Materials & Chemicals

Iron Catalyst for Selective Hydrogenation of Aldehydes, Ketones and Imines

View U.S. Patent No. 7,834,224 in PDF format.

WARF: P07510US

Inventors: Charles Casey, Hairong Guan

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a novel method for using an iron-based, ligand-metal bifunctional catalyst.

Overview

Ligand-metal bifunctional catalysts have revolutionized hydrogenation chemistry. These catalysts are highly active and selective at reducing aldehyde, ketone and imine species with unsaturated multiple bonds. They provide an attractive alternative to stoichiometric sodium borohydride and lithium aluminum hydride, two powerful but non-selective reducing agents commonly used to manufacture pharmaceuticals. However, these catalysts contain costly precious metals.

The Invention

UW-Madison researchers have developed a method of using an iron-based, ligand-metal bifunctional catalyst for the selective hydrogenation of aldehydes, ketones and imines under mild conditions. This catalyst contains relatively inexpensive iron, rather than precious metals. When exposed to an aldehyde, ketone or imine, particularly in the presence of hydrogen gas, it facilitates a reduction reaction that is an important step in the production of pharmaceuticals, animal health products, agrochemicals, fungicides, pheromones, flavors and fragrances.

Applications

- Production of pharmaceuticals, animal health products, agrochemicals, fungicides, pheromones, flavors and fragrances

Key Benefits

- Less expensive than precious metal-based ligand-metal bifunctional catalysts
- Improved chemoselectivity
- Reaction occurs with minimal reduction of alkyne and alkene bonds, and without affecting ester or ether moieties
- Reaction products are easy to isolate.
- Works under mild reaction conditions
- Does not require hazardous solvents
- Produces high yields in less than 24 hours of reaction time

Tech Fields

- Materials & Chemicals : Catalysts
- Materials & Chemicals : Synthesis

For current licensing status, please contact Jennifer Cottrell at jennifer@warf.org | 608.960.9854

We use cookies on this site to enhance your experience and improve our marketing efforts. By continuing to browse without changing your browser settings to block or delete cookies, you agree to the storing of cookies and related technologies on your device. See our privacy policy

OK

We use cookies on this site to enhance your experience and improve our marketing efforts. By continuing to browse without changing your browser settings to block or delete cookies, you agree to the storing of cookies and related technologies on your device. See our privacy policy

OK