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The application of heterogeneous catalysts in the esterification of fatty wastes

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Abstract

The use of agro-products in biofuel production has been the subject of research on low-cost liquid fuels. There is little information available on the technology and how to use the by-products generated from biomass Amazon. For example we have the acid sludge produced at the refineries of vegetable oils, as obtained in the extraction of palm oil and cupuaçu fat. The esterification of free fatty acids is generally made by homogeneous catalysis using sulfuric and hydrochloric acids; however, solid acid catalysts have great potential to replace liquid acids, which would eliminate separation steps and corrosion as well as other environmental problems. Accordingly, solid acid catalysts has been applied in the esterification of fatty wastes. The solid type heteropolyacids Keggin series (HPW) offers high thermal stability, high strength and low acid corrosive power. The dispersion of HPW in solid matrices with high surface areas has been used to increase the surface area of the solid, making it accessible to a larger number of reactant molecules and, consequently, a more efficient catalyst. Sulfated zirconia was used due to its superacid characteristics, which are suitable for use in the esterification of raw materials with high acidity. The use of fatty waste from industries for production of biodiesel and synthesis, characterization and application of heterogeneous catalysts for this purpose will be the subject of discussion.