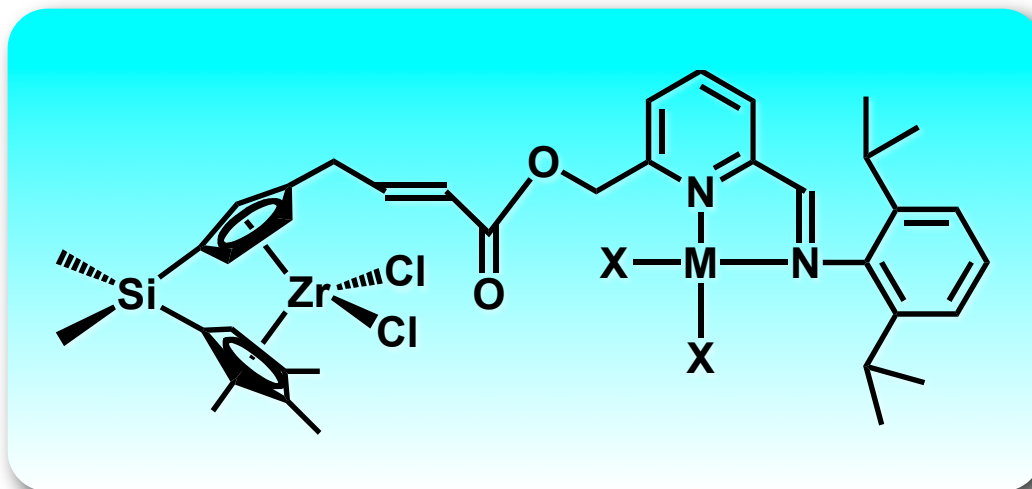


Synthesis of Homo- and Heterodinuclear Zirconium Complexes by Olefin Metathesis and Their Application for Olefin Polymerization Catalysis



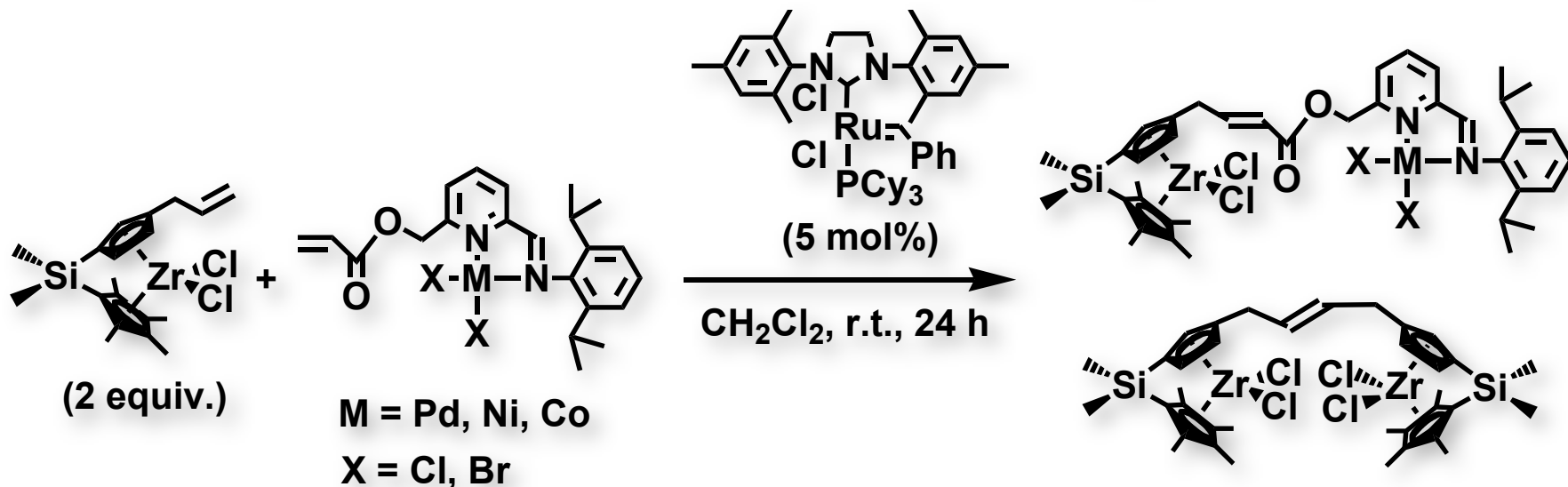
Chemical Resources Laboratory, Tokyo Institute of Technology
Daisuke Takeuchi, Junpei Kuwabara, Kohtaro Osakada



