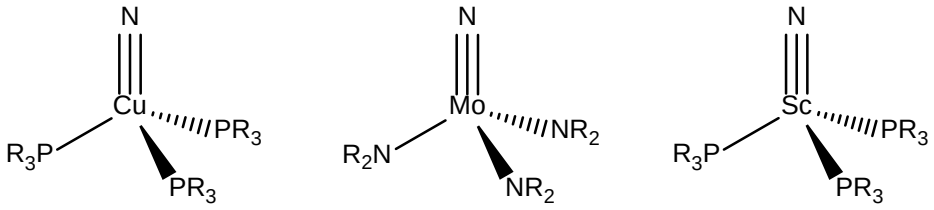
Ch 112
In class exercise
Oct 26, 2015

1. Consider end-on binding of dinitrogen to the bent metallocene fragments $[Cp_2Zr]$ and $[Cp_2Zr]^{2+}$. Which fragment is more likely to bind N_2?

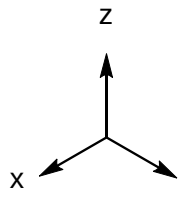
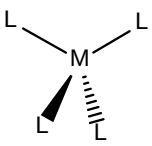
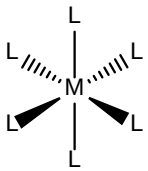
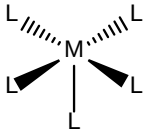
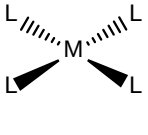
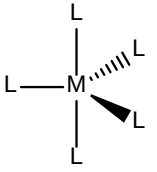
2. Consider end-on binding of dinitrogen to the bent diphosphine fragment $[Ni(PR_3)_2]$ and the tetrahedral fragment $[Ni(PR_3)_4]$. Which fragment is more likely to bind N_2?

3. Given that Mo(VI) forms very strong bonds with nitrides, such as in the molecule shown below, evaluate the stability of the related Cu and Sc complexes:



4. Assuming L is only a σ-donor, provide the d orbital splitting diagram for the following complexes. Label each orbital with their d orbital parentage. Qualitatively, show the relative energy of the orbitals with respect to the free-ion d orbital energy level.

free ion
d orbital
energy level



coordinate system