



Potential of feedstock and catalysts from waste in biodiesel preparation: A review



Irma Nurfitri^a, Gaanty Pragas Maniam^{a,b,*}, Noor Hindryawati^a, Mashitah M. Yusoff^{a,b}, Shangeetha Ganesan^c

^a Faculty of Industrial Sciences and Technology, Universiti Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang, Kuantan, Pahang, Malaysia

^b Central Laboratory, Universiti Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang, Kuantan, Pahang, Malaysia

^c School of Chemical Sciences, Universiti Sains Malaysia, 11800 Minden, Penang, Malaysia

ARTICLE INFO

Article history:

Received 11 February 2013

Accepted 30 April 2013

Keywords:

Biodiesel

Transesterification

Waste/used edible oil

Heterogeneous catalyst

Catalysts from waste

ABSTRACT

For many years, the cost of production has been the main barrier in commercializing biodiesel, globally. It has been well researched and established in the literature that the cost of feedstock is the major contributor. Biodiesel producers are forced to choose between edible and non-edible feedstock. The use of edible feedstock sparks concern in terms of food security while the inedible feedstock needs additional pretreatment steps. On the other hand, the wide availability of edible feedstock guarantees the supply while the choice of non-edible results in a non-continuous or non-ready supply. With these complications in mind, this review attempts to identify possible solutions by exploring the potential of waste edible oils and waste catalysts in biodiesel preparation. Since edible oils are available and used abundantly, waste or used edible oils have the potential to provide plentiful feedstock for biodiesel. In addition, since traditional homogeneous catalysts are less competent in transesterifying waste/used oils, this review includes the possibility of heterogeneous catalysts from waste sources that are able to aid the transesterification reaction with success.

© 2013 Elsevier Ltd. All rights reserved.

* Corresponding author at: Faculty of Industrial Sciences and Technology, Universiti Malaysia Pahang, Lebuhraya Tun Razak, 26300 Gambang, Kuantan, Pahang, Malaysia. Tel.: +60 16 4110236; fax: +60 9 549 2766.

E-mail address: gaanty@hotmail.com (G.P. Maniam).