



Novel Process of Converting Solid Biomass to Gases and Commodity Chemicals

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BRIEF DESCRIPTION

A new process for converting insoluble solid biomass to commodity chemicals and gases.

BACKGROUND

Currently, there are three approaches to the production of liquid fuels and commodity chemicals from solid biomass: gasification, pyrolysis, and hydrolysis. However, these processes are problematic as pyrolysis and gasification produce a large quantity of char. Using hydrolysis, water must be separated from the final product and the chemical bonds that compose woody biomass are inherently resistant to this process.

DESCRIPTION

Researchers at the University of California, Santa Barbara have developed a new process for converting insoluble solid biomass to commodity chemicals and gases, thus eliminating the need for separations. This technology can reduce demand for petroleum derived chemicals and fuels and reduce emissions of carbon dioxide.

ADVANTAGES

- ▶ Increased rate of conversion
- ▶ Prevents char formation
- ▶ Provide fuels and chemicals from a low- or negative-value feed stock
- ▶ Suitable for commodity chemicals
- ▶ Suitable for water-free, high-octane gasoline additive
- ▶ Self-sustaining, allows for production of liquid fuels and commodity chemicals from biomass in remote regions
- ▶ Able to convert up to 100% of the carbon content of raw biomass
- ▶ Eliminates need for separations

APPLICATIONS

- ▶ Gas and methanol production
- ▶ Commodity Chemical Production
- ▶ Gasoline Additives

This technology is available for licensing. Patent pending.

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OTHER INFORMATION

KEYWORDS

biomass, liquid fuel, hydrolysis,
pyrolysis

CATEGORIZED AS

- ▶ **Energy**
 - ▶ Other
- ▶ **Environment**
 - ▶ Other
- ▶ **Materials & Chemicals**
 - ▶ Other

RELATED CASES

2009-761-0, 2010-114-1

PUBLICATIONS

- ▶ [Hydrogen Transfer from Supercritical Methanol over a Solid Base Catalyst: A Model for Lignin Depolymerization](#)
- Gerald S. Macala, Theodore D. Matson, Charles L. Johnson, Robert S. Lewis, Alexei V. Iretskii, and Peter C. Ford. - ChemSusChem 2009.
- ▶ [Catalytic Disassembly of an Organosolv Lignin Via Hydrogen Transfer From Supercritical Methanol](#) - Katalin Barta, Theodore D. Matson, Makayla L. Fettig,^a Susannah L. Scott,^a Alexei V. Iretskii and Peter C. Ford - Green Chemistry 2010

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	9,522,864	12/20/2016	2009-761
United States Of America	Issued Patent	8,796,494	08/05/2014	2009-761

