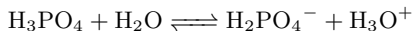

Equilibrium

Extent of Chemical Reactions

At equilibrium, the rate of the forward reaction is equal to the rate of the reverse reaction. For a reaction such as



The amount of product being formed is equal to the amount of reactant formed. This is represented by the sign \rightleftharpoons . No change is observed because changes in one direction are balanced by changes in the other. The amount of product and reactant stay constant at this point.

For any reaction in the form



The rate law shows

$$k_f[A]^m = k_r[B]^n$$

We can also write the value for K_{eq} to be

$$\frac{k_f}{k_r} = \frac{[B]^n}{[A]^m} = K_{eq}$$