Day 15: Olefin Metathesis

TODAY'S TOPICS

-Synthetically important reaction classes
-Chemoselectivitiy trends
-Mechanism
-History

CHEMIST OF THE DAY

name?
known for?

QUOTE OF THE DAY

"The only rules that really matter are these: what a man can do and what a man can't do."

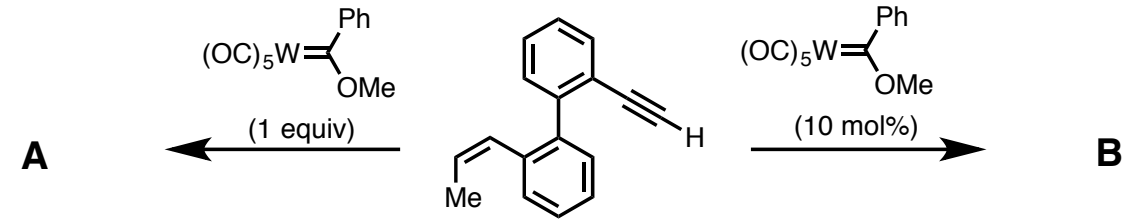
- *Pirates of the Caribbean*

READING

Hartwig: Ch. 21
Crabtree: Ch. 12.1

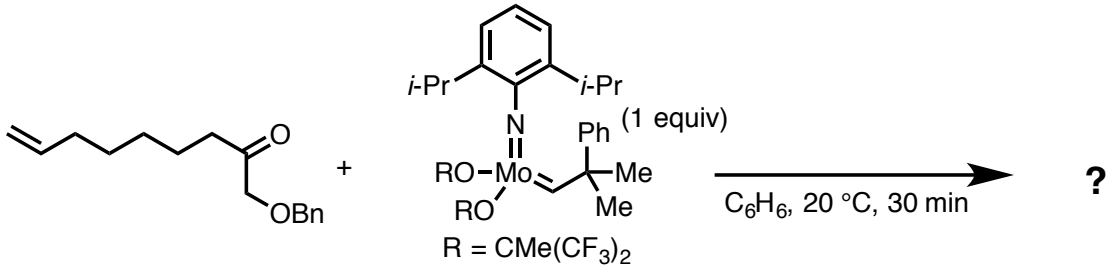
PROBLEMS OF THE DAY

#1 Katz reported the first example of enyne metathesis (*JACS* **1985**, *107*, 737). **Predict the products and propose a mechanism that accounts for formation of both products.**



#2 Consider the reaction below by Fu and Grubbs using the Schrock catalyst (*JACS.* **1993**, *115*, 3800).

A. Provide the oxidation state, d-electron count, and overall electron count of the Mo complex.



B. Predict the product and propose a plausible mechanism.

#3 $Ru(H)(H_2)Cl(PCy_3)_2$ reacts with propargyl chloride to for a new complex that is metathesis-active (*OM* **1997**, *16*, 3867). **Predict the product and propose a mechanism for its formation.**

#4 A key step in the Crimmins lab's total synthesis of (–)-mucocin (*OL* **2006**, *8*, 2369) involves ring closing metathesis of the polyene below. **Based on mechanistic considerations, predict the major product.** For relevant mechanistic discussion, see: *JACS* **2004**, *126*, 10210.