Day 2: Organotransition Metal Complexes: History, Structure, and Bonding I

TODAY'S TOPICS

- organometallic history
- electron counting
-18-election rule
- structure and bonding

CHEMIST OF THE DAY

name?
known for?

QUOTE OF THE DAY

"The real voyage of discovery consists not in seeking new landscapes, but in having new eyes."

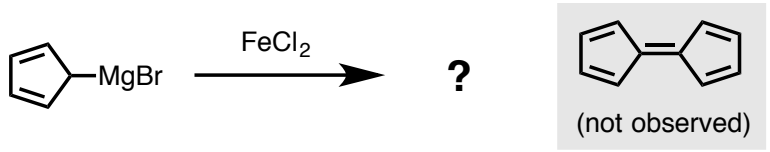
- Marcel Proust

READING

Hartwig: Ch. 1.1–1.3
Crabtree: Ch. 1–2

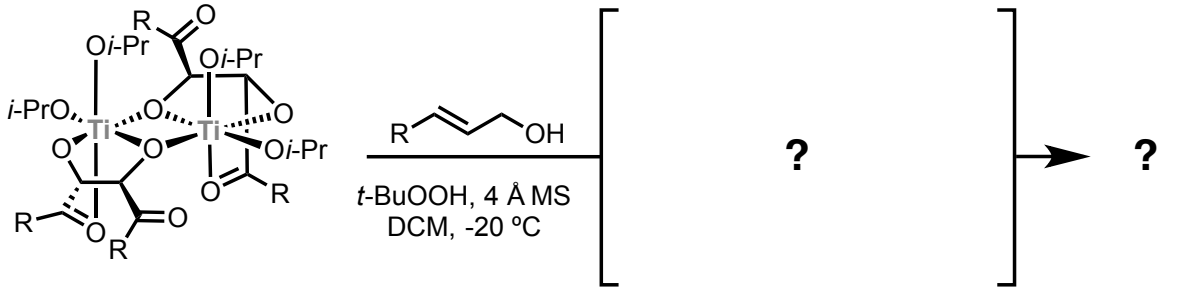
PROBLEMS OF THE DAY

#1 **A.** In 1951, Paulson and Kelly attempted to synthesize fulvalene under the conditions shown below. Instead they obtained an unexpected product. **Provide as many possible connectivities as possible for this unexpected product and propose how to rule out alternatives using techniques available in the 1950s.**



B. For the correct structure, **provide the coordination number, metal oxidation state, d-electron count, and overall electron count.**

#2 **A.** The Sharpless titanium-tartrate catalyst exists as a bridged dimer. **Provide the coordination number, metal oxidation state, d-electron count, and overall electron count.**



B. Provide the proposed dimeric intermediate that leads to product formation and predict the stereochemical outcome. (*Hint:* Coordination number and oxidation state remain unchanged.)

#3 For the structures below, **provide the coordination number, metal oxidation state, d-electron count, and overall electron count.** Bonus: **provide the names of theses catalysts.**