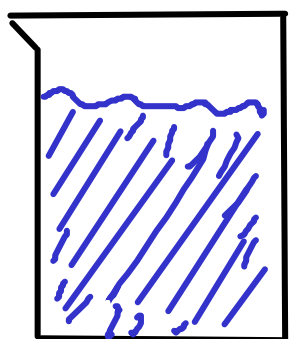


Safety/Waste:

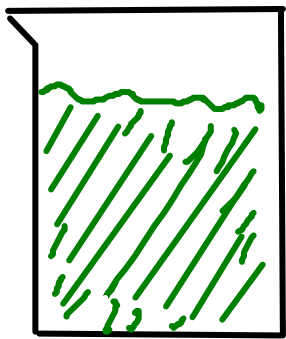
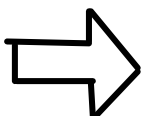
- Burn hazard - use tongs to handle hot evap. dish!
- Waste may be flushed down the sink with water

Solubility

- the amount of a substance that will dissolve in another

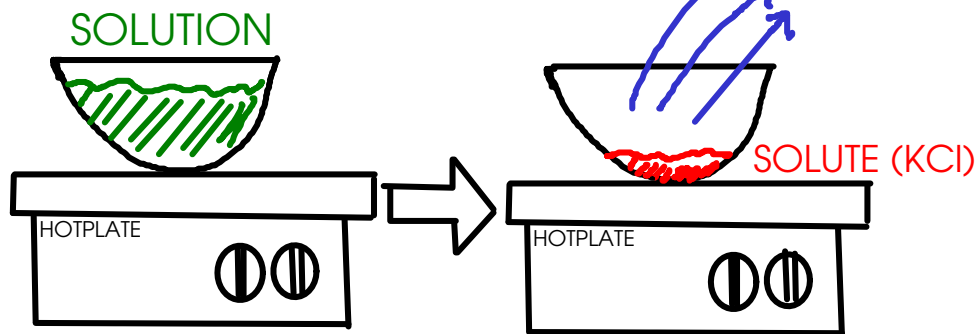


SOLVENT



SOLUTION

Quantitative experiment



Some hints for the calculations...

Finding the mass of water...

⑦  $\text{mass H}_2\text{O} = \text{mass solution} - \text{mass KCl}$

Finding mass percentage of KCl...

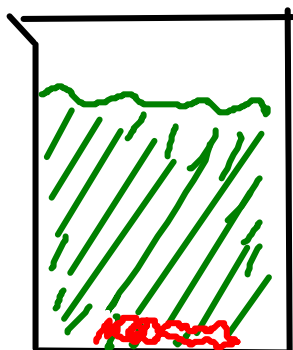
⑧  $\text{mass \% KCl} = \frac{\text{mass KCl}}{\text{mass solution}} \times 100\%$

Finding grams KCl per 100g water...

⑨  $\text{g KCl} / 100\text{g H}_2\text{O} = \frac{\text{mass KCl}}{\text{mass H}_2\text{O}} \times 100\text{g}$

\* An UNSATURATED solution can hold more SOLUTE than it is currently holding

\* A SATURATED solution can hold NO more SOLUTE than it is currently holding.



A SATURATED SOLUTION will often have UNDISSOLVED solute at the bottom!

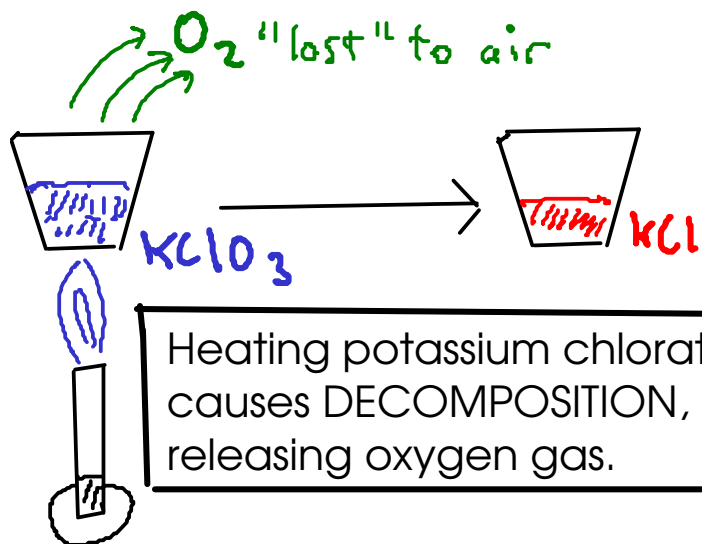
SATURATED SOLUTION

Today: Expt. 10

Turn in: p97-98, SKIP PART B, p98

## DECOMPOSITION REACTIONS

- are reactions that break a single reactant down into multiple products.



## SAFETY:

- DO NOT OMIT THE FIRST STEP IN "A" ON PAGE 95!
- DO NOT dispose of potassium chlorate in the trash can - flush any spills or waste down the sink with water.

