

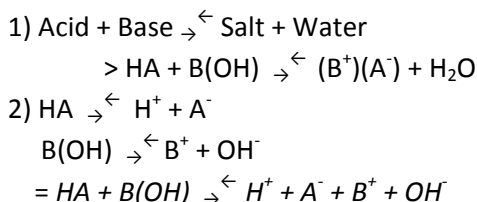
Lecture 18 (TC)

Nov. 6, 2008

Notes

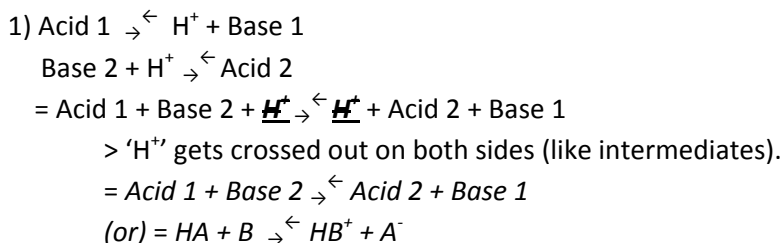
Arrhenius Acids/Bases:

- Arrhenius Acids have a removable H^+ .
- Arrhenius Bases have a removable OH^- .
- Arrhenius acid-base RXNs have the format/model:



Bronsted-Lowry Acids/Bases:

- Bronsted-Lowry Acids have removable H^+ .
- Bronsted-Lowry Bases can 'accept' H^+ from an acid (acid 1 or acid 2).
- Removing H^+ causes the corresponding base to be more 'negative' charge.
- Conjugates: Related by H^+ .
- Bronsted-Lowry Acid/Base RXNs usually have the format:



Arrhenius:

- Arrhenius Acids produce H^+ when added to water ($(l) H_2O$).
- Arrhenius Bases produce OH^- when added to water ($(l) H_2O$).

Bronsted-Lowry:

- Bronsted-Lowry Acids donate protons (H^+).
- Bronsted-Lowry Bases accept protons (H^+).

Amphiprotic Substances:

- Some chemicals can be an acid or a base.
- Water is an Amphiprotic Substance.
- Water can be both a proton donator as well as a proton acceptor.
- Autoionization: a fast equilibrium rxn that is always occurring whenever there is water present.

Using the table of Conjugate Acid-Base Pairs:

- The acids column is in order from Large to Lowest K_a . (Top to bottom order).
- The Base column is in order from weakest to strongest. (Top to bottom order).

- The stronger the acid, the weaker the base.
- The weaker the acid, the stronger the base.

Conjugate:

- Conjugate acids/bases differ by a H^+ .

Acid ionization constant:

- Acid ionization constant = K_a
- This is a measure of ACID STRENGTH.
- If K_a is larger, the Acid is stronger. If its smaller, the Acid is weaker.