



Olefin Synthesis from Biomass (20150116, Dr. Hillmyer, Dr. Tolman)

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Biomass Used in Synthesis of Olefins

A catalytic process allows commodity olefins to be synthesized from the carboxylic acids of biomass. This bio-based feedstock approach is a desirable method for generating olefins that can be used to make plastics and other chemicals. The process, which involves the decarbonylation of carboxylic acids from biomass, creates olefins such as styrene, acrylates, acrylonitrile and octene in moderate to good yield. Furthermore, by adding a tandem Heck-type coupling reaction, the process can also generate stilbenes, which are desired bioactive targets.

Environmentally Friendly

This process uses a palladium catalyst instead of anhydride additives or ligands, thus reducing reagents and generating less waste. In addition, the reaction occurs at moderate temperatures, which reduces energy costs and is more environmentally friendly than current methods.

Creating olefins from biomass may lead to a more sustainable, bio-based economy that is less dependent on oil.

BENEFITS AND FEATURES OF SYNTHESIS OF OLEFINS FROM BIOMASS:

- Greener and more cost effective – fewer reagents required, less waste generated, less energy used
- Does not require anhydride additives or ligands
- Direct, one-step method for making a greater variety of olefins
- Reduces dependence on oil/petroleum

Phase of Development - Proof of Concept

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