

Announcements – Lecture XVIII – Wednesday, June 17^h

1. Final Lab:

Tuesday, June 23rd, ISB 155B

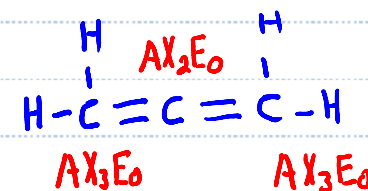
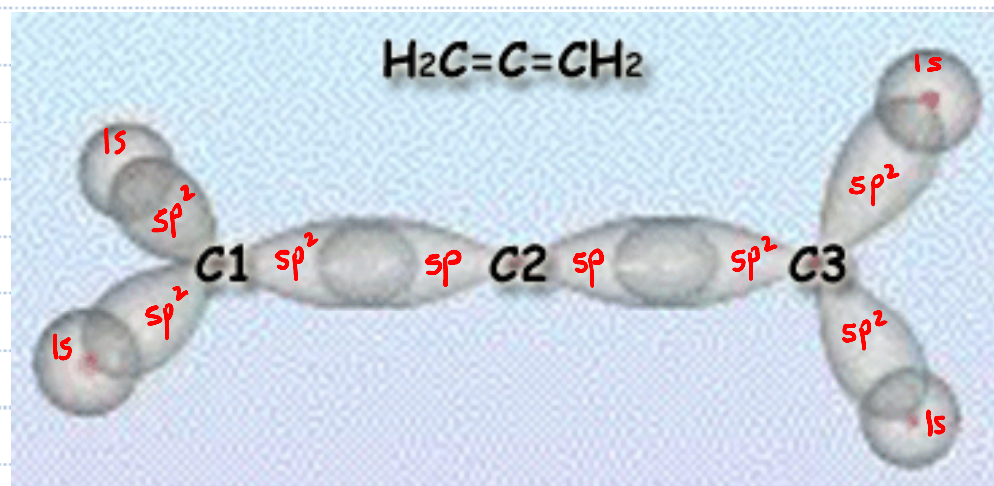
(Pre-Lab Quiz – TA Evaluation in Class Owls)



Quiz 14

Class #: _____

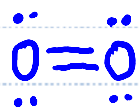
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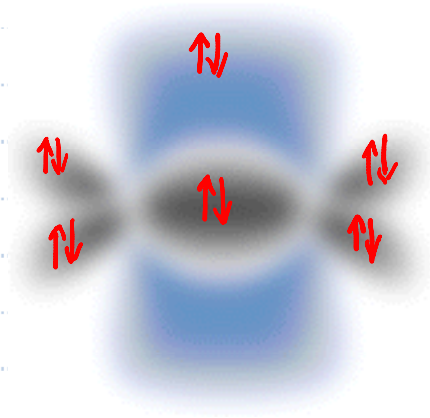
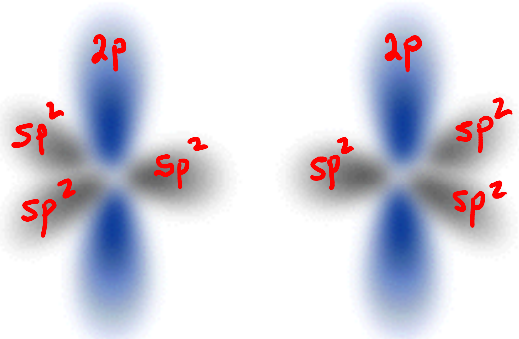
1. The sigma bond formed between C1 and C2 is the result of the overlap of an sp^2 hybrid orbital on C1 with an sp hybrid orbital on C2.
2. The sigma bond formed between C3 and hydrogen is the result of the overlap of an sp^2 hybrid orbital on C3 with the $1s$ orbital on H.
3. The formation of a pi bond (not shown) between C1 and C2 is the result of the overlap of the $2p$ orbital on C1 with the $2p$ orbital on C2.

