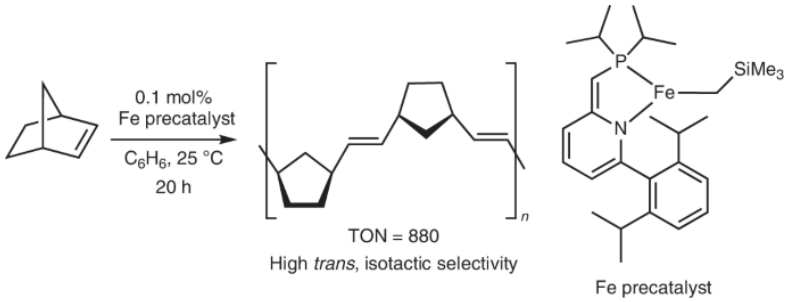
Iron Catalyzed Ring-Opening Metathesis Polymerization (ROMP)

Climate Tech

Material Science

Reference Number: **1905** \ Principal Investigator: **Prof. David Milstein** \ Patent Status: **EP4377007A1**

A novel iron-catalyzed Ring-Opening Metathesis Polymerization (ROMP) of olefins, which leads to several new catalytic reactions and enables the synthesis of new polymeric materials. This breakthrough replaces the costly and toxic Mo- and Ru-carbene catalysts that currently dominate olefin metathesis chemistry, using a catalyst based on earth-abundant iron.



Iron-catalyzed ROMP of norbornene

APPLICATIONS

- New polymeric materials (i.e. Polydicyclopentadiene, Polyoxanorbornene and Cyclooctene-based polymers).
- New engineering materials.
- Industrial-scale production of polynorbornene using iron-based catalysts

DEVELOPMENT STAGE

The researchers have shown the ability to systematically perform the catalysis on a lab scale to produce Polynorbornene.

DIFFERENTIATION

Economical

Bio-compatible

Forms high molecular weight polynorbornene