

Catalytic Production of Advanced Biofuels via Hydrotreatment Process: Bio-Jet, Green Diesel, and Fuel Additives

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The catalytic production of advanced biofuels has been extensively investigated for many types of renewable feedstocks and using various types of catalysts. Metal and alloy catalysts dispersed on strong solid acid-based supports show excellent activity in converting oil-based feedstocks to bio-jet fuels via the combination of hydro isomerization and deoxygenation. Our research showed that metal, metal sulfide and metal phosphide dispersed on alumina or porous carbon support give outstanding performance in green diesel production through different deoxygenation pathways depending on the type of catalytic active sites. Moreover, selective hydrogenation or catalytic transfer hydrogenation of biomass-derived compounds to fuel additives can be effectively achieved over highly dispersed metal or alloy nanocatalysts on ordered mesoporous supports. The recent advances in these hydrotreatment processes for advanced biofuels production will be presented and discussed.

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