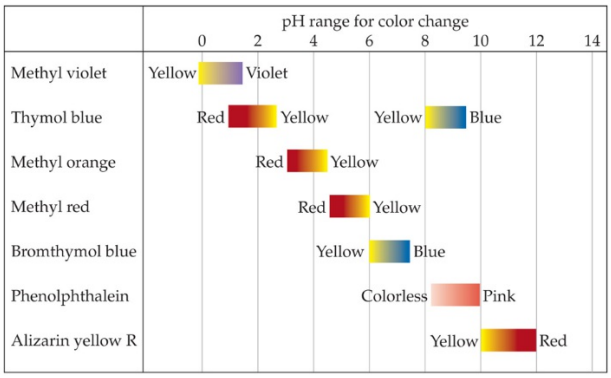
Lesson Overview
Measuring pH

Objective: The student will be able to discuss the chemical theory behind the laboratory techniques which determine pH.

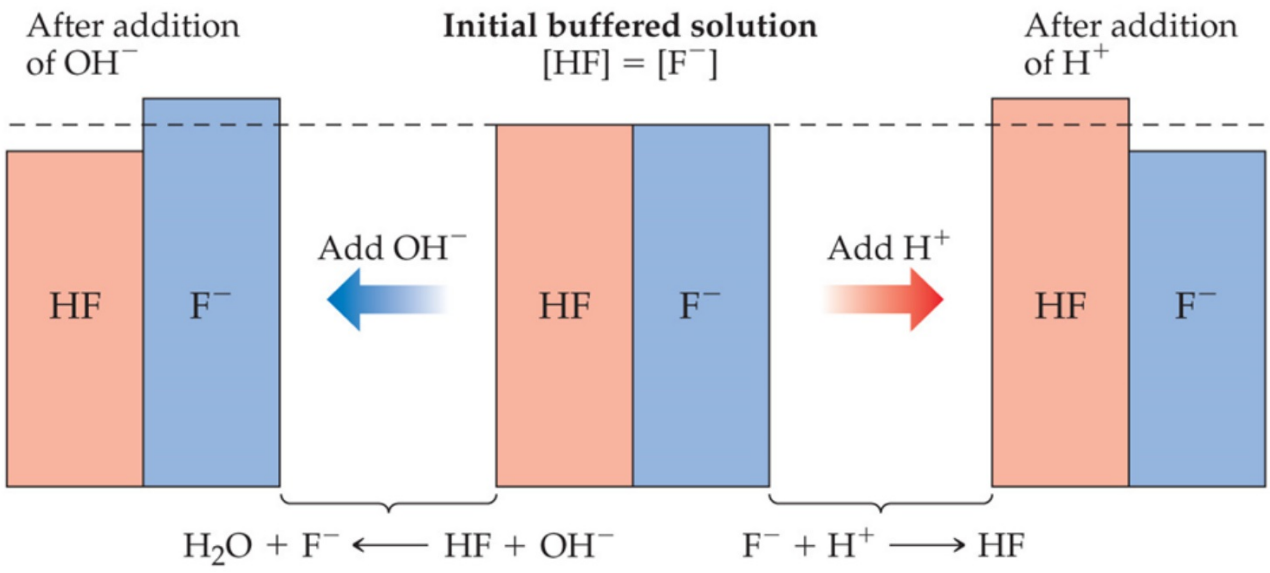
Measuring pH: Indicators

Weak organic acid (HIn) whose color is different from the color of its conjugate base (In^-).

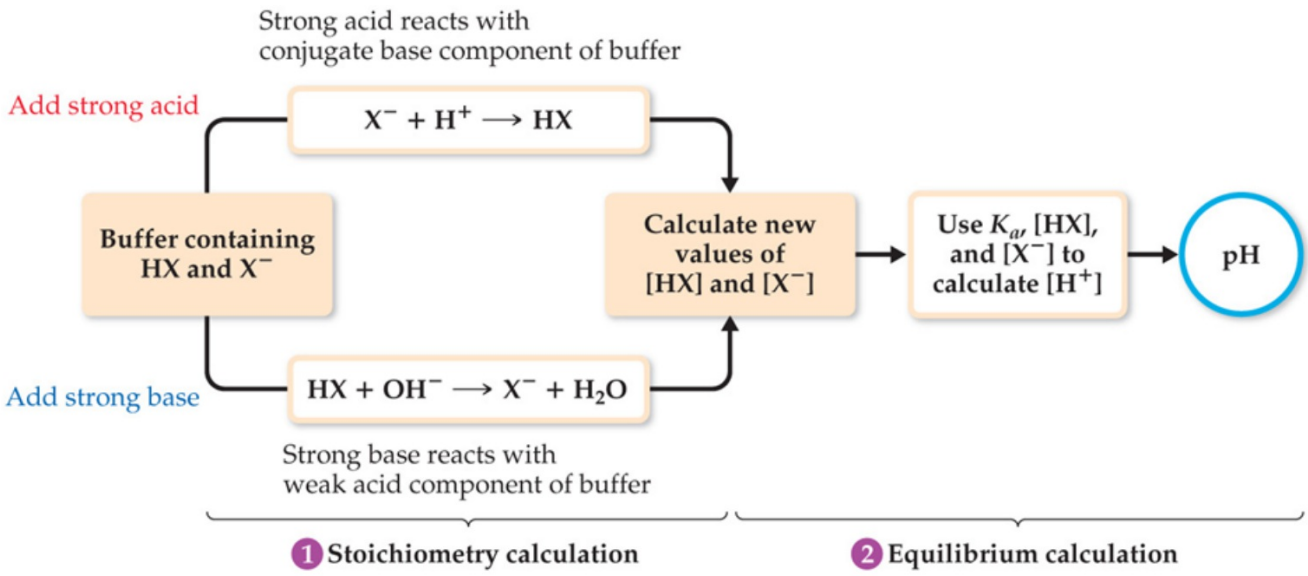


Controlling pH: Buffered Solutions

Solutions which contain a weak conjugate acid-base pair resist drastic changes in pH when small amounts of strong acid or strong base are added to them.



Process for Calculating pH of a Buffer

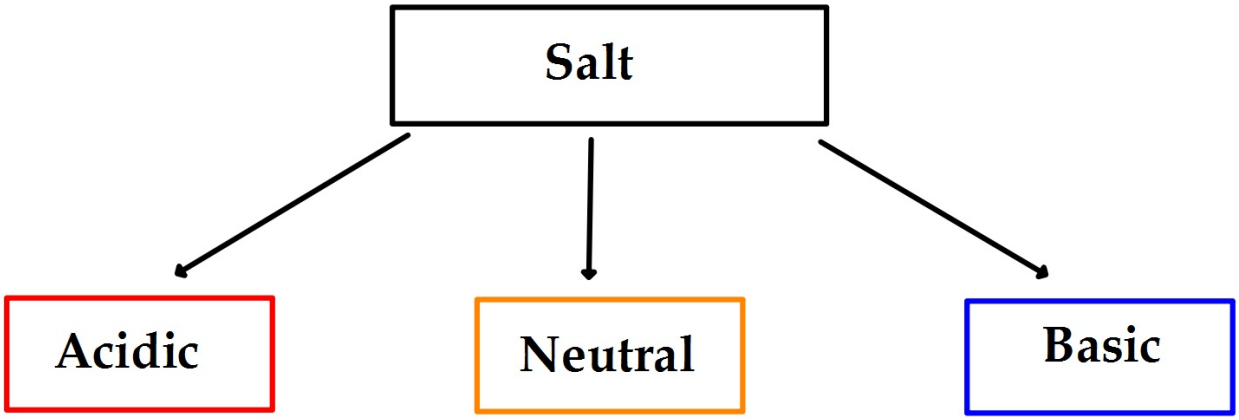


Sample Problem
pH of a Buffer

What is the pH of a buffer that is 0.12 M in lactic acid ($HC_3H_5O_3$) and 0.10 M in sodium lactate ($NaC_3O_5O_3$)? $K_a = 1.4 \times 10^{-4}$.

Salt Hydrolysis

The literal meaning of hydrolysis is the splitting of water (lysis = spliting, hydro = water). It is the opposite of a neutralization reaction.



Salt Hydrolysis Examples

$KC_2H_3O_2$ NH_4I Na_2SO_4

$Fe(NO_3)_3$ $CsClO_4$ $NaHSO_3$

Sample Problem
Salt Hydrolysis

What is the pH of a 0.25 M solution of potassium nitrite?