Day 23: Photochemistry of Coordination Complexes

TODAY'S TOPICS

-Photoexitation
-Photodissociation (photolysis)
-Photoinduced electron transfer (photoredox)
-Other related processes

CHEMIST OF THE DAY

name?
known for?

QUOTE OF THE DAY

"A part of good science is to see what everyone else can see but think what no one else has ever said.

-*Amos Tversky*

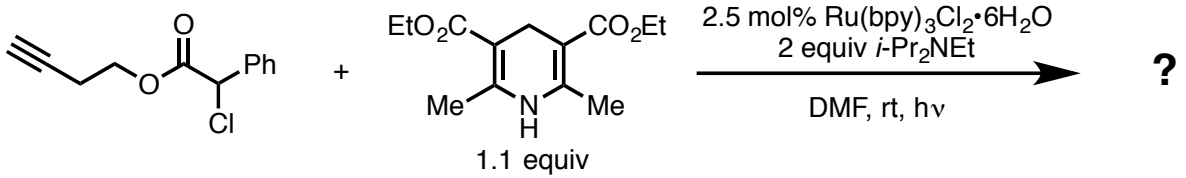
READING

Hartwig: Ch. 5.4.2.2.3
Crabtree: Ch. 4.7
Wrighton "Organometallic Photochemistry" (1979)

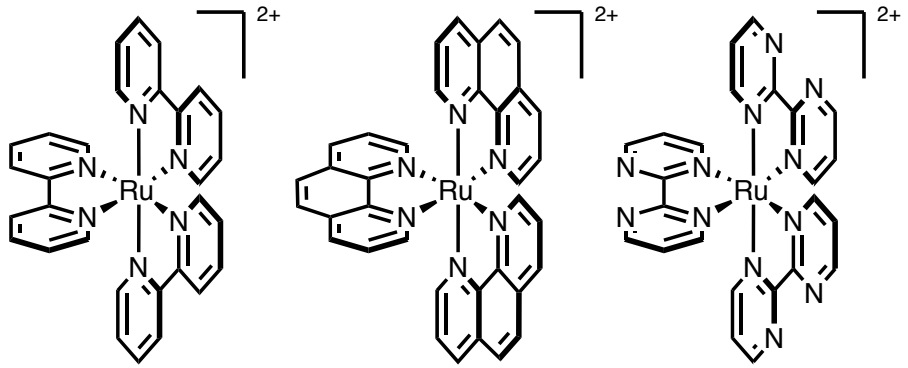
PROBLEMS OF THE DAY

#1 $Ru(bpy)_3(PF_6)_2$ is an archetypal photoredox catalyst. **A. Provide the oxidation state, d-electron count, and overall electron count for this complex. B. Propose a synthesis of this complex from inexpensive commerically available starting materials.**

#2 For the reaction below (*JACS* **2009**, *131*, 8756), **predict the product(s) and propose a plausible mechanism.**



#3 Consider the following three octahedral ruthenium(II) complexes. **Order them in terms of excited state reduction potential.**



#4 For the transformation below (*Science* **2012**, *338*, 647), **propose a role of light in the reaction.**