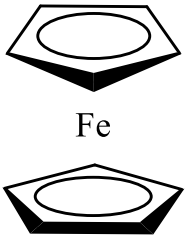
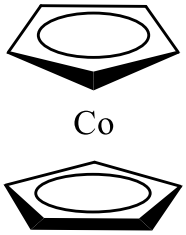
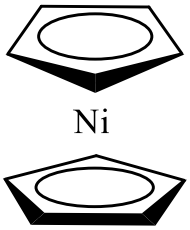
Ch112
In class problem A
Oct 13, 2016

Problem 1

Consider $FeCp_2$, $CoCp_2$ and $NiCp_2$.

1. What is the d-electron count in each?
2. If paramagnetic, what is the number of unpaired electrons?
3. Order them from least to most reducing. Which is the most reducing? Why?

	 Fe	 Co	 Ni
d^n			
Paramagnetic? / S = ?			
Rank $E_{1/2}(MCp_2/MCp_2^+)$			

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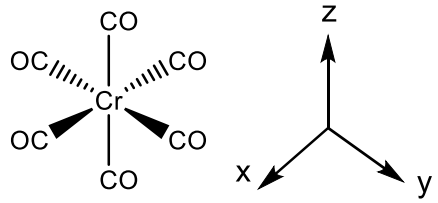
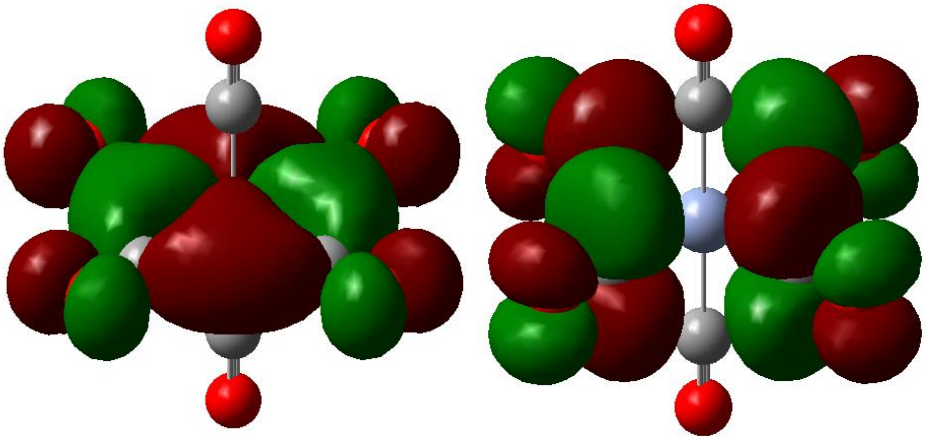
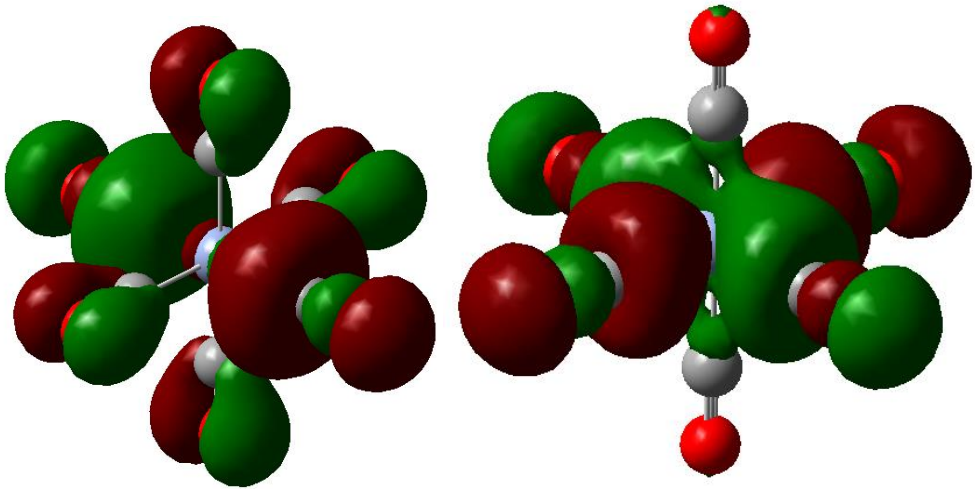
Problem 2

Consider $Cr(CO)_6$. Shown below are pictures of calculated molecular orbitals. Assign each orbital as σ/σ*, π/π*, or non-bonding with respect to the M-ligand interaction. Name the contributing metal based orbital.





