

## Reductive Hydroformylation for the Production of Alcohols Used in Synthetic Fuel Blends

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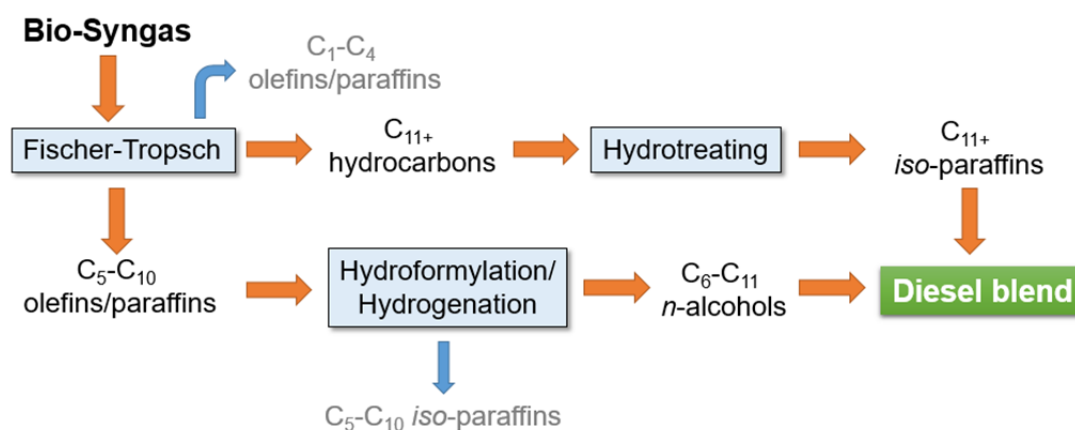
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### Abstract

Fuels from renewable feedstock can contribute significantly to reduce greenhouse gas emissions and therefore are an important approach to successfully execute the energy transition in the transport sector. REDIFUELS objective is to enable the utilization of various biomass feedstock for a renewable EN590 diesel biofuel - which is drop-in capable at any ratio - in a sustainable manner.

The proposed drop-in biofuel contains high-cetane C<sub>11+</sub> bio-hydrocarbons and C<sub>6</sub>-C<sub>11</sub> bio-alcohols that have exceptional performance with respect to combustion and soot-inhibition properties because of their oxygen content.

Our work focuses on the Hydroformylation/Hydrogenation step. Hydroformylation is carried out with a homogeneous transition metal complex containing rhodium, because of its superior activity. The developed fuel production process need to be extremely cost efficient, therefore rhodium must be recovered from the reaction mixture. This can be achieved by immobilization of the catalyst in second liquid phase, consisting of water. Furthermore, the developed process needs to show high tolerance to side products (paraffins) of Fischer-Tropsch synthesis and high once-through conversion to minimize product loss in the Hydrogenation step.



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