9.4 Molecular Orbital Theory

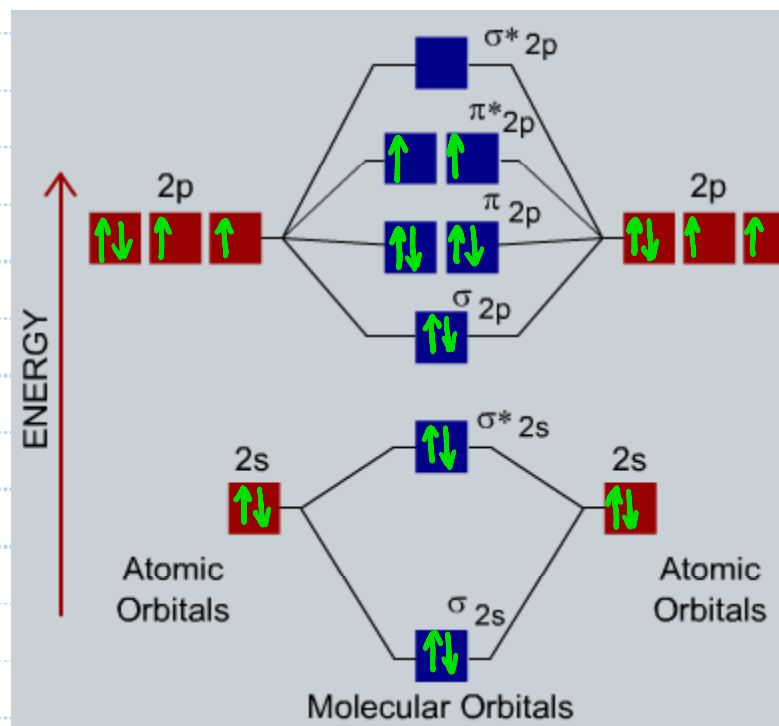
D: Magnetic Properties of O₂



AX₂E₂ AX₂E₂



Molecular Orbital Diagram



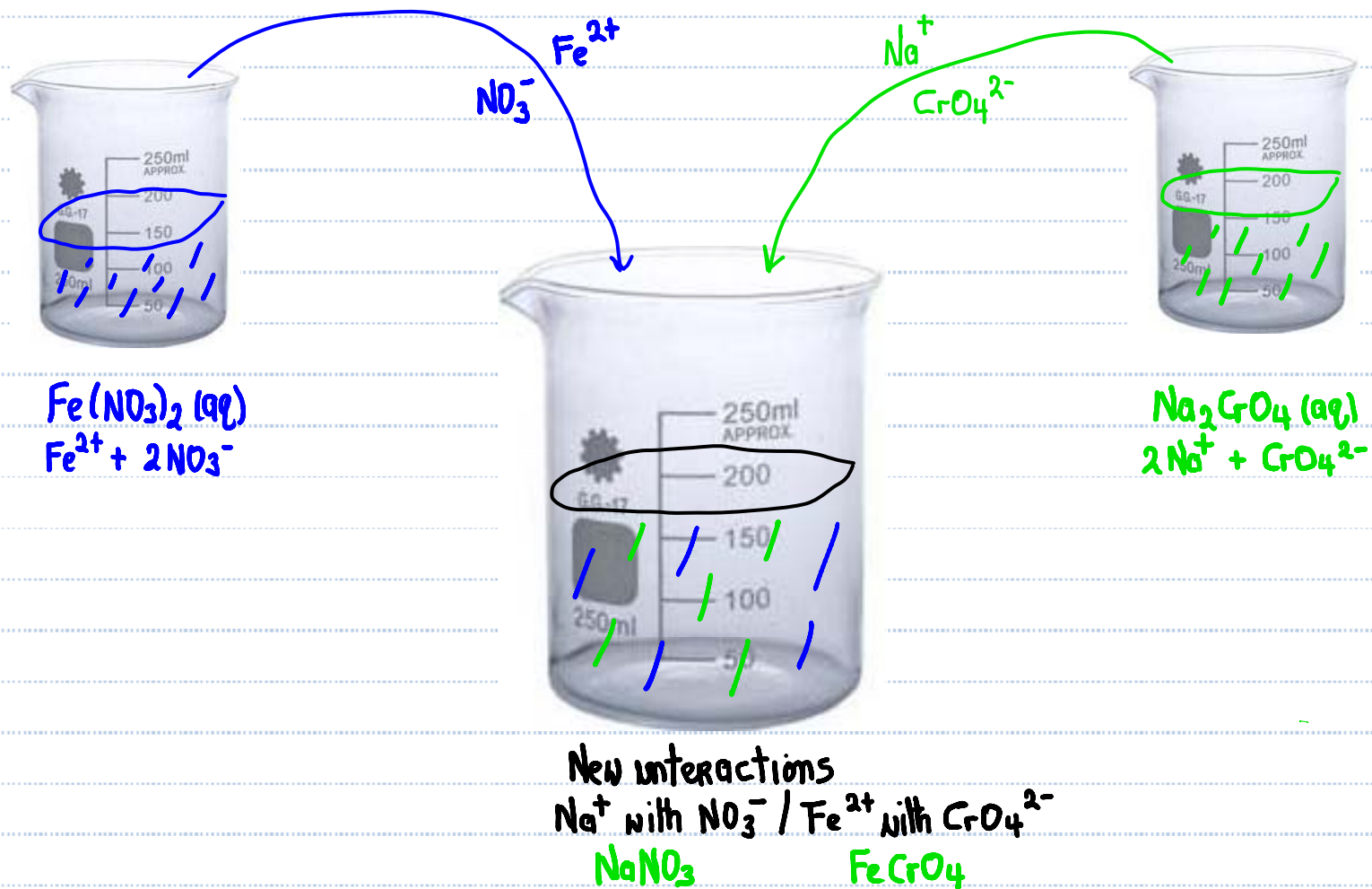
Net Sigma Bonds : $1 - 1 + 1 = 1$
 Net Pi Bonds : $1 + 1 - \frac{1}{2} - \frac{1}{2} = 1$

