

Chemistry 12 Lab

Solubility Trends and Precipitate Formation

NAME _____

Partner _____

DATE _____ Block _____

Pre-lab Questions:

1. What causes a precipitate to form?

2. What do we call ions in a mixture that do not participate in a chemical reaction?

Procedure:

- Obtain a set of 10 small (13 mm × 100 mm) test tubes and a test tube rack.
Make sure the test tubes are clean (they don't have to be dry).
- Get a set of dropper bottles for each of three sets of chemicals.
(You don't have to start with set #1.)
- Pour in about one-half centimetre of each reacting chemical into each test tube according to the following charts: Indicate no reaction with a "-" and a "+" with a word or two word description to indicate the positive reactions.

Set #1

Solution	K ⁺ Cl ⁻	Na ⁺ NO ₃ ⁻	K ⁺ CrO ₄ ²⁻	Na ⁺ CrO ₄ ²⁻	Ba ²⁺ Cl ⁻
Ba ²⁺ NO ₃ ⁻					
Ba ²⁺ Cl ⁻					
Na ⁺ CrO ₄ ²⁻					
K ⁺ CrO ₄ ²⁻					
Na ⁺ NO ₃ ⁻					

Four of your mixtures should have formed precipitates. The precipitate in each of the four positive test tubes is the same chemical. Pick any one of the positive results and write the formula, overall ionic, and net ionic equation for the mixture.

formula = _____

over- = _____
all ionic

net ionic = _____

Set #2

Solution	Al ³⁺ Cl ⁻	Ba ²⁺ NO ₃ ⁻	Ba ²⁺ Cl ⁻	Sr ²⁺ NO ₃ ⁻	Al ³⁺ SO ₄ ²⁻
Na ⁺ SO ₄ ²⁻					
Al ³⁺ SO ₄ ²⁻					
Sr ²⁺ NO ₃ ⁻					
Ba ²⁺ Cl ⁻					
Ba ²⁺ NO ₃ ⁻					

Six of your mixtures should have formed precipitates. There are two different precipitates among the six positive results. Pick any two of the positive results (producing the two different ppts) and write the formula, overall ionic, and net ionic equation for the mixture.

formula = _____

over- = _____
all ionic

net ionic = _____

formula = _____

over- = _____
all ionic

net ionic = _____

Set #3

Solution	Na ⁺ NO ₃ ⁻	K ⁺ OH ⁻	Na ⁺ OH ⁻	Co ²⁺ Cl ⁻	Co ²⁺ NO ₃ ⁻
Fe ³⁺ Cl ⁻					
Co ²⁺ NO ₃ ⁻					
Co ²⁺ Cl ⁻					
Na ⁺ OH ⁻					
K ⁺ OH ⁻					

Six of your mixtures should have formed precipitates. There are two different precipitates among the six positive results. Pick any two of the positive results (producing the two different ppts) and write the formula, overall ionic, and net ionic equation for the mixture.

formula = _____

over- = _____
all ionic

net ionic = _____

formula = _____

over- = _____
all ionic

net ionic = _____

ExperimentSolubility Trends and Precipitate Formation

Objectives :- To mix several pairs of solutions and note any precipitate formation.

- To deduce from the experimental results, the formulas for these precipitates.

- To write balanced equations for each reaction.

PROCEDURE :	OBSERVATIONS :
1a) $Mg(NO_3)_2(s) + H_2O(l)$	
(b) $Na_2CO_3(s) + H_2O(l)$	
(c) $Mg(NO_3)_2(aq) + Na_2CO_3(aq)$	
(d) $MgCO_3(s) + H_2O(l)$	
e) $NaNO_3(s) + H_2O(l)$	
2 a) ** $K_2Cr_2O_7(s) + H_2O(l)$	
(b) * $AgNO_3(s) + H_2O(l)$	

* = stains

** = health hazard

PROCEDURE:	OBSERVATIONS:
(f) $\text{AlCl}_3(\text{aq}) + \text{KNO}_3(\text{aq})$	
4a) $\text{Na}_2\overset{**}{\text{S}}(\text{s}) + \text{H}_2\text{O}(\text{l})$	
(b) $\text{Cu}\overset{**}{\text{Cl}}_2(\text{s}) + \text{H}_2\text{O}(\text{l})$	
(c) $\text{Na}_2\text{S}(\text{aq}) + \text{CuCl}_2(\text{aq})$	
5a) $\text{Zn}(\text{NO}_3)_2(\text{s}) + \text{H}_2\text{O}(\text{l})$	
(b) $\text{Na}_2\text{S}(\text{s}) + \text{H}_2\text{O}(\text{l})$	
(c) $\text{Zn}(\text{NO}_3)_2(\text{aq}) + \text{Na}_2\text{S}(\text{aq})$	