## CALCULATIONS CONTINUED

$$\textcircled{9} \% \text{ oxygen} = \frac{\text{mass loss}}{\text{mass sample}} \times 100\%$$

$$\textcircled{10} \% \text{ KCl} = \frac{\text{mass residue}}{\text{mass sample}} \times 100\%$$

Find the THEORETICAL VALUES for percent oxygen and percent KCl using the numbers at the top of page 94 in the lab manual.

$$\textcircled{13} \% \text{ error} = \frac{(\text{theoretical \% oxygen} - \% \text{ oxygen})}{\text{theoretical \% oxygen}} \times 100\%$$

## CALCULATIONS

$$\textcircled{6} \text{ mass sample} = \text{mass CCS} - \text{mass CC}$$

$$\textcircled{7} \text{ mass loss} = \text{mass CCS} - \text{mass CCR}$$

$$\textcircled{8} \text{ mass residue} = \text{mass CCR} - \text{mass CC}$$

"CC" = crucible and cover

"CCS" = crucible and cover and sample (before heating)

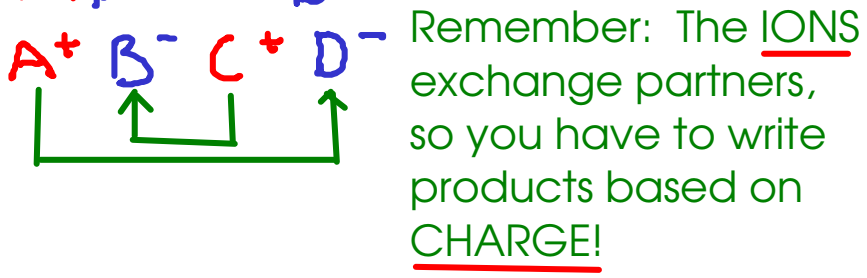
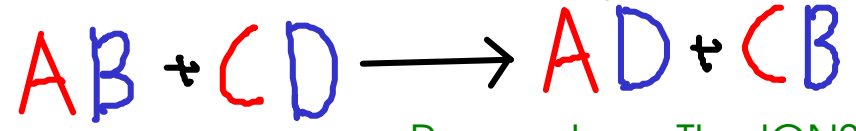
"CCR" = crucible and cover and residue (after final heating)

Today:  
 Expt 11  
 Due today:  
 p103-104

-SKIP #12 on  
 p103  
 -SKIP #2 on  
 p104

EXCHANGE REACTIONS

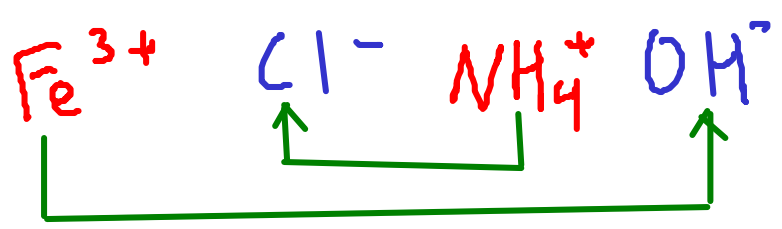
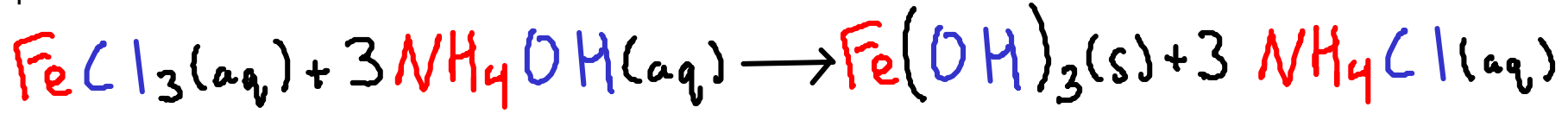
General form of an exchange reaction:



Safety and waste disposal notes:

- Contact hazards: acids/bases
- Dispose of these tubed in the marked waste container: #2, #5, #7, #9
- The other tube contents may be disposed of in the sink

Example reaction:



In exchange reactions, transition metals do not change their charge. Find the charge on the transition metal by looking at the formula of the reactant that originally contained the transition metal.

For a reaction to occur, AT LEAST ONE of the products must be...

- 1) An INSOLUBLE solid (called a "precipitate"). Precipitates will initially appear as cloudiness. You can check the solubility chart at the back of the lab manual to see if a compound is soluble.
- 2) A STABLE OR SLIGHTLY IONIZED molecule. The molecule is usually WATER, but may be:



The formation of these molecules may be detected by observing HEAT.

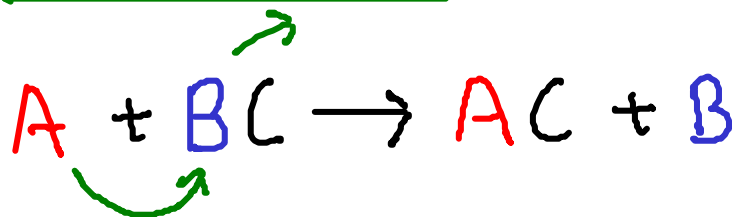
- 3) A GAS formed by the decomposition of an unstable product.



Detect these gases by looking for BUBBLES or (in the case of ammonia or sulfur dioxide) an ODOR.

Today:  
- Expt 12  
Due today:  
- p107-108

## SINGLE REPLACEMENT



## WASTE

- Dispose of all waste in the designated waste beaker. Make sure no pieces of metal go down the drain!

In a single replacement reaction, one element REPLACES another element in a compound (usually an ionic compound). For this to happen, the free element must TRANSFER ELECTRONS TO the element being replaced. This will happen if the free element is MORE ACTIVE THAN the element in the compound.

In the example above,

\*IF a reaction occurs, **A** is more active than **B**.

\*IF no reaction occurs, **B** is more active than **A**.

We will use the information from today's lab to rank the elements tested in an ACTIVITY SERIES, with the most active element at the top and the least active element at the bottom.

Once we have an ACTIVITY series, we can use it to PREDICT whether or not one element will replace another in a reaction.

## TODAY'S ELEMENTS AND THE IONS THEY FORM

FREE ELEMENT	IN COMPOUND	FREE ELEMENT	IN COMPOUND
Cu	Cu <sup>2+</sup>	Zn	Zn <sup>2+</sup>
Ag	Ag <sup>+</sup>	Mg	Mg <sup>2+</sup>
Pb	Pb <sup>2+</sup>	H <sub>2</sub>	H <sup>+</sup>