

Open-Flask Hydroboration of Alkenes Using Ammonia Borane

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Categories:

- Chemistry and Chemical Analysis

Keywords:

- Amine-Boranes
- Chemical Synthesis
- Chemistry and Chemical Analysis
- Education
- Energy
- Energy Storage
- Organic Chemistry
- Propulsion
- Rocket Propellant

Current methods for hydroboration utilize pyrophoric, moisture-sensitive reagents that pose a safety risk. The reactions are usually performed under strict anhydrous conditions, avoiding contact with air and moisture. Amine-boranes are stable borane complexes, but very few are used for hydroboration.

Researchers at Purdue University have developed a method for achieving hydroboration of alkenes using ammonia borane. This is the first open-to-air hydroboration protocol using air- and moisture-stable reagents without the need for inert conditions or metal catalysts. Moreover, this process can uniquely produce the hydroboration products, ammonia-trialkylboranes, and aminodialkylboranes. This method increases the utility of hydroboration, providing opportunity for new discoveries.

Advantages:

- Safer than traditional hydroboration
- Open-flask hydroboration
- Access to ammonia-trialkylboranes and aminodialkylboranes
- Hydroboration-oxidation sequence provides corresponding alcohols in high yields
- High boron content and air- and moisture-stable reagent

Potential Applications:

- Organic synthesis
- Industrial chemistry

-Chemical education

People:

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Intellectual Property:

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