CHEM 1412 MWF Spring 2016

Worksheet #25 – pH of Salts and the Common Ion Effect

Name _____ Team_____

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pH of Salts and the Common Ion Effect

Why?

The addition of some salts to water causes a change in pH. Other salts don't cause a change in pH. Which salts cause changes to the pH and does the pH go up or down? How can you calculate the pH? What happens to the pH when you add a neutral salt, such as $NaNO_2$ to a dilute solution of HNO_2? Stay tuned.

Learning Objectives

Students should be able to:

- Predict whether a salt solution will be acidic or basic.
- Calculate the pH of salt solutions.
- Predict whether the addition of a salt to an acid-base equilibrium will cause the pH of a solution to increase or decrease.
- Calculate the pH of solutions in the presence of added salt.

Resources

Gilbert, 16.6 and 16.7

ChemTours

No ChemTours today.

Videos

pH of Salts
https://vimeo.com/20873043
This video summarizes the basic pH effects of salts. 10:12 minutes.

Calculation of the pH of 0.1 M Sulfuric Acid
https://www.youtube.com/watch?v=6exH6k9k60o
This video works out the problem presented in the book on p 797. 12:11 minutes

Prerequisites

Equilibrium, algebra, K_a, K_b, K_w, conjugate acid, and conjugate base.

Vocabulary

Common ion effect.

Focus Information

Common Ion Effect

Good news! If you have been paying attention, you already know this! The common ion effect is just Le Chatlier's principle! In the common ion effect, the addition oft salts that have a common ion with a weak acid can change the pH. For instance, consider what happens when you add NaF to the reaction below.

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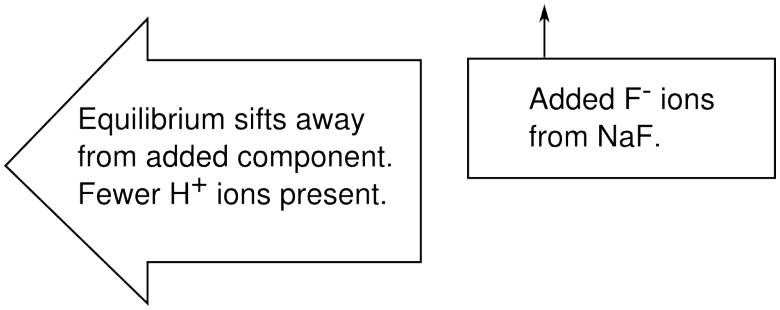
$$HF(aq) \rightleftharpoons H^+(aq) + F^-(aq)$$



That was easy! By the way, when the $[H^+]$ goes down, the pH goes up.
