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Innovation at Work

Colorado State University

Aluminum-Based Catalysts for Low-Cost, High-Yield Biomass-to-Biofuel-Intermediate or Feedstock Chemical Catalyst

HMF has been identified as an important chemical intermediate in a proposed biorefining pathway. Known to be derivable from biomass, HMF can be a feed-stock chemical for conversion into biofuels and other value-added chemicals. While HMF synthesis from cellulose has already been realized at laboratory scale, it has not reached levels that are commercially and economically viable.

Researchers in the Chemistry Department at Colorado State University have created several new means of converting cellulose and glucose into a biofuel intermediate, several of which use aluminum alkyl compounds to create the biofuel intermediate HMF. These catalysts are far cheaper than $CrCl_2$ (as low as 0.6% of the price of CrCl2) and have realized conversion rates that match or exceed state-of-the-art. The compounds have been shown to produce higher yields of HMF than state-of-the-art with the added benefit of lowered toxicity. Most importantly, these catalysts are capable of converting inedible cellulose sources into HMF, allowing traditional biofuel sources, such as corn, to remain part of human food chains.

This technology will be of special interest to those looking to create biofuels from cellulosic sources. Any source of glucose or cellulose may be converted into HMF with this catalyst—crop residues such as straw and corn stover are just one potential source for this and related technologies.

Contact us for more information regarding this exciting new technology.

Patent Information
U. S. patent pending

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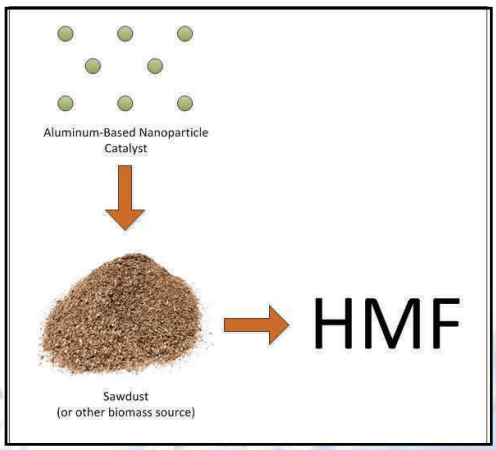

Features and Benefits

- Catalytic conversion of cellulosic or glucosic biomass sources into biofuel intermediate
- Cheaper than state-of-the-art
- Utilizes inedible biomass sources
- Higher yields than state-of-the-art
- Lower toxicity than state-of-the-art

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