

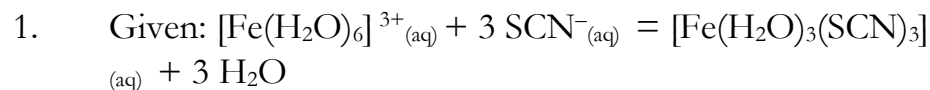
Chemistry Pretet 3.4 Lab Portion Only

Practice for Lab Section of Next test. Don't forget to prepare yourself for the 10 theory questions too. Go to <http://www.emsb.qc.ca/laurenhill/science/chemacademy3.html>

Green class can vote for 3 of the 5 labs we did (so far we have no votes for the Kc lab) and for two topics under each chapter (Gases, Energy, Rates, Equilibrium, Acids-Base Equil'm)

CHEM-03	CHEM-01	CHEM-02
Le Chat	<u>Ka</u>	<u>Ka</u>
<u>Stoich of Redox</u>	<u>stoich redox</u>	<u>stoich redox</u>
<u>Electrochem Lab</u>	<u>Electrochem Lab</u>	<u>Electrochem Lab</u>
<u>Pv=nRT</u>	<u>Pv=nRT</u>	<u>Pv=nRT</u>
changes of State	changes of State	changes of State
Hess	Hess	Hess
Bond Energy	calorimetry	calorimetry
Ae graphs,	rate law mechanism	rate law mechanism
Factors Affecting rates	effective collision temp	graphs ; effective....
<u>defnEqui State</u>	<u>defnEqui State</u>	<u>defnEqui State</u>
<u>Ksp</u>	<u>Ksp</u>	<u>Ksp</u>
<u>phpOH deriv</u>	<u>Ka</u>	<u>Ka</u>
<u>Bronsted Lowry</u>	<u>Bronsted Lowry</u>	<u>Bronsted Lowry</u>

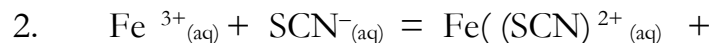
□



Orange colorless red

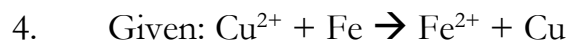
What substance should you add to the above equilibrium to create an orange solution? Here are some possible choices. Justify your answer.

- (1) A solution of FeCl_3 , which is light orange.
- (2) A solution of silver nitrate; AgSCN does not dissolve in water
- (3) A drying agent that would remove water
- (4) More red thiocyanate compound

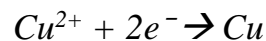


Why did the addition of solid KSCN create a darker color than adding aqueous iron ion if both push the equilibrium to the right?

3. In the oxidation of the iron nail-lab with copper solution by consulting the table of reduction potentials, can you think of a replacement for Cu^{2+} and a replacement for iron that would lead to a very similar lab?



This reaction with the nail in direct contact was fast --- you even saw the blue color of Cu^{2+} fade. And yet the same concentration of Cu^{2+} in the battery lab created a very slow reaction? How come?



therefore, every mole of Cu plated out requires two moles of electrons.

$$1.573663 \text{ mol} \times 2 = 3.147326 \text{ mol } e^{-} \text{ required}$$

3) Convert moles of electrons to Coulombs of charge:

$$3.147326 \text{ mol } e^{-} \times 96,485.309 \text{ C/mol} = 3.0367 \times 10^5 \text{ C}$$

5. How many measurements do you need in the lab to get a weak acid's K_A ? What equipment is needed for each measurement?

6. Are any sig fig errors being made at any stage in solving this problem? Why or why not?

Problem: Calculate the quantity of electricity (Coulombs) necessary to deposit 100.00 g of copper from a CuSO_4 solution. Analyze all three steps.

Solution:

1) Determine moles of copper plated out:

$$100.00 \text{ g divided by } 63.546 \text{ g/mole} = 1.573663 \text{ mol}$$

2) Determine moles of electrons required: