



Biomass-Derived Isoprene in High Yield

Technology ID

20170037

Converting 3-methyltetrahydrofuran to Isoprene

A new process uses a novel catalyst to synthesize isoprene in high yields. Isoprene is made by contacting 3-methyltetrahydrofuran (3-MTHF) with a heterogeneous acid catalyst (other than alumina, or Al₂O₃). This catalytic process dehydrates MTHF to isoprene via several combinations of temperatures, pressures, and space velocities (reactant volumetric flow rate per volume of catalyst) and achieves selectivity of 3-MTHF to isoprene of up to 100%.

Higher Yields, Lower Costs

Isoprene, while traditionally produced from petroleum, can be produced from biomass. However, these production processes suffer from low overall yields or low conversion rates, preventing them from being economically feasible. This new method produces isoprene from a biomass-derived precursor at a high yield. Using a less expensive precursor, it is not only economically viable, but economically competitive with current petroleum processes.

BENEFITS AND FEATURES:

- Biomass-derived precursor
- One-step dehydration of MBDO to isoprene
- High yields (up to 100%)
- Catalyst technology

APPLICATIONS:

- Isoprene manufacture from biomass
- Tires
- Elastomers
- Adhesives and sealants

Phase of Development - Prototype

Researchers

Paul Dauenhauer

Associate Professor, Chemical Engineering and Materials Science

[External Link](http://www.cems.umn.edu) (www.cems.umn.edu)

Kechun Zhang

Associate Professor, Chemical Engineering and Materials Science

[External Link](http://zhang.dl.umn.edu) (zhang.dl.umn.edu)

Publications

[*Renewable Isoprene by Sequential Hydrogenation of Itaconic Acid and Dehydro-Decyclization of 3-Methyl-Tetrahydrofuran*](#)

ACS Catalysis, January 19, 2017, 7 (2), pp 1428–1431

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