Chemical Equilibrium

Science
TVO 1984
Science SOL: CH.3, CH.5 (all programs)
6 10-minute programs for grades 11-12
One Year Tape and Keep Rights
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This series uses analogy and computer animation to introduce chemistry students to the concepts of chemical reactions. It explores and examines the theories of steady state, dynamic equilibrium, kinetic molecular theory, reaction tendencies, and the equilibrium constant. The forward and reverse reactions of various chemical changes are illustrated, including the production of hydrogen iodide, hydrogen chloride, and ammonia. Finally, through demonstrations of Le Chatelier's principle and the Haber process, students will gain a better understanding of the importance of chemical equilibrium to scientific study.

101. Unsteady Steadiness
Science: CH.3, CH.5
This program explores the direction of chemical reactions by seeking completion of both endothermic and exothermic reactions. Illustrated examples lead to a comparison of steady state and closed systems and to an apparently stopped reaction-equilibrium.

102. Dynamic Equilibrium
Science: CH.3, CH.5
By focusing on the behavior of hydrogen iodide, this program describes how all chemical reactions operate in two directions. It uses a collision model, based on the kinetic molecular theory, to explain how molecules behave to produce dynamic equilibrium.

3. Reaction Kinetics
Science: CH.3, CH.5
An examination of why some chemical reactions happen more quickly than others. A chain mechanism model shows