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Hydrotreatment of waste fats and oils with heterogeneous catalysis for tailor made production of biofuels

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Especially for fats and oils with high content of saturated fatty acids, hydrotreatment is an alternative to trans-esterification to obtain high quality alternative diesel fuels. A comparison of fuel properties of fatty acid methyl esters and hydrotreated fatty acid material is given. Heterogeneous catalysts, based on Ni and Co impregnated alumosilicates were prepared and used as catalysts for the hydrotreatment of animal fat as well as tall oil. The influence of reaction conditions like time, temperature and type of catalyst has been investigated. The aim of the study was a combined hydrotreatment as well as isomerization with high yield in one step. It could be shown that depending on the reaction conditions high quality products could be obtained from each feedstock, leading to products with low sulphur content and good cold temperature behaviour in one-step reaction. The catalysts could be reused successfully without significant loss of activity. Even the rosin acids in tall oil, which cannot be converted by classical transesterification reaction, were totally converted to valuable hydrocarbons by hydrotreatment. Advantages and disadvantages of both options for the conversion of fatty acid material, either transesterification or hydrotreatment are compared and discussed.

Biography

M Mittelbach is a leading Scientist for the preparation and use of biofuels from fats and oils since over 30 years. He is Professor of Organic Chemistry at the University of Graz and has published over 120 peer reviewed papers, several book contributions and filed several patents on biodiesel production technologies.

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