

Production of hydrocarbon from oleic acid by decarboxylation

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Vegetable oils are renewable feedstocks currently being used for production of biofuels from sustainable biomass resources. There are many benefits of biofuels including domestic production of fuels, decreased greenhouse gas emissions, decreased dependence on fossil fuels, improvement of rural economies and increased national security. Biofuel production from transesterification of vegetable oils is currently the primary route for production of biofuels from vegetable oils. Hydrotreating have been studied very recently to overcome problems caused by biodiesel during engine operation, handling, and storage. But, this is known to consume large amount of hydrogen.

In this study, we conducted catalytic decarboxylation of a free fatty acid with catalysts in autoclave reactor. Oleic acid was selected as a model reactant, because oleic acid is one of the main component in vegetable oil. Basic inorganic metal oxides, hydrotalcites, and precious metals supported on high surface area substrates, such as palladium on activated carbon, platinum on silica and platinum on activated carbon, were used as catalysts. The reaction products were analyzed by GC-FID, GC-MS and HPLC.