

Amir H. Hoveyda

Research description

Amir Hoveyda is responsible for several groundbreaking discoveries in design and development of new catalysts for olefin metathesis, a broadly applicable chemical transformation that converts a wide range of unsaturated hydrocarbons to a myriad of high value cyclic and acyclic molecules.

The Hoveyda-type ruthenium-based carbenes are probably the most widely used olefin metathesis catalyst in the world. These complexes are the most popular basic template for development of supported versions or catalysts that remain active in aqueous media. Hoveyda's ruthenium catalysts have been applied several times for the preparation of hydrocarbon-based pharmaceutical agents as well as polymers that possess uniquely desirable properties.

Hoveyda has been instrumental in the development of molybdenum- and tungsten-based catalysts that have proven to be of considerable significance. These catalysts offer unprecedented reactivity, but it is their ability of the new class to promote highly *Z*-selective cross-metathesis and ring-closing metathesis reactions that will undoubtedly leave a permanent mark on the way we will be able to convert unsaturated hydrocarbons to a wide assortment of precious molecules.

The discovery of *Z*-selective olefin metathesis, first reported by Hoveyda in 2009, has long been considered a "Holy Grail" of catalyst and reaction development. These catalysts are now being applied in the chemical industry on large-scale stereoselective polymer synthesis and conversion of renewable hydrocarbons to high value materials in sustainable and exceptionally efficient ways.