastics, construction material, resin, pulp, animal bedding, and fuel. Hemp has several advantages over other crops because it requires little water and fertilizers to grow, and its deep roots help control the erosion of the topsoil. In recent years, state legislatures have established state-licensed hemp programs to promote hemp as an agricultural commodity.

Hemp oil biodiesel has a higher flash point compared to Soybean biodiesel, which makes it a better candidate in terms of storage, fuel handling, and transportation. The low cloud point, which is the temperature at which wax crystals start to form in fuel, of hemp oil biodiesel makes it better alternative biodiesel in cold-weather regions. The extremely low sulfur content in hemp oil biodiesel makes it the perfect renewable energy when combating pollutions.

In this presentation, we will take a journey to see the story of hempseed oil from feedstock transforming to ASTM quality biodiesel.

Date:
Wednesday,
Feb 10th,
2021

Time:
Starts @
12:00PM

**Zoom Meeting
Details:**

<https://kansas.zoom.us/j/98495742246>

Meeting ID:
984 9574 2246

Password:
1234

Committee Chair:

**Professor
Susan
Williams**