Pacific Northwest NATIONAL LABORATORY

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Available Technologies

Genetically Engineered Ethanol Producing Microorganisms

SUMMARY

Researchers at PNNL have developed a process concept for the use of microorganisms in the production of fuels, chemicals and other products. When applied, the new process would improve the efficiency of ethanol fermentations by genetically engineering ethanol producing organisms, for example yeast. The improved conversion efficiency of ethanol production is based on utilization of a five carbon sugar present in hemicellulose, a ubiquitous component of lignocellulosic biomass. The yield improvement combines utilization of xylose, a product of hemicellulose hydrolysis.

PNNL's improved conversion efficiency for sugars to ethanol production involves incorporation of enzymes into a genetically engineered ethanologenic microorganism.

ADVANTAGES

* Efficient ethanol production due to unique utilization of five-carbon sugars.
* Improved conversion resulting from incorporation of a genetically-engineered microorganism.

U.S. DEPARTMENT OF ENERGY

Technology Portfolio(s)

- Bio-processing
- Renewables
- Bio-based

Potential Industry Applications

- Chemicals
- Energy & Utilities
- Healthcare, Pharma, Biotech & Medical
- Recycling & Waste Management

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