Biological Pathways Produce Isobutyric Acid Using Renewable Resources

Technology #20110077

Commodity Chemicals from Renewable Resources

Biological pathways that produce isobutyric acid from sugar-based feedstocks have been developed using fungal and bacterial enzymes. These biological pathways are more environmentally friendly and direct than chemical synthesis. Producing commodity chemicals from renewable resources reduces the likelihood of economic impact from exhausting petroleum feedstock materials and can spur economic development providing the renewable feedstocks.

Isobutyric Acid can be Converted to Methacrylate

Isobutyric acid is used in the production of fibers, resins, plastics, and dyestuffs, and is used as an intermediate in the manufacture of pharmaceuticals, cosmetics, food additives. Isobutyric acid also can be further converted to methacrylate (i.e., methacrylic acid - MAA) and methyl methacrylate (MMA) which are commodity chemicals used in the production of plexiglass (polymethyl methacrylate plastics), adhesives, ion exchange resins, textile size, leather treatment chemicals, lubrication additives and crosslinking agents. Making methacrylate via traditional chemical synthesis techniques usually begins with either natural gas or crude oil as the feedstock. The biological pathway uses renewable sugar feedstock instead of petroleum based feedstock.

FEATURES AND BENEFITS OF PRODUCING ISOBUTYRIC ACID USING BIOLOGICAL PATHWAYS:

- Produces isobutyric acid using renewable resources of sugar feedstock
• Uses standard fermentation conditions and robust microbes
• Does not require fossil fuels or harmful chemicals
• Isobutyric acid is used in the production of fibers and plastics and can be converted to methacrylate

Inventors

Kechun Zhang, PhD

Associate Professor, Chemical Engineering and Materials Science

IP: UM Docket 20110077

For additional information, contact

Larry Micek
Technology Licensing Officer
exprlic@umn.edu
612-624-9568