10: Principles of Chemical Equilibrium

As we have studied chemical reactions in this course, we have used a "reaction arrow" to indicate the process of reactants being converted into products. The implication here is that the reaction is "irreversible", proceeding in the direction of the arrow. Many simple reactions that we encounter in chemistry, however, are *not* irreversible, but proceed in *both* directions with products readily be converted back into reactants. When a set of reactions, such as this, proceed so that the *rate* of conversion in one direction equals the *rate* of conversion in the other, we say the reactions are in equilibrium. An equilibrium system is shown by using a set of double arrows, proceeding in opposite directions. An understanding of equilibrium is essential to an appreciation of the concepts behind acid-base behavior, solubility phenomena, etc.