

Metathesis

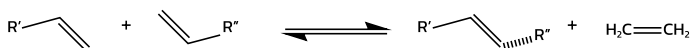


SONEAS

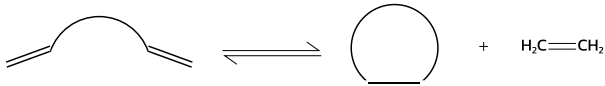
Chemistry for a better life

Olefin metathesis is an important catalytic reaction that is perfect for making carbon-carbon bonds and building molecules. Carbon-carbon double bonds are simultaneously broken and re-formed as the reaction progresses, along with a substituent exchange, ring closing, ring opening, or polymerization. This essential family of reactions now makes a wide range of small-, medium-, and large-ring carbo- and heterocycles and a variety of acyclic unsaturated compounds. These reactions need catalysts.

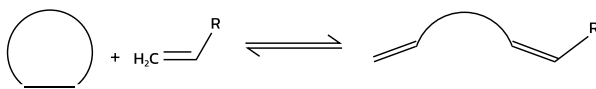
Cross-Metathesis



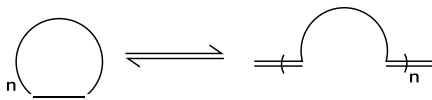
Ring-Closing Metathesis



Ring-Opening Metathesis



Ring-Opening Metathesis Polymerisation

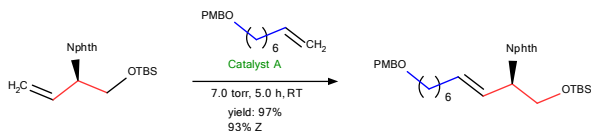


The molybdenum (Mo) and tungsten (W) catalysts that represent a new generation of metathesis catalysts are based on the breakthrough scientific research of the two founders, Amir H. Hoveyda, Richard R. Schrock, co-winner of the 2005 Nobel Prize in Chemistry. Presently these are the most popular metathesis catalysts.

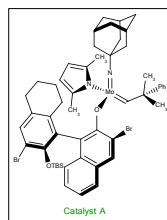
Mo and W catalysts are particularly efficient and valuable catalysts in various selective transformations (including regio-, stereo- and enantioselective/asymmetric metathesis reactions) of industrial interest. From relatively simple intermediates to complex natural products synthesis, those catalysts can be widely used.

The types of reactions, that can be carried out using different Mo and W based catalysts, are the following:

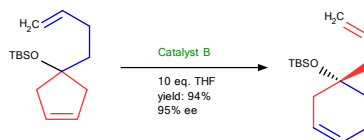
Z-Selective Metathesis Reactions



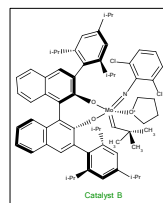
Literature: Hoveyda, Schrock, et al. *Nature* 2011, **471**, 461-465.



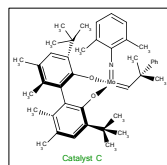
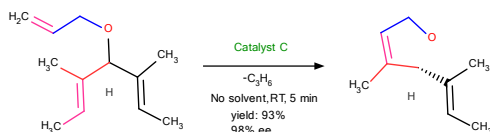
Enantioselective Metathesis Reaction



Literature: Schrock, Hoveyda, et al. *J. Am. Chem. Soc.* 2002, **124**, 10779-10784.

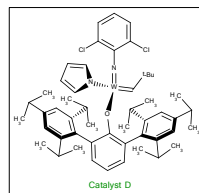
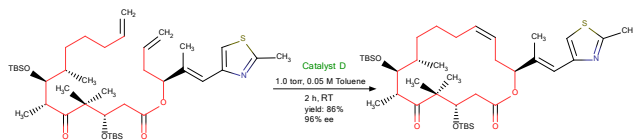


Asymmetric Ring-Closing Metathesis (RCM)



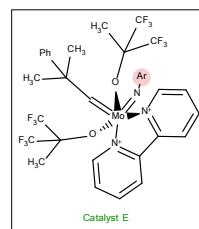
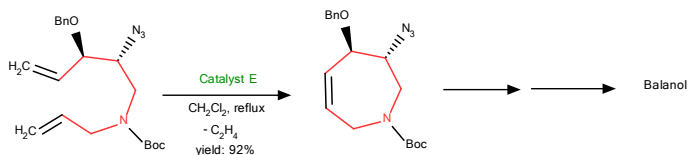
Literature: Hoveyda, Schrock, et al. *J. Am. Chem. Soc.* 1998, **9720**,
Hoveyda, et al. *Angew. Chem. Int. Ed.* 2010, **49**, 34-44.

Z-Selective Catalytic Ring-Closing Metathesis (RCM) Reactions



Literature: Hoveyda, Schrock, et al. *Chem. Eur. J.* 2013, **19**, 2726 – 2740.;
Hoveyda, Schrock, et al. *Nature* 2011, **471**, 461 and 479, 88.

Z-Selective Catalytic Ring-Closing Metathesis (RCM) Reaction



Literature: Fürstner, et al. *J. Org. Chem.*, 2000, **65** (6), 1738-1742;
Fürstner, et al. *Angew. Chem. Int. Ed.* 2011, **50**, 7829-7832.

SONEAS Chemicals Ltd., a member of the UQUIFA Group, chemistry team can perform metathesis reaction in laboratory scale, scale up and perform multi tonne scale.

Reactors

Reactor Capacity	Material of construction
6300 L	Glass line
2500 L	Glass line

Distillation / rectification columns

Column diameter	Material of construction
500 mm	Stainless steel
500 mm	Stainless steel
350 mm	Glass line, Stainless steel
150 mm	Glass line, Stainless steel, Graphite

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