Predicting Acid-Base Reactions

1. List all entities (ions, atoms, or molecules) initially present.

2. Identify all possible acids and bases, using Bronsted-Lowry definition.

3. Identify the strongest acid and strongest base, using table of acids and bases.

4. Transfer one proton from the acid to the base and predict the conjugate acid and conjugate base as products.

5. Predict the position of the equilibrium.

Sample Problem

Na^+ CO_3^{2-}

Write a balanced acid-base equilibrium equation for the reaction of sulfuric acid and sodium carbonate.

$H_2SO_{4(aq)}$ and $Na_2CO_{3(aq)}$

SA B — SB A/B

$H_3O^+_{(aq)}$, $SO^{2-}_{4(aq)}$, $Na^+_{(aq)}$, $CO^{2-}_{3(aq)}$, $H_2O_{(l)}$

$$H_3O^+_{(aq)} + CO^{2-}_{3(aq)} \underset{>50\%}{\rightleftharpoons} H_2O_{(l)} + HCO^-_{3(aq)}$$

$$H_2SO_4 \longrightarrow \cancel{2H^+} + SO_4^{2-}$$

$$2H_3O^+_{(aq)}$$

Homework

Predicting Acid-Base Equilibria

Worksheet