Technological advancement for efficiency enhancement of biodiesel and residual glycerol refining: A mini review

ABSTRACT

Biodiesel or known as fatty acid methyl ester (FAME), is a diesel fuel substitute derived from the transesterification reaction of triglycerides with alcohol in the presence of suitable catalyst. The demand for biodiesel is increasing due to environmental and health awareness, as well as diminishing energy security. However, the presence of impurities in biodiesel will affect engine performance by corroding fuel tubes and damaging the injectors. Common methods for the purification of biodiesel include water washing, dry washing and membrane separation. This mini review compares the technological advancement for efficient enhancement of biodiesel and glycerol refining between wet washing, dry washing (activated compound, biomass-based adsorbents and silica-based adsorbents), ion exchange and membrane separation technology. The percentage of glycerol residues, soap, alcohol and catalyst from crude biodiesel was compared to reflect the resulting biodiesel purity variation. The advantages and disadvantages of each method were also discussed.