

Pretreatment of used cooking oil for the preparation of biodiesel using heterogeneous catalysis

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ABSTRACT

Used cooking oil (UCO) offers a number of benefits for the production of biodiesel because it is a waste material and relatively cheap; however UCOs contain free fatty acids (FFAs) which need to be removed. Esterification can be used to convert the FFAs to biodiesel, and this work has compared two types of heterogeneous catalyst for esterification. An immobilized enzyme, Novozyme 435, was investigated because it has been shown to give a high conversion of FFAs and it has been compared to an ion-exchange resin, Purolite D5081, which was developed for the esterification of UCO for the production of biodiesel. It was found that a conversion of 94% was achieved using Purolite D5081 compared to 90% conversion with Novozyme 435.

KEYWORDS:

Immobilize Enzyme; Catalyst Loading; Candida Antarctica Lipase; Internal Mass Transfer; Palm Fatty Acid Distillate

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