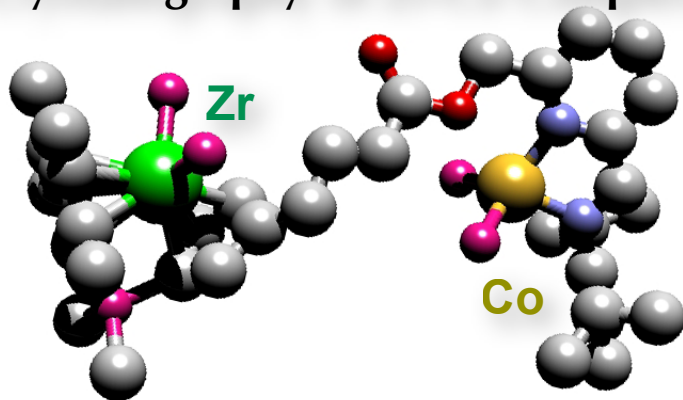
- Synthesis of Heterodinuclear Complexes by Cross Metathesis Reaction
- Synthesis of Polyethylene with Characteristic Branches
- Intramolecular Chain Transfer of Branched Oligoethylene

Synthesis of Heterodinuclear Complexes

1

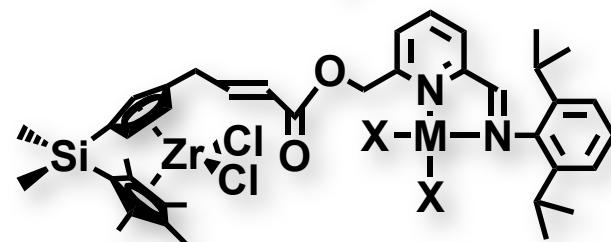


X-ray Crystallography of Zr-Co Complex



Washed with Et₂O

Recrystallization
from THF/Et₂O

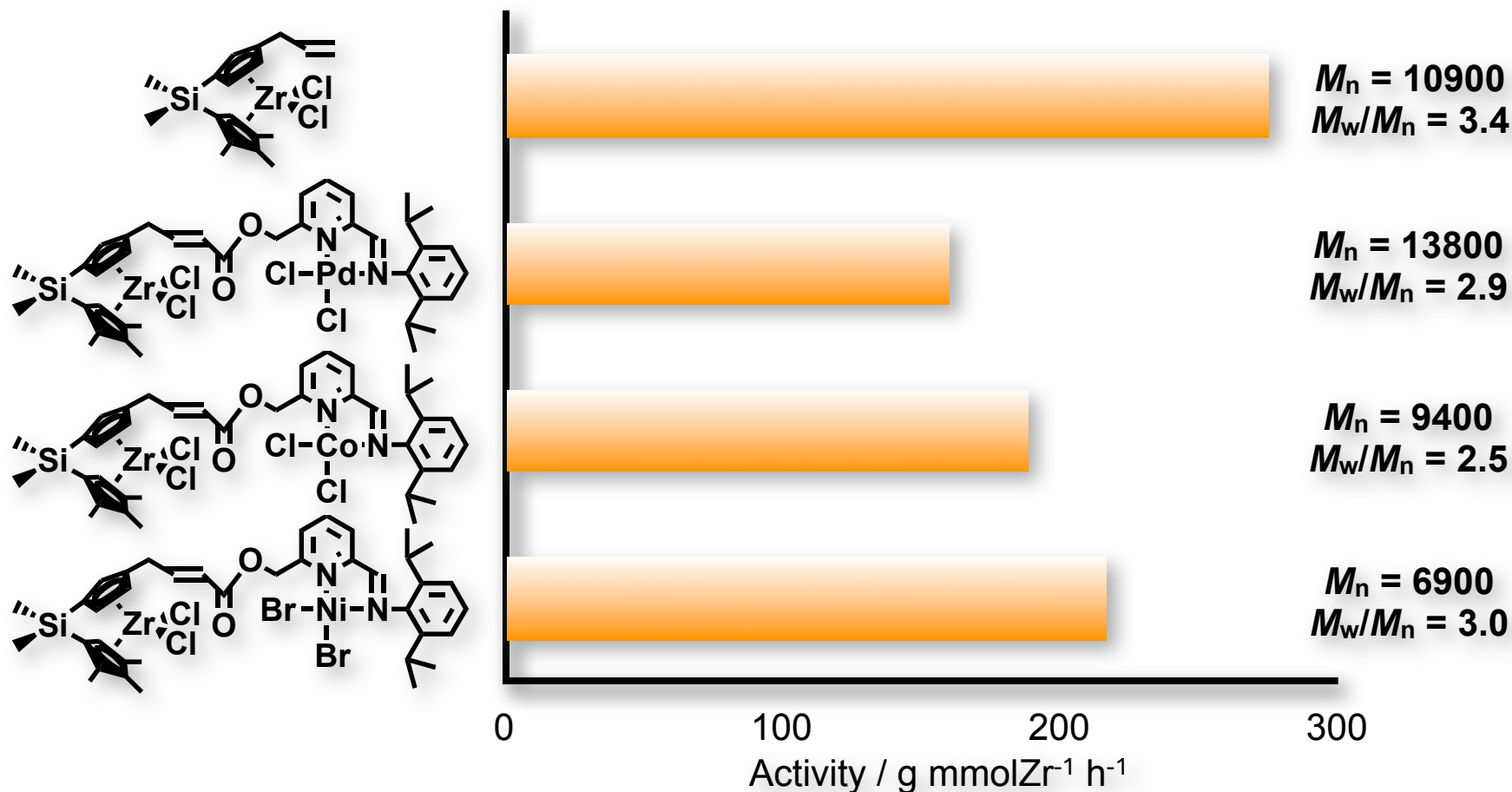
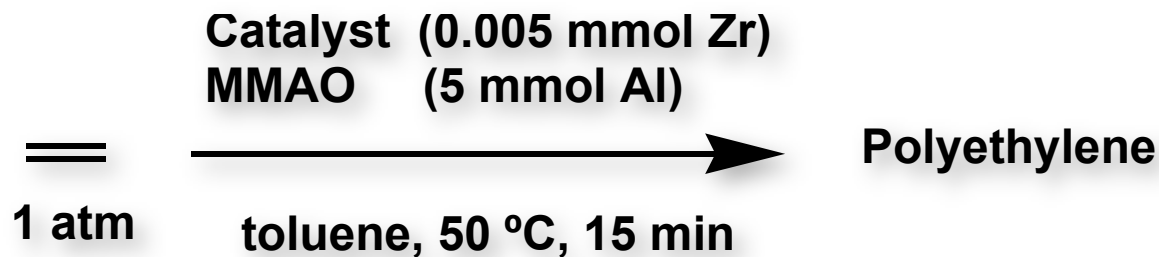


