

Conversion of Douglas fir Biomass into Isobutanol and Biojet

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The pretreatment and hydrolysis of lignocellulosic biomass to release nutrients and sugars can be utilized for the production of biofuels and biochemicals. Gevo has developed fermentation and process technology to convert biomass derived sugars into isobutanol, followed by chemical processing into renewable jet fuel. Gevo uses GIFT®, Gevo Integrated Fermentation Technology, to produce isobutanol at high productivity, titer, and yield using a biocatalyst. As part of the Northwest Advanced Renewables Alliance (NARA), Gevo's goal is to fermentatively convert hydrolyzed Douglas fir biomass into isobutanol at a specification developed by Gevo that ensures the isobutanol will be further converted into renewable biojet using existing Gevo technology. The specific tasks of Gevo's project for NARA include: (1) Characterize and evaluate representative samples of pretreated Douglas fir biomass; (2) Adapt yeast biocatalysts to pretreated biomass hydrolyzates; (3) Produce isobutanol at laboratory scale to optimize isobutanol production using the hydrolyzate adapted biocatalyst; (4) Economic assessment of wood to isobutanol, biojet; (5) Analyze isobutanol to close the mass balance and determine potential low-level impurities; (6) Produce isobutanol at demonstration scale using GIFT® fermentations and convert the lignocellulosic derived isobutanol to biojet for further testing.