

Name: _____
Blk: _____ Date: _____

Chemistry 12
Solubility Lesson #5
Separating Mixtures of Ions by Precipitation Methods
QUALITATIVE ANALYSIS

Example1 : A solution contains one or both of the cations Ag^+ and Sr^{2+} , devise a method which will precipitate out BOTH of the cations.

Answer:

Step 1. Create a table which has the **CATIONS** you think are in the solution as the **ROW HEADERS** and the **ANIONS** you will use to try and precipitate out the cations as the **COLUMN HEADERS**:

	$\text{Cl}^- (*)$	SO_4^{2-}	S^{2-}	OH^-	$\text{PO}_4^{3-} (*)$
Ag^+					
Sr^{2+}					

Step 2. Fill the table in using "----" to show a **soluble** compound or "**ppt**" to show a **precipitate**

Step 3. Based on the above table we can devise a way to separate the cations
a. **FIRST** precipitate out _____, by adding:

*******FILITER THE PPT OUT*******

b. **SECOND** precipitate out _____, by adding:

Example 2. A solution contains one or more of Ag^+ , Ba^{2+} and Ni^{2+} . What ions could be added, and in what order, to determine which of these cations are present?

	$\text{Cl}^- (*)$	SO_4^{2-}	S^{2-}	OH^-	$\text{PO}_4^{3-} (*)$
Ag^+					
Ba^{2+}					
Ni^{2+}					

a. First precipitate out _____ by adding:

FILTER OFF THE PPT

b. Second precipitate out _____ by adding:

FILTER OFF THE PPT

c. Third precipitate out _____ by adding:

You could **re-write** the above answer in the form of an experimental procedure:

Step 1. To 1 mL of a solution that might contain Ag^+ , Ba^{2+} and/or Ni^{2+} , add a few drops of 1 M _____.

Step 2. To the solution from step 1, add a few drops of 1 M _____.

Step 3. To the solution from Step 2, add a few drops of 1 M _____.

Seat work/Homework: Exercises: 26 - 39 (odd numbers only) pgs 90-91
PLO's: H4 and H6