M = Pd, X = Cl: 57% Yield

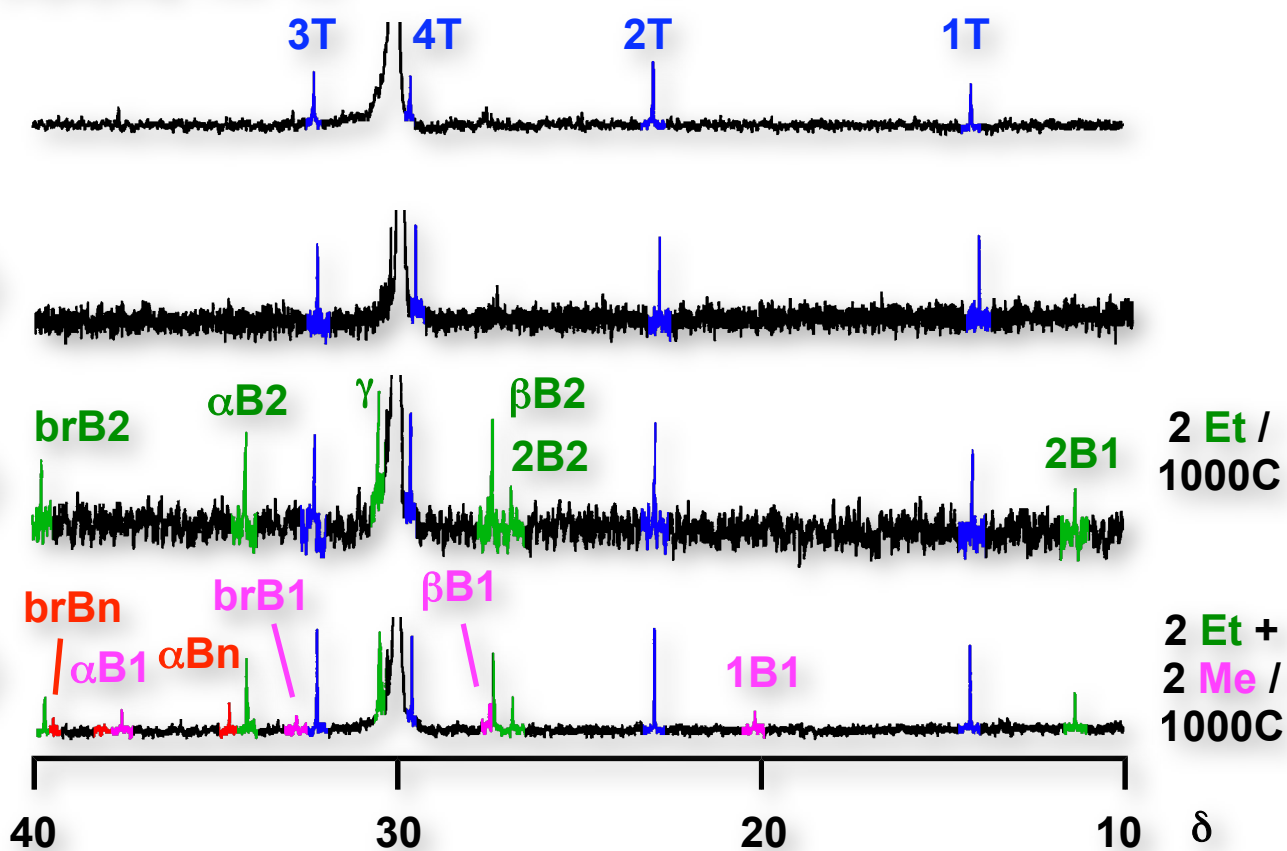
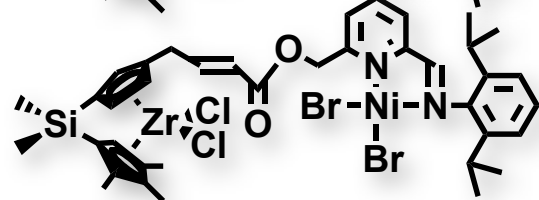
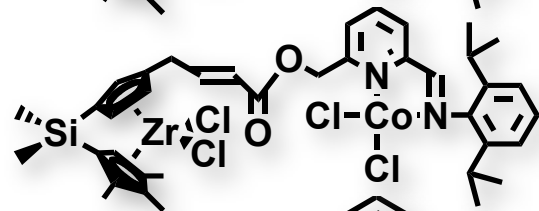
