

## 5 • Reactions in Aqueous Solution

### PRECIPITATE LAB

- For each compound, write the two ions that make it up. (Ex: ⑧  $\text{K}_2\text{CrO}_4 = \text{K}^+ \text{CrO}_4^{2-}$ )
- In each square, write the two new compounds that will form.
- Cross out any compounds that you KNOW will be soluble in water and therefore will NOT be precipitates.

⑧  $\text{K}_2\text{CrO}_4$     ⑦  $\text{CuSO}_4$     ⑥  $\text{Ba}(\text{OH})_2$     ⑤  $\text{Pb}(\text{NO}_3)_2$     ④  $\text{Na}_2\text{CO}_3$     ③  $\text{KCl}$     ②  $(\text{NH}_4)_2\text{SO}_4$

① $\text{AgNO}_3$	$\text{Ag}_2\text{CrO}_4$ $\text{KNO}_3$						
② $(\text{NH}_4)_2\text{SO}_4$							
③ $\text{KCl}$							
④ $\text{Na}_2\text{CO}_3$							
⑤ $\text{Pb}(\text{NO}_3)_2$							
⑥ $\text{Ba}(\text{OH})_2$							
⑦ $\text{CuSO}_4$							

# Precipitate Lab

## Procedure

1. Locate a Ziploc baggie containing a data table. Be certain that the baggie is clean and dry.
2. Place a drop of each of the two ionic compounds in each of the indicated boxes.  
Be careful not to touch the tip of the dropper bottle to the solutions. This will prevent contamination.
3. For each combination note whether there is a precipitate and its color (e.g. WHITE PPT).  
If no reaction occurs (the mixed drop remain clear) write N.R. for no reaction or draw a dash —.
4. If the precipitate is white, you may not be able to see it against the white background.  
Look at the drop sideways and/or slip a piece of colored paper below the droplets.

## Data

	⑧ $K_2CrO_4$	⑦ $CuSO_4$	⑥ $Ba(OH)_2$	⑤ $Pb(NO_3)_2$	④ $Na_2CO_3$	③ $KCl$	② $(NH_4)_2SO_4$
① $AgNO_3$	red-brown PPT						
② $(NH_4)_2SO_4$							
③ $KCl$							
④ $Na_2CO_3$							
⑤ $Pb(NO_3)_2$							
⑥ $Ba(OH)_2$							
⑦ $CuSO_4$							

### Clean Up

Rinse off the baggie with tap water, then with distilled water. (Tap water contains ions that may change the data.)

Dry the baggie with a paper towel.

If the baggie will not come clean, tell the instructor so he may replace the baggie.

## Follow Up

1. Verify with the rest of the class which combinations result in precipitates and which do not. If you do not agree on the results, redo those questionable portions of the experiment. (Baggies that have not been cleaned properly or contaminated dropper bottles can affect the data.)
2. For the following combinations, write the molecular equation, the ionic equation, and cross out the spectator ions and write the net ionic equation.

### 1 & 8

- $2 \text{AgNO}_3 (\text{aq}) + \text{K}_2\text{CrO}_4 (\text{aq}) \rightarrow \text{Ag}_2\text{CrO}_4 (\text{s}) + 2 \text{KNO}_3 (\text{aq})$
- $2 \text{Ag}^+ + 2 \text{NO}_3^- + 2 \text{K}^+ + \text{CrO}_4^{2-} \rightarrow \text{Ag}_2\text{CrO}_4 (\text{s}) + 2\text{K}^+ + 2 \text{NO}_3^-$
- $2 \text{Ag}^+ + \text{CrO}_4^{2-} \rightarrow \text{Ag}_2\text{CrO}_4 (\text{s})$

### 1 & 6

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### 1 & 4

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### 1 & 3

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