

Biodiesel Production by Enzymatic Process

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Abstract

Biodiesel is an alternative fuel, and is receiving much attention because of its benefits, i.e., it is non-toxic, biodegradable, and renewable. Biodiesel is the mixture of alkyl esters of fatty acids derived from the transesterification of vegetable or animal oils with alcohol. Generally, the synthesis of alkyl ester is accomplished by chemical process using alkaline catalysts. A by-product, glycerol, contains the alkali, and have to treated as a waste material. Biodiesel can also be produced from waste oil to diminish production cost. However, waste oils contain water and free fatty acids, the chemical reaction generates fatty acid alkaline salts. The salts are removed by washing water which also removes glycerol, methanol, and catalyst. Therefore, disposal of the resulting alkaline water causes other environmental problems. On the other hand, because enzymatic methanolysis of waste oil does not generate any waste materials, production of biodiesel using lipase is strongly desired. However, the high cost of the lipase makes the enzymatic process economically unattractive. Immobilized lipase could be a possible solution to this problem because it can be recovered from the product and reused. In this work, enzymatic process of biodiesel production is reviewed.

References

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