



Conversion of lignin to muconic acid and methods therefor

[View U.S. Patent Application Publication No. US-2024-0327877 in PDF format.](#)

WARF: P230357US02

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The Invention

Researchers from UW-Madison, MIT, and NLR have developed a chemical process for the conversion of lignocellulosic biomass into muconic acid which is useful for the generation of plastics and polymers. The method includes providing a lignocellulosic biomass reactant, fractionating the reactant via reductive catalytic fractionation (RCF) to generate an RCF oil, deoxygenating the RCF oil via hydrodeoxygenation (HDO) to generate an HDO oil, oxidizing the HDO oil to generate oxygenated monomers, and bioconverting the oxygenated monomers with a bacterium to produce muconic acid.

The oxidation catalysts are Co, Mn, and Br-based, which promote carbon-carbon bond cleavage in the acetylated lignin oligomers that are produced via RCF. The oxidation products include acetyl vanillic acid and acetyl vanillin, which are ideal substrates for bioconversion. An engineered strain of *Pseudomonas putida* was used to demonstrate conversion of these monomers to cis,cis-muconic acid.

Additional Information

For More Information About the Inventors

- [Shannon Stahl](#)

Tech Fields

- [Clean Technology : Biobased & renewable chemicals & fuels](#)

For current licensing status, please contact Jennifer Gottwald at jennifer@warf.org or 608-960-9854