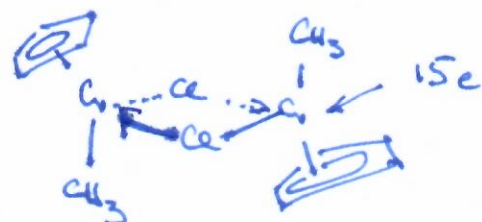


- organometallics are often low-valent or 'electron rich' electron density is relieved by π -acceptors push-pull \rightarrow large HOMO-LUMO gaps \rightarrow lots of diamagnetic compounds
- Limitations

1) steric crowding $V(CO)_6$ 17e vs $Mn_2(CO)_{10}$ '18e' 2 x $Mn(CO)_5$ 17e

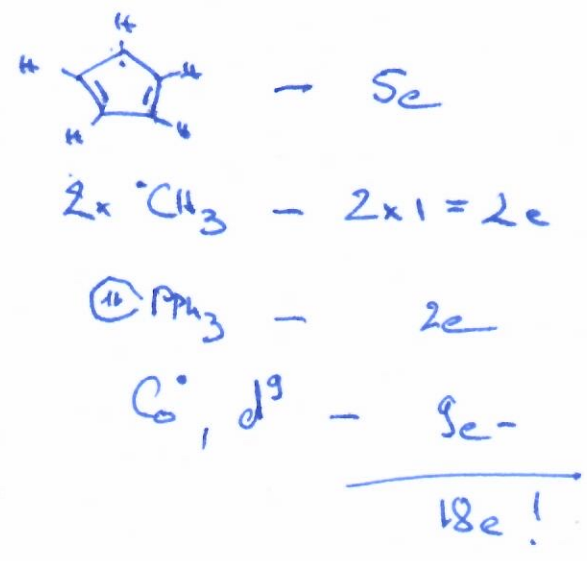
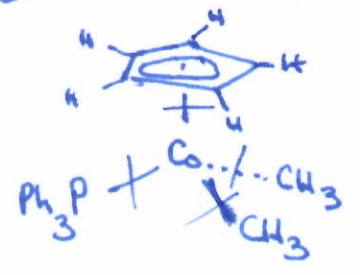
2) higher ox. st. 2 no π -acceptors



3) not for lanthanides & actinides f-orbitals!

counting to 18!

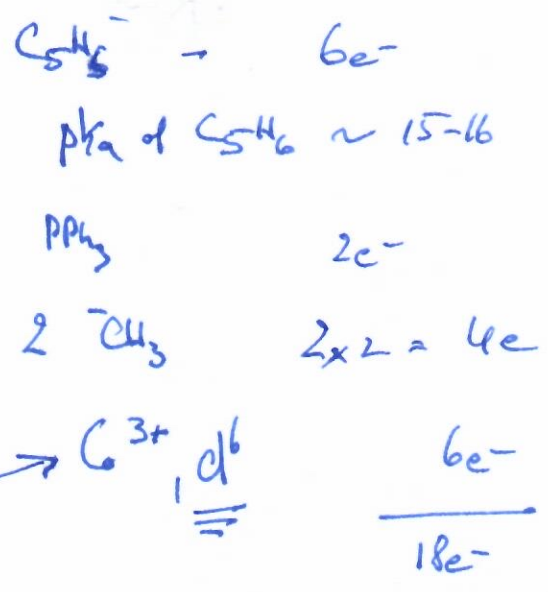
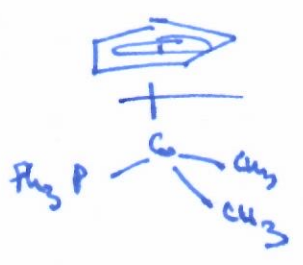
1) 'everything neutral' method



rule! : in compounds all metal valence electrons in d-orbitals

2) 'formal oxidation state' method

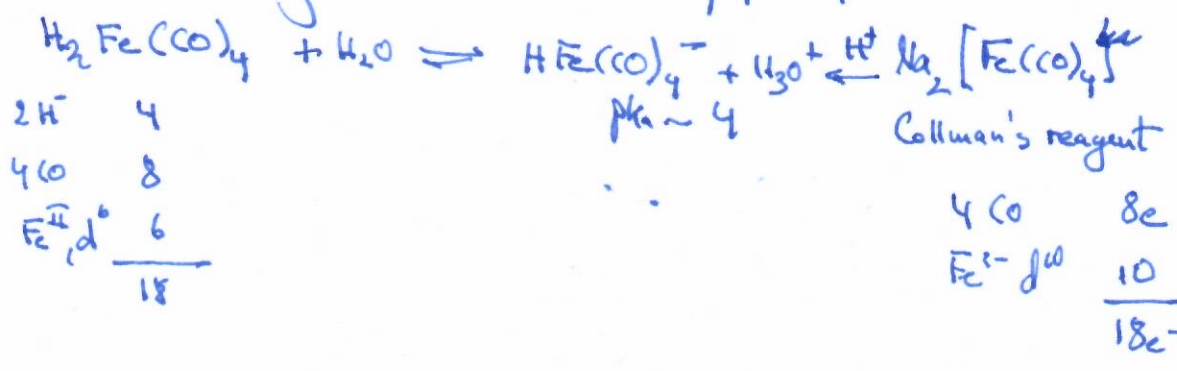
remove ligands in closed shell configuration



Co³⁺ is not realistic!

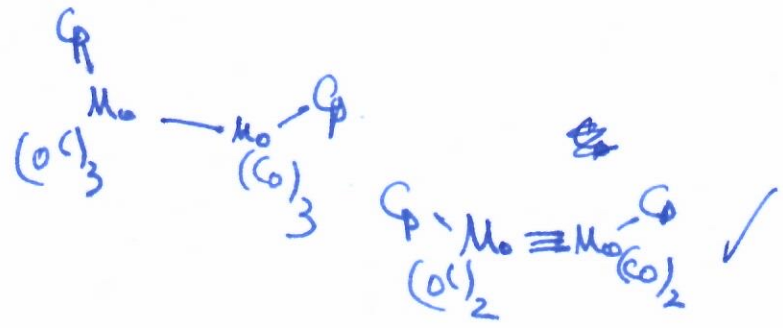
bonding is covalent

Pauling's electroneutrality principle



other things

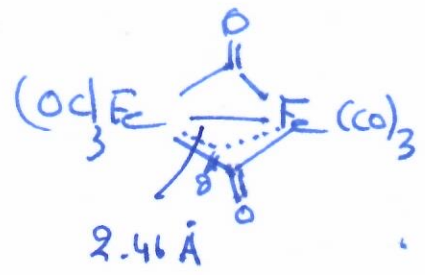
1) M-M bonds



Cp	5
3 CO	6
Mo	6
	<hr/>
	17e
M-M	+ 1
	<hr/>
	18e

multiple bonds contribute multiple electrons

2) bridging ligands



2 Fe	16e
9 CO	18
	<hr/>
	34e / 2
	→ 17e

however:

J.-H. Lubinger

Inorg. Chim. Acta 2015, 424, 14

