

# How was Exp 2 Graded?

*with answers to Prelab Assignment*

Chem 151 Fall 2009

## The estimate pH of solutions (6 pts. possible)

One point was deducted for each out of range pH value not to exceed 4 total points.

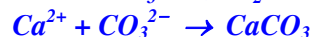
Among the 8 stock solutions, HCl is the most acidic solution; KOH and Na<sub>2</sub>CO<sub>3</sub> is two of the most basic solutions. One point was deducted for each mistake.

## Balanced net ionic equations (20 points possible)

3 points were awarded for each corrected net ionic equation in Wells #A5, B4, D3, E2, E6, and G8. If the correct product was predicted, but mistake was made in the equation or, if a balanced molecular equation was reported instead of the net ionic equation, only 1 point was awarded. The correct net ionic equations are:



NR



Even though no obvious change was observed in Well #C2, yet, a weak electrolyte, H<sub>2</sub>O, was predicted to be one of the ion-exchange reaction products. Therefore, we expected reaction occurred. The net ionic equation is:



## The flame color of each solution (4 points possible)

1 point was deducted to each wrong flame color in the stock solutions, or if the yellow/orange color due to sodium contamination is not excluded from the flame color.

## Identification of unknown solutions (12 points possible)

4 points were awarded for the correct identification of each of the 3 compounds in the two unknown solutions. 2 pts. were deducted for each extra component reported.

## Questions 5→ 8 (18 points possible)

5. *Same color as reported for Solution 6.* (2 pts.)
6. *The photons emitted from the flame test of Copper(II) sulfate is more energetic because green light photon has a shorter wavelength than red/orange photons.* (2 pts.)
7. *According to the pH and flame color, the correct choice is Ca(CH<sub>3</sub>COO)<sub>2</sub>* (4 pts.)
8. (10 pts.) *Assuming reaction goes to completion, 0.00400 moles of Ba<sup>2+</sup> reacts with 0.0040 moles of SO<sub>4</sub><sup>2-</sup> to make 0.00040 moles of BaSO<sub>4</sub> precipitate and 0.00800 moles of Na<sup>+</sup> and 0.000800 moles of Cl<sup>-</sup> are left in solution.*

$$\text{Mass of BaSO}_4 = (0.00400 \text{ mol})(233.4 \text{ g/mol}) = 0.934 \text{ g}$$

$$\text{Mass of NaCl} = (0.00400 \text{ mol BaSO}_4) \left( \frac{2 \text{ mole NaCl}}{1 \text{ mole BaSO}_4} \right) \left( \frac{58.44 \text{ g}}{1 \text{ mol NaCl}} \right) = 0.468 \text{ g}$$

## Complete Prelab Assignment and notebook pages (20 points possible)

### Two points were deducted for each of the following violations:

- Missing/Incorrect ChemID or Missing/Incorrect unknown number
- Using of pencil or a red pen to write the report/notebook pages
- Using of white-outs in report/notebook pages
- Scribbling of errors in notebook pages

*Answers to Exp 2 Pre-lab Assignment*

2. According to the Solubility Guidelines, do you expect to see a cloudy solution when you mix the following stock solutions (of concentrations ~0.1 M) together? Circle the correct response. If your answer is YES or NOT SURE, enter the chemical formula of the insoluble substance or slightly soluble substance in the box.

a) Silver nitrate mixes with copper(II) sulfate

(YES/ NO/ **NOT SURE**)



b) Potassium hydroxide mixes with lithium sulfate

(YES/ **NO**/ NOT SURE)

c) Silver nitrate mixes with sodium carbonate

**YES**/ NO/ NOT SURE)



d) Potassium hydroxide mixes with barium acetate

(YES/ NO/ **NOT SURE**)



e) Sodium carbonate mixes with copper(II) sulfate

**YES**/ NO/ NOT SURE)



f) Barium acetate mixes with calcium chloride

(YES/ **NO**/ NOT SURE)

g) Hydrochloric acid mixes with potassium hydroxide

(YES/ **NO**/ NOT SURE)