Drug Discovery & Development

One-Step Synthesis of Diazaphosphacycles

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Inventors: Clark Landis, Wiechang Jin, Jonathan Owen, Thomas Clark

The Wisconsin Alumni Research Foundation (WARF) is seeking commercial partners interested in developing a relatively easy, one-step method of synthesizing a diazaphosphacycle.

Overview

Phosphines have many commercial and industrial uses as attachments to rare earth metal catalysts, including specialized uses in asymmetric hydrogenation and other catalytic transformations. However, chiral phosphines, which are used in reactions such as asymmetric hydrogenation that yield only one enantiomer of a product, are difficult and expensive to produce, often requiring multi-step synthesis.

The Invention

UW-Madison researchers have developed a relatively easy, one-step method of synthesizing a diazaphosphacycle. To generate a diazaphosphacycle, a phosphine is reacted with a diimine and one or more equivalents of an acid halide, a sulfonyl halide, a phosphoryl halide, or an acid anhydride, in the absence of oxygen. The phosphine has the formula R^1-PH_2, where R^1 is a substituted or unsubstituted aryl, alkyl, alkenyl, cycloalkyl or ferrocenyl group.

Applications

- Allows generation of libraries of compounds for screening
- Libraries of phosphine catalysts for hydrogenation and hydroformylation reactions should be useful to the pharmaceutical and chemical industries

Key Benefits

- Relatively easy one-step synthesis

Stage of Development

The researchers have used this reaction to generate a number of variations of diazaphosphacycles, all of which have been thoroughly characterized chemically and are unique compositions of matter.

Additional Information

For More Information About the Inventors

- Clark Landis

Related Intellectual Property

- View Divisional Patent in PDF format.

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Tech Fields

- Drug Discovery & Development : Compound libraries
- Materials & Chemicals : Synthesis

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