

Sulfamic acid titration



**ASSIGN
BUSTER**

Introduction: ? Neutralization reactions involve the reaction of an acid and a base to produce a salt (ionic compound) and water. Acid + Base (Salt + Water ? In this lab, sulfamic acid (a weak acid which contains one acidic hydrogen) will be used: $\text{H}_2\text{NSO}_2\text{OH}(\text{aq}) + \text{NaOH}(\text{aq}) \rightarrow \text{NaOSO}_2\text{NH}_2(\text{aq}) + \text{H}_2\text{O}(\text{l})$ (Net Equation: $\text{H}^+(\text{aq}) + \text{OH}^-(\text{aq}) \rightarrow \text{H}_2\text{O}(\text{l})$) ? Titration is a process of neutralization Titration is commonly used to determine the concentration of an acid or base in a solution. ? This process involves a solution of known concentration (the titrant or standard solution) delivered from a buret into the unknown solution (analyte) until the substance being analyzed is just consumed.

The moles of H^+ = moles of OH^- at this point (called the equivalence point). ? Information about the analyte (i. e. mass) can be calculated at the equivalence point. The volume of titrant is recorded and the moles of titrant can then be calculated using $n = C(V$, where $n = \#$ of moles, $C =$ concentration in mol/L and $V =$ volume in L. ? The end point in a titration is often signaled by the color change of an indicator and occurs just slightly past the equivalence point. ? An indicator is a substance (weak acid) that has distinctively different colors in acidic and basic media. *Not all indicators change color at the same pH, so the choice of indicator for a particular titration depends on the strength of the acid and base.

An indicator is chosen whose end point range lies on the steep part of the titration curve. ? The progress of an acid-base titration is often monitored by plotting the pH of the solution being analyzed as a function of the amount of titrant added (called a titration curve). Types of Titrations: 1. Strong Acid /

Strong Base pH at equivalence point = 7
2. Weak Acid / Strong Base pH at equivalence point > 7
3. Strong Acid / Weak Base pH at equivalence point