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Hydro-treated vegetable oils – The better biodiesel alternative?

Fats and oils today represent the main source for alternative transport fuels, especially for FAME (biodiesel) and HVO (hydrotreated vegetable oils). Recent developments in FAME and HVO production and utilization are highlighted. Since HVO production technology is based mainly on current mineral oil industry processing methods, the scientific literature is not as extensive as that of FAME production. While biodiesel is produced from vegetable oils via transesterification with methanol, the main reaction routes of HVO are a combination of hydrogenation, decarboxylation, decarbonylation, hydroisomerization and cracking under high pressure and temperatures, using supported and unsupported heterogeneous metal catalysts. Own experiments using non food feedstocks as starting material like waste animal fat or tall oil under heterogeneous catalysis are presented. Differences and fuel characteristics of both biodiesel types are discussed. The main advantage of HVO is the use as so-called drop in fuels, meeting existing fossil fuels standards. However, hydrogenation and lower yields at HVO production leads to significant higher production costs. As feedstocks are limited, the solution will be an optimum mix of both types of alternative fuels.

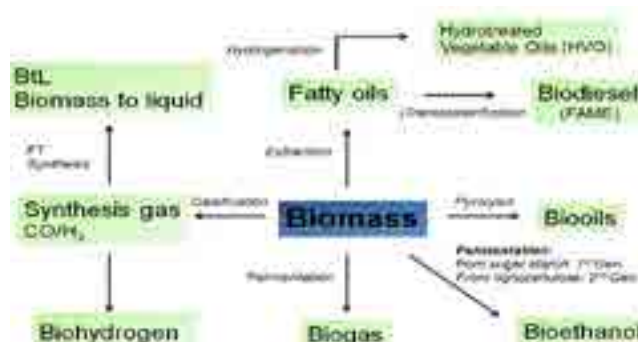


Figure 1: Different types of biofuels

Biography

Martin Mittelbach is a leading scientist in the field of biodiesel over 30 years. Since 1993, he is Head of the working group: "Chemistry and technology of renewable resources" at the University of Graz, Austria. He is the author of over 110 scientific publications in reviewed journals, editor and author of several books on biodiesel and inventor of several patents on biodiesel production technologies. He has had co-operations and projects on biodiesel with numerous national and international research organizations. He was invited for key presentations or guest professorships at bioenergy conferences and research organizations around the world. In 2015, he received the European Lipid Technology Award from the European Federation for the Science and Technology of Lipids.

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