

**Revised August 2012**

## HONORS LAB 5a: Precipitation Reactions

**Aim** To investigate the formation of precipitates

**Apparatus** Reaction plate (24 well), pipets, Sharpie marker pen, toothpicks

**Chemicals** 0.100 M solutions of the following

**Set X** silver nitrate, copper (II) chloride, iron (III) chloride, calcium nitrate

**Set Y** ammonium sulfate, potassium carbonate, sodium hydroxide, potassium phosphate, potassium iodide

### **Method**

1. Take nine pipets and with the marker pen, label them with the chemical formula of each of the nine solutions.
2. **Using the correct pipet**, place a few drops of silver nitrate into one well on the reaction plate.
3. **Using the correct pipet**, add a few drops of potassium carbonate solution to the well containing silver nitrate and stir with the toothpick. If a solid forms record a check mark (✓) in the appropriate box in the results table. If not, record a cross (x).
4. Repeat the process of adding a few drops of each of the remaining solutions in set X (**each time using the correct pipet**) to the each of the remaining solutions in set Y (**each time using the correct pipet**) in the other wells. Each time record a check mark in the appropriate box if a reaction occurs, otherwise record a cross. Each time use a different toothpick to avoid cross contamination.

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Results

		Record a check mark (√) if a solid forms, or a cross (×) if there is no reaction					
		← SET X →					
		A	B	C	D	E	F
		Lead (II) nitrate	Silver nitrate	Copper (II) chloride	Iron (III) chloride	Calcium nitrate	Barium chloride
	<b>SET Y</b> ↓						
1	<b>Ammonium sulfate</b>	√		X			√
2	<b>Potassium carbonate</b>	√					√
3	<b>Sodium chromate</b>	√	√	√	√	√	√
4	<b>Sodium hydroxide</b>	√					√
5	<b>Potassium phosphate</b>	√					√
6	<b>Potassium iodide</b>	√					X

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**Conclusion/Calculation**

Wherever you have a check mark in your results table, fill in a line in the table below. Identify the possible products, use the solubility rules to select the insoluble solid and then write a balanced **net ionic** equation. If there was no reaction, write **NONE** in the column headed "Insoluble Solid" and write **NO REACTION** in the column headed "Net Ionic Equation". Two examples (A1 and C1) are completed for you.

Combination	Possible Products	Insoluble Solid	Net Ionic Equation
A1	Ammonium nitrate Lead (II) sulfate	Lead (II) sulfate	$\text{Pb}^{2+}_{(aq)} + \text{SO}_4^{2-}_{(aq)} \rightarrow \text{PbSO}_{4(s)}$
A2			
A3			
A4			
A5			
A6			
B1			
B2			
B3			
B4			
B5			
B6			

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Combination	Possible Products	Insoluble Solid	Net Ionic Equation
C1	Ammonium chloride Copper (II) sulfate	NONE	NO REACTION
C2			
C3			
C4			
C5			
C6			
D1			
D2			
D3			
D4			
D5			
D6			

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Combination	Possible Products	Insoluble Solid	Net ionic equation
E1			
E2			
E3			
E4			
E5			
E6			
F1			
F2			
F3			
F4			
F5			
F6			