6: pH and Titration Curves

I. Titrating Acids and Bases with pH meter

II. Titration Curves and Calculations

Announcements

I. Mid-Term (Exam 1) will be a Take-Home

    A. Available via Moodle and website on Friday, Mar 14

    B. Due 5PM Tuesday, Mar 25

    C. Must work independently!

II. Next week (Thursday, Mar 13): Start Experiment 7

Titration

Definition: Determining number of **moles** of an *analyte* in *sample* by reaction with known amount of **moles** in a *titrant*.
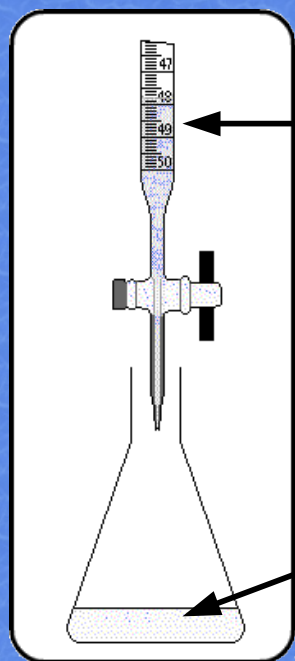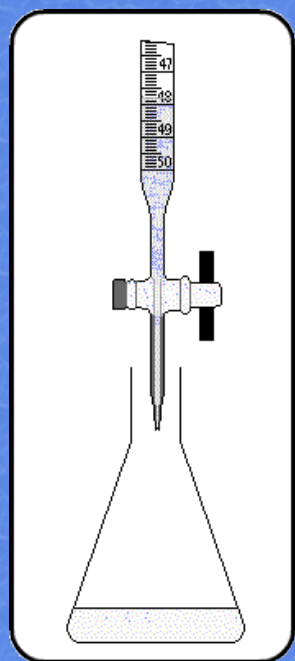
Moles of **Titrant**

Stoichiometrically equivalent

Moles of **Analyte (sample)**

Calculating Moles

Volume × Concentration = Moles
(L)   (mol/L)   (mol)

Calculating pH

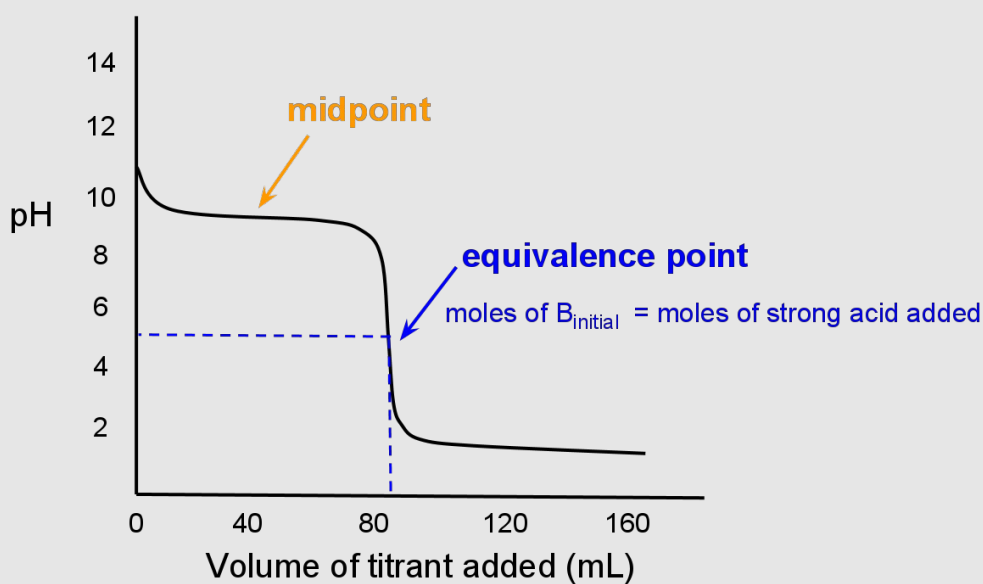$$pH = -\log [H^+]$$

$$[H^+] = 10^{-pH}$$

Today's Lab

Titrate and Identify an Unknown Base

- Weigh Unknown
  NOTE SAMPLE ID NUMBER!!
- Quick titration with indicator
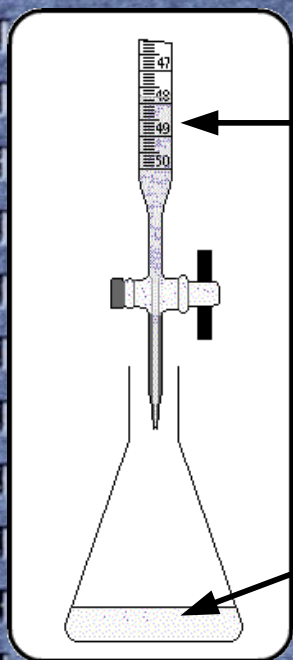- Careful titration with pH meter for more exact endpoint

Titration Curve: Weak Base

midpoint

equivalence point

moles of $B_{initial}$ = moles of strong acid added

pH

Volume of titrant added (mL)

Christine Chang

Note: Subtract <u>starting volume</u> in buret to get volume <u>ADDED</u>

Today's Lab

Titrant: Standardized HCl
- Know conc to 4 sig figs
- Determine volume added

Unknown Base
- Weigh mass
- Calculate moles

$$MW = \frac{grams}{moles}$$