Production of biodiesel from non-edible jatropha curcas oil via transesterification using Nd2O3-La2O3 catalyst

ABSTRACT

Biodiesel is viewed as the most promising alternative fuel to replace petroleum-based diesel since it is derived from renewable sources such as animal fats, vegetable oil and grease. Out of various vegetable oil resources for biodiesel production, Jatropha curcas oil (JCO) is a viable choice for biodiesel because it is non-edible and can be grown easily in a harsh environment. In this study, Nd2O3-La2O3 catalyst was prepared for transesterification of JCO with methanol, in order to evaluate its potential as a heterogeneous catalyst for biodiesel production. Under suitable transesterification condition at 210 °C with catalyst amount of 3 wt.%, methanol/oil molar ratio of 45 and reaction time for 4 h, the conversion of JCO to fatty acid methyl ester (FAME) achieved was more than 93% over Nd2O3-La2O3 catalyst.

Keyword: Biodiesel; Heterogeneous catalyst; Jatropha curcas oil; Transesterification.