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Bioliquefaction Assisted Heat Transfer for Pretreated Biomass Slurries

A novel method uses an organic catalyst to liquefy semisolid lignocellulosic biomass into a low-viscosity, fermentable slurry, reducing costs and eliminating the need for expensive enzymes in high-yield ethanol production.

Technologies used for biologically converting renewable biomass to fuels and chemicals remain in the experimental stage where shortcomings still exist.

Researchers at Purdue University have developed a method that overcomes some of these shortcomings by using an organic molecule as a catalyst to liquefy semisolid lignocellulosic biomass into a low viscosity, fermentable slurry, allowing it to be readily processed through pumps, heat exchangers, and induces turbulence to enable good transfer of heat and mass in the process. The slurry reduces the cost of converting liquefied cellulose to high yields of ethanol because it has enhanced reactivity and allows conversion without the need of enzymes.

Advantages:

-Liquefies semisolid lignocellulosic biomass into a fermentable slurry

-Does not require expensive enzymes for liquefaction

-Enhances reactivity to convert cellulose into marketable ethanol fuel

-Reduced cost

Potential Applications:

-Processing lignocellulosic biomass feedstock

-Alternative biomass utilization processes

-Production of ethanol or other substances from fermentation

TRL: 7

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Energy & Power Systems/Power Generation

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