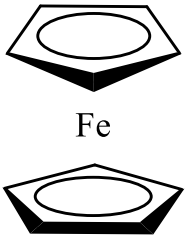
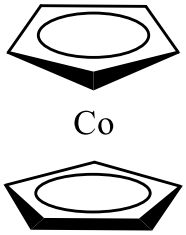
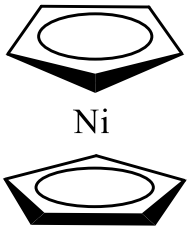


Ch112
In class problem B
Oct 13, 2016

Problem 1

Consider $FeCp_2$, $CoCp_2$ and $NiCp_2$.

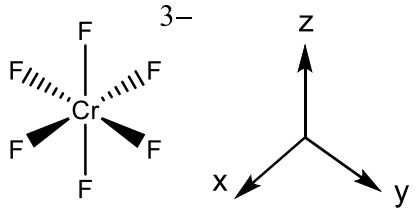
1. What is the d-electron count in each?
2. If paramagnetic, what is the number of unpaired electrons?
3. Order them from least to most reducing. Which is the most reducing? Why?

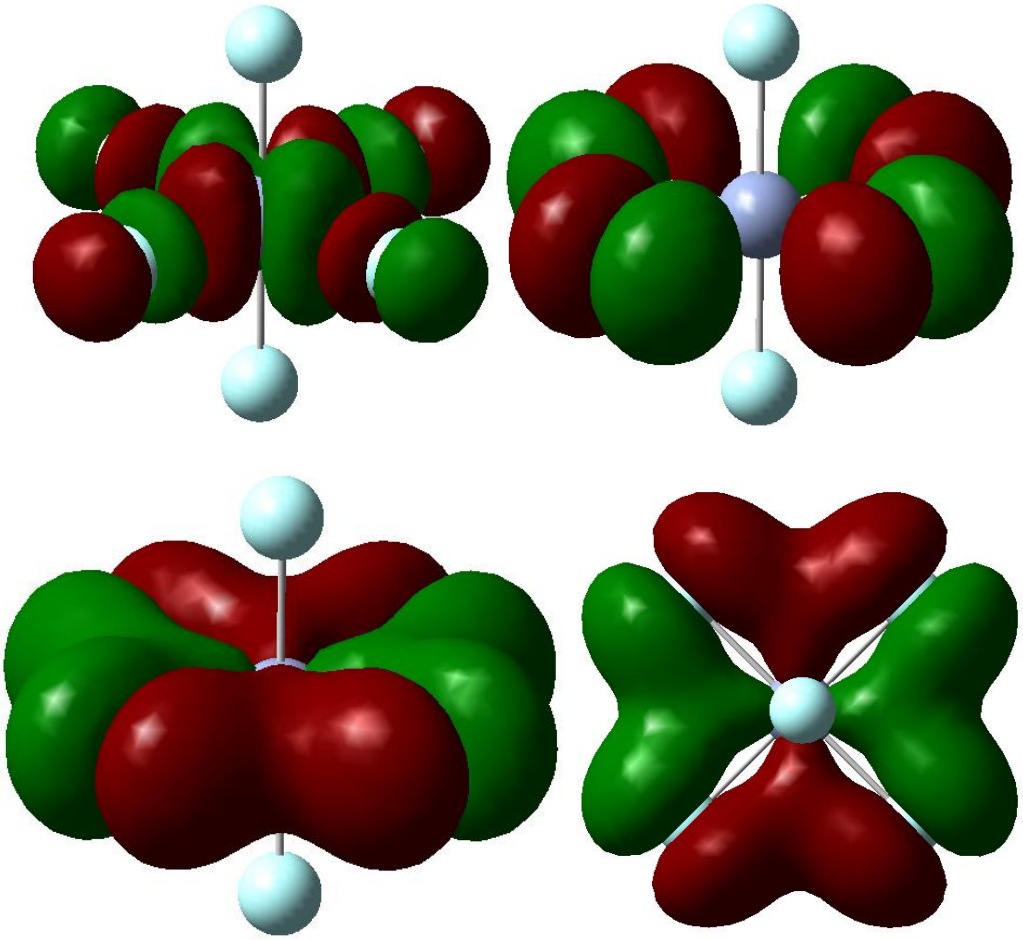
	 Fe	 Co	 Ni
d^n			
Paramagnetic? / S = ?			
Rank $E_{1/2}(MCp_2/MCp_2^+)$			

Ch 112
In class problem B
Oct 13, 2016

Problem 2

Consider $[CrF_6]^{3-}$. Shown below are pictures of calculated molecular orbitals. Assign each orbital as σ/σ*, π/π*, or non-bonding with respect to the M-ligand interaction. Name the contributing metal based orbital.





(another view along Cr−F bond)