Lab Questions

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- When the dish is heated and cooled repeatedly, it is done to burn off water
- Safety: When diluting acids, always add acid to water
    1. Spills: Acid/weak base, Base/weak acid
- Accuracy: When titrating, rinse the buret with the solution being used
- Allow hot objects to return to room temperature because hot objects weight less
- Accuracy vs Precision — How close to value vs how consistent the results are
- Weight and Reweigh
- Know separation techniques
- Spectrophotometer — Measures concentrations of solution by measuring slight variations in color. The concentration of an ion will be directly proportional to the absorbance
- Different colors require a different wavelength setting
- Beer's Law — This relationship between absorbance and concentration is given by $A = abc$, where A is absorbance, a is a constant, b is path length of the light, and c is the concentration
- Solutions have to be colored (using the cuvet — make sure to clean off fingerprints)
- Flame test: Li = red, Na = yellow, K = purple, Ba = green, Sr = red, Ca = red, and Cu = green
- Colored Solutions: Cu = blue, CrO_4 = yellow, Ni = green, Cr_2O_7 = orange, I = brown, PbI_2 = yellow, and MnO_4 = purple
- Percent Recovery — Found value divided by actual value, times one hunder

- Percent Error — 100− Percent Recovery
- Photoelectron Spectroscopy (PES) — Use X-Ray to remove "core" baby electron from an atom. Measure the kinetic energy of the electron coming off (binding energy). Understand the structure of atoms and electron structure.
- PES Spectrum shows Intensity — Number of Electrons vs. Binding Energy. Smaller shells require more energy to remove (1s requires the most)
- Mixture of Elements — The peak height is not related to the number of electrons in a PES spectrum
- Atoms will not lose electrons in the 2p orbital and beyond
- Mass Spectrometer — Finds relative masses of individual atoms
- Happy Graphs — Energy vs. Distance
- Calculate Energy of a Wavelength of light:
    1. $c = f\lambda$
    2. $E = hf$
    3. $E = \frac{hc}{\lambda}$
- Photons with lower wavelengths have a higher energy. Higher frequency means higher energy.