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In situ biodiesel production via reactive extraction of mixed crop oil

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The production of biodiesel from crop oils under application of homogenous and heterogeneous based catalyzed transesterification is commonly well known. The feedstock of biodiesel (mix of *Ricinus communis L.* and *Jatropha curcas L.* oil) is produced through either processes chemical or mechanical extraction. This method represents both the oil extraction and chemical reaction take place separately. In this study, the process of oil extraction and biodiesel production proceed in situ into a transesterification reactor which it is termed as a reactive extraction process. The ratios of solvent (n-hexane) volume and reactant (ethanol) mole are taken into account for optimizing the production of biodiesel. The diluted potassium hydroxide in amount of 1.0% w/w is applied as the catalyst. The results show that the reactive extraction method is suitable for biodiesel production due to it is able to obtain the maximum yield of biodiesel, around 79.8%. The characterization of biodiesel is performed using standard ASTM D 6751. As the main issue of this study is biodiesel production for applying in the climate area. The composition of hydrocarbon compounds of biodiesel must be analyzed via gas chromatography to confirm the biodiesel quality meets the requisite for cold flow properties. The inferior cold flow properties may cause the fuel line problem, such as the formation of crystal particle which can block the fuel flow under low temperature region.

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