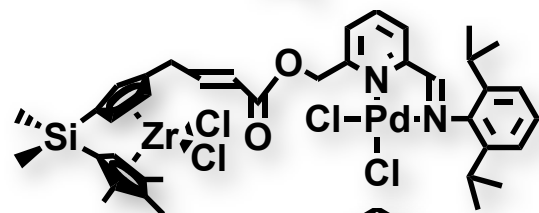
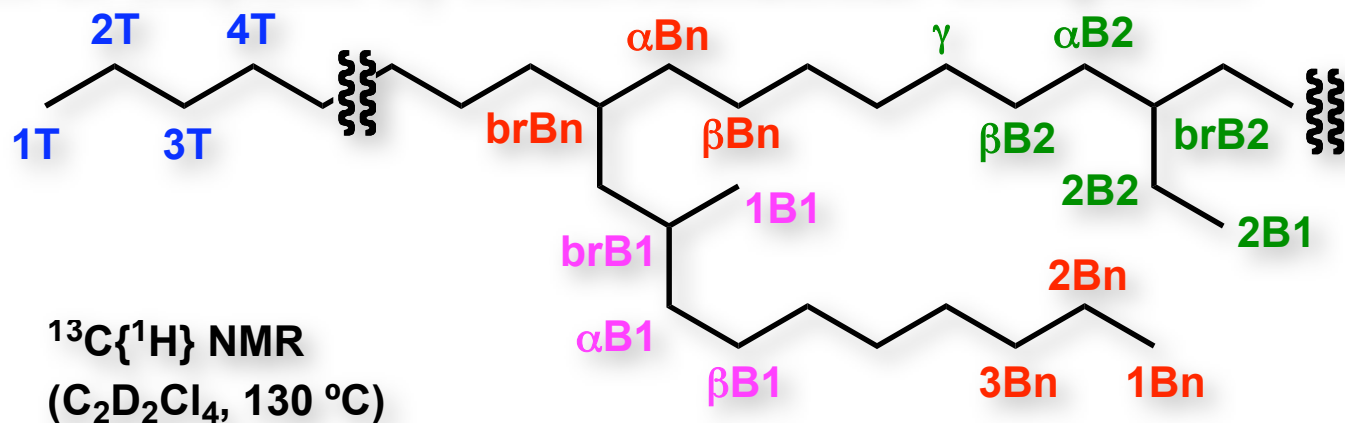
M = Ni, X = Br: 48% Yield

M = Co, X = Cl: 63% Yield

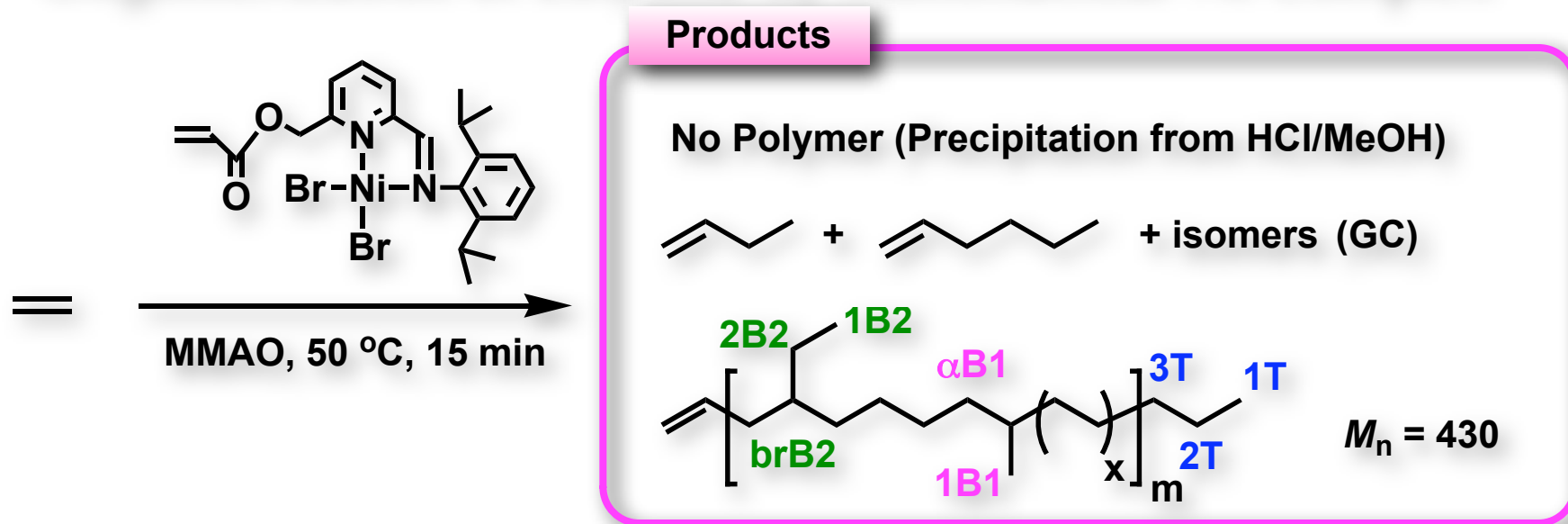
Polymerization of Ethylene by Heterodinuclear Complexes 2



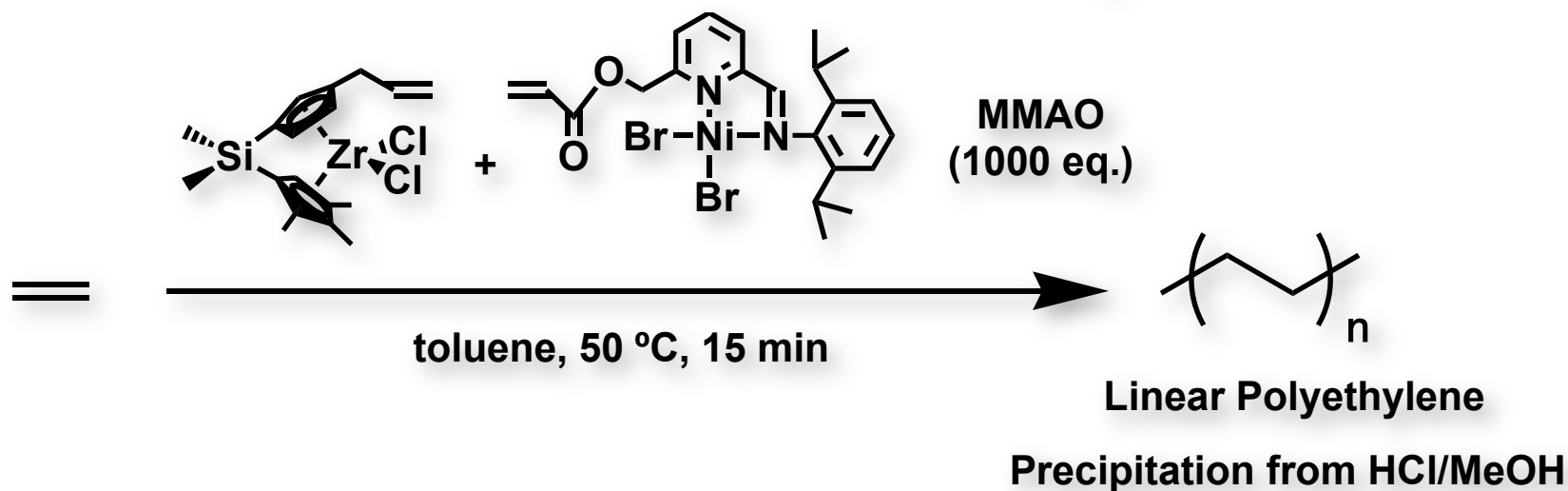
Polymerization of Ethylene by Heterodinuclear Complexes 3



Oligomerization of Ethylene by Mononuclear Ni Complex 4



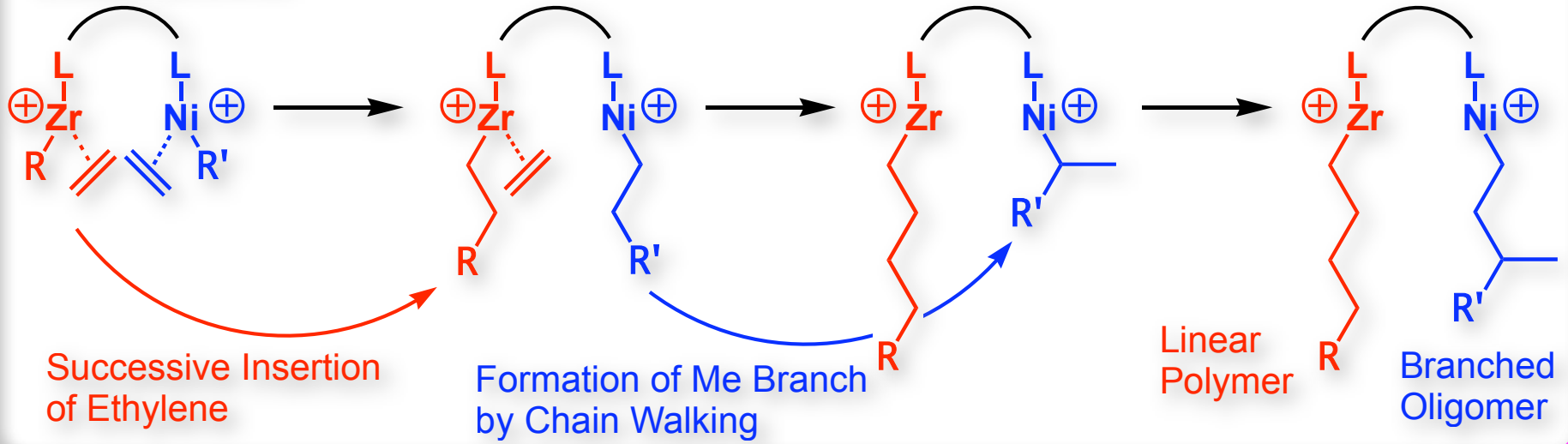
Combination of Mononuclear Complexes



Mechanism of Polymerization

5

Chain Growth



Chain Transfer

