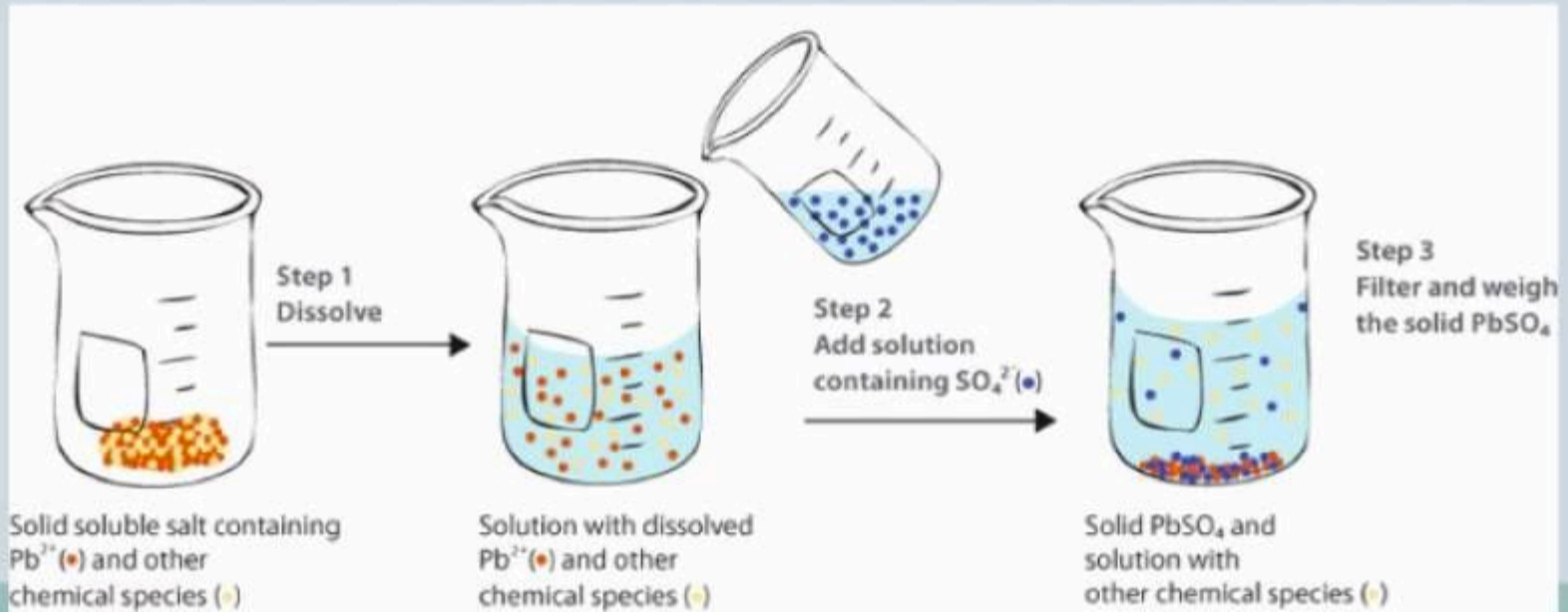
Gravimetric Analysis

- Gravimetric Analysis – one of the most accurate and precise methods of macro-quantitative analysis.
- Analyte selectively converted to an insoluble form.
- Measurement of mass of material
- Correlate with chemical composition
- Why?
- Simple
- Often required for high precision

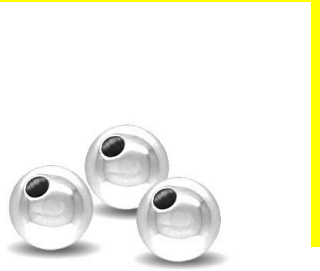
- We have an Sterling Silver alloy bead made up of Silver and Copper
- Your goal is to determine the percent silver in the alloy bead through Gravimetric Analysis

Gravimetric Analysis

- **Gravimetric Analysis:** analysis method based on mass.
  - Precipitation method is most common
  - Isolate unknown via precipitation and filtration
  - Dry and mass
    - "Heat to constant mass" to ensure all water is gone



Analysis of Ag in Ag/Cu Alloy



1. The group was given an 8mm sterling silver alloy bead
2. The bead was dissolved in 6M nitric acid and left overnight
3. The students determined the amount of NaCl needed to precipitate the Ag^+ in solution
4. The next day the group made a NaCl solution with the predetermined mass of NaCl needed and added it while stirring the Ag^+ / Cu^{2+} nitrate solutions
5. Precipitation of AgCl took place during the addition of NaCl solution with a 15min heating
6. The precipitate was then poured into a filter funnel with a small filter paper, attached to a filter flask. All contents of the break was put into the funnel
7. A HNO_3 wash was poured over the precipitate followed by 10ml of Isopropyl Alcohol to aid in removing any excess water
8. The precipitate was sandwiched between the small filter paper and a large filter paper and left to dry over night
9. The next day, the sample was measured for mass and observations taken.

Initial Mass Measurements

1. Each student will be put into a group and you will use the data provided below for the lab
2. Each student will fill out their own data table. All other fields of the data table are to be calculated and added to your table

	Group 1 (KH)	**Group 2** (SL)	**Group 3** (VR)	**Group 4** (DS)
Mass of Alloy	0.5134 g	0.5181 g	0.5183 g	0.5125 g
Mass of Filter paper	0.7859 g	1.0631 g	1.1416 g	1.0140 g
Mass of Filter paper + AgCl	1.3816 g	1.6226 g	1.6144 g	1.7189 g

Your assignment…

- Go through the lab sheet and this PPTX
- Complete all calculations needed based on the group you put in
  - Show all work for each calculation
    - Insert pictures of your handwritten work
      - Your name in INK must be in every picture inserted into your document
  - Input your data into the data table provided
- Answer the POST-LAB questions individually on your own sheet
  - May work with others within your group sample

Full Video of the experiment, different chemical

- https://www.youtube.com/watch?v=dERZhN-01f8&feature=emb_logo