Efficient Method with Less Caustic Reagents to Synthesize Schrock Catalysts

Tech ID: 33717 / UC Case 2024-761-0

BACKGROUND

Schrock catalysts are highly efficient catalysts used in olefin metathesis reactions. They are commonly used in industrial applications like the production of pharmaceuticals, biofuels, petrochemicals, and polymers. However, Schrock catalysts are difficult to generate and regenerate, limiting cost effectiveness in industrial processes.

BRIEF DESCRIPTION

Professors Richard Schrock, Matthew Conley, and colleagues from the University of California, Riverside have developed new Schrock catalysts in the form of tungsten cyclohexylidenes that can be produced in as few as three synthetic steps, using inexpensive and non-corrosive reagents. This technology forms metathesis-relevant alkylidenes from an olefin through a novel thermal mechanism that avoids a protonation/deprotonation mechanism. This technology is advantageous because it can enable a cost-effective access to metathesis active Schrock catalysts for industrial and research applications.

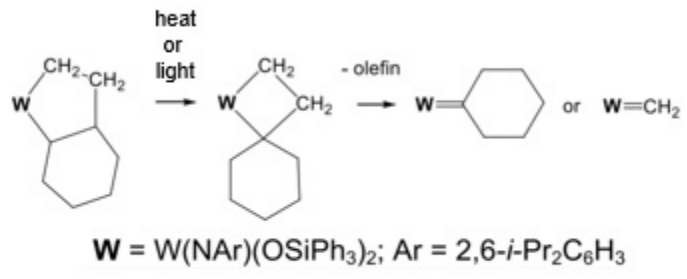

Fig 1: The active Schrock catalyst, cyclohexylidene is formed from tungstabiclononane by photoactivation or heating above ~80 °C.

APPLICATIONS

- A potential cost-effective approach to produce cyclohexylidene metathesis catalysts for industrial and research applications.
- For use in various industries including agrochemical, renewables, pharmaceutical, flavors and fragrances, polymers, and advanced materials.

PATENT STATUS

Patent Pending

RELATED MATERIALS

CONTACT

Grace Yee
grace.yee@ucr.edu
tel: 951-827-2212.

OTHER INFORMATION

KEYWORDS

Schrock catalysts, metathesis, olefin, catalysts

CATEGORIZED AS

- **Materials & Chemicals**
  - Chemicals
  - Other

RELATED CASES

2024-761-0, 2023-978-0

▶ Maji, Milan, et al. “Thermal formation of metathesis-active tungsten alkylidene complexes from cyclohexene.” Journal of the American Chemical Society, vol. 146, no. 27, 25 June 2024,pp.18661–18671, - 06/24/2024

University of California, Riverside

Office of Technology Commercialization

200 University Office Building,

Riverside,CA 92521

otc@ucr.edu

https://research.ucr.edu/