Magnetism : Paramagnetic

4.3 Reactions in Aqueous Solution

A: Precipitation Reactions -- Predicting

If aqueous solutions of **iron(II) nitrate** and **sodium chromate** are mixed will a precipitate be expected to form?



4.2 Aqueous Solutions

B: Solubility of Ionic Compounds

Solubility Guidelines	
Soluble Ionic Compounds	
1.	All sodium, potassium and ammonium salts are soluble.
2.	All nitrate, acetate, chlorate and perchlorate salts soluble.
3.	All chloride, bromide and iodide salts are soluble. <u>EXCEPT</u> those that contain: lead, silver or mercury(I) (Hg_2^{2+}).
4.	All fluoride salts are soluble. <u>EXCEPT</u> those that contain: magnesium, calcium, strontium, barium or lead.
5.	All sulfate salts are soluble. <u>EXCEPT</u> those that contain: calcium, silver, mercury(I), strontium, barium or lead.
Not Soluble Ionic Compounds	
1.	All hydroxide and oxide salts are not soluble. <u>EXCEPT</u> those that contain: sodium, potassium, ammonium or barium.
2.	All sulfide salts are not soluble. <u>EXCEPT</u> those that contain: sodium, potassium or ammonium.
3.	All carbonate, phosphate, <u>chromate</u> and oxide salts are <u>not soluble</u> . <u>EXCEPT</u> those that contain: sodium, potassium or ammonium.

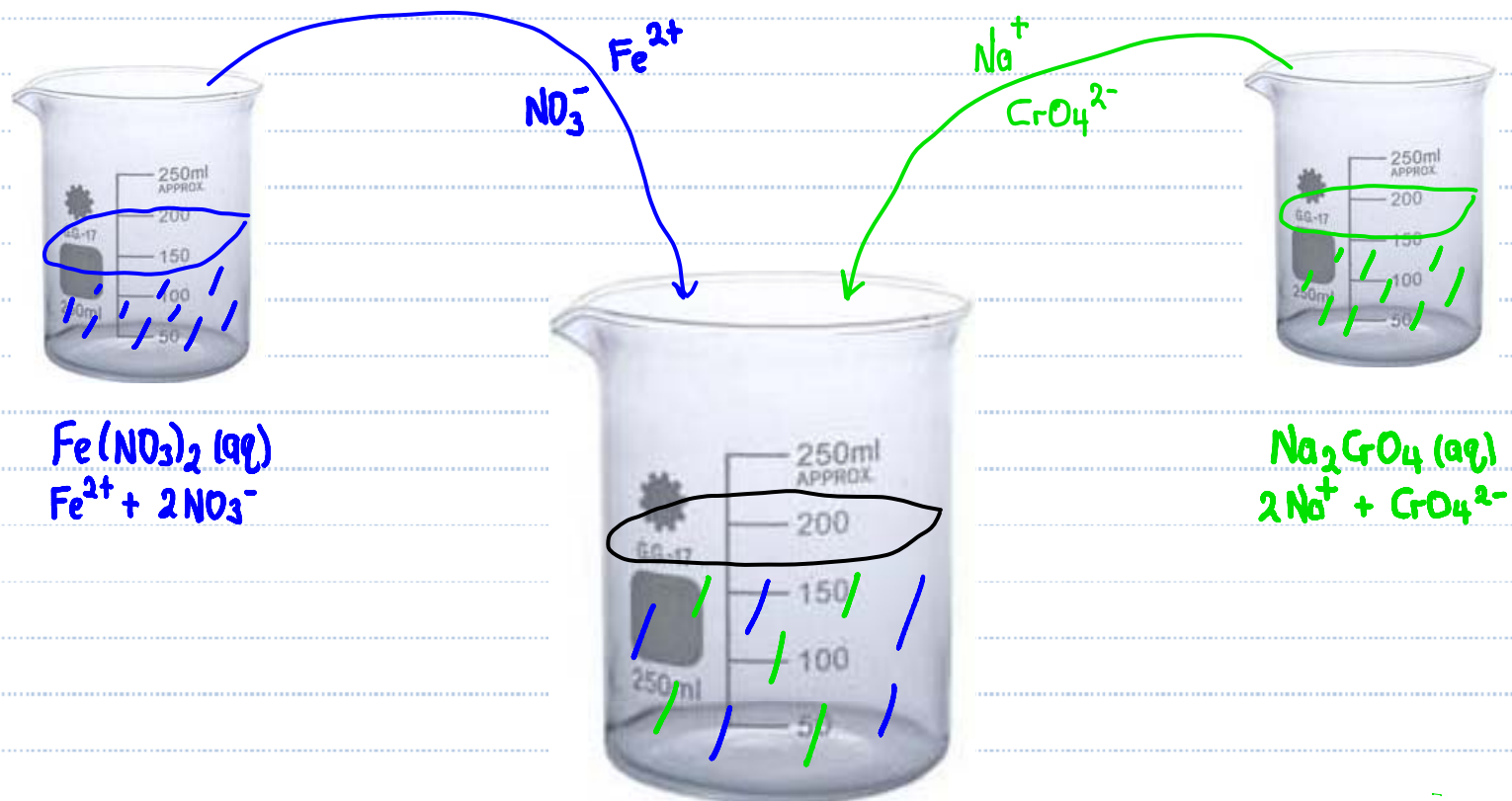
NaNO_3 : All you need is one ... NaNO_3 is soluble ... $\text{NaNO}_3(\text{aq})$

FeCrO_4 : not soluble ... $\text{FeCrO}_4(\text{s})$

4.3 Reactions in Aqueous Solution

A: Precipitation Reactions -- Predicting

If aqueous solutions of **iron(II) nitrate** and **sodium chromate** are mixed will a precipitate be expected to form? **Yes ... $\text{FeCrO}_4(\text{s})$**

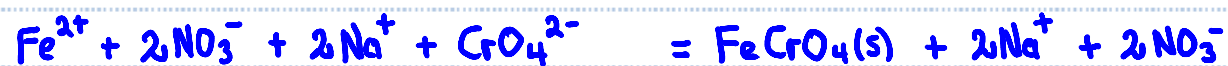


New interactions
 Na^+ with NO_3^- / Fe^{2+} with CrO_4^{2-}
 NaNO_3 FeCrO_4

4.3 Reactions in Aqueous Solution

B: Net Ionic Equations

Give the Net Ionic Equation for the reaction that takes place when aqueous solutions of **iron(II) nitrate** and **sodium chromate** are mixed?



Spectator ions ... Remove them



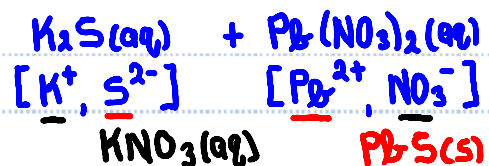
NIE: NET IONIC EQUATION

4.3 Reactions in Aqueous Solution

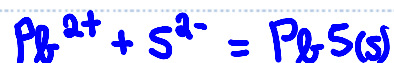
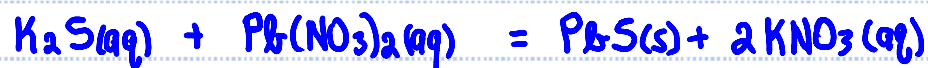
B: Net Ionic Equations

Give the Net Ionic Equation for the reaction that takes place when aqueous solutions of **potassium sulfide** and **lead(II) nitrate** are mixed?

a) Predict products and write a balanced chemical equation.



b) Determine the NIE



4.3 Reactions in Aqueous Solution

B: Net Ionic Equations

Write the **net ionic equation** for the reaction that takes place when aqueous solutions of **ammonium sulfide** and **chromium(III) iodide** are combined?

