

عنوان مقاله:

Biodiesel Production by Esterification of Oleic Acid with Ethanol Using a Magnetic Activated Carbon Nanocatalyst
($\text{Fe}_3\text{O}_4/\text{SiO}_2/\text{AC}$)

محل انتشار:

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خلاصه مقاله:

The esterification of free fatty acids (FFA) mostly found in vegetable oils with ethanol using solid acid catalyst is one of promising method to convert FFA into Fatty Acid Ethyl Ester (FAEE) that is an alternative to replace fossil fuel as energy source mostly in transportation sector. The present study aimed to determine the optimum or best operating condition for the production of FAEE by esterification of oleic acid and ethanol with a new magnetic activated carbon nanocatalyst ($\text{Fe}_3\text{O}_4/\text{AC}$) as solid acid catalyst. The novel catalyst was characterized by FTIR, SEM, XRD, TGA and BET. The scope of study, the achieving optimum operating condition of oleic acid esterification at $50-80^\circ\text{C}$, $0.5-1.5$ g $\text{Fe}_3\text{O}_4/\text{AC}$ solid catalyst and $5:1$, $10:1$, $15:1$ ethanol to oleic acid molar ratio that brings maximum % oleic acid conversion.

کلمات کلیدی:

Biodiesel, Magnetic activated carbon, Esterification of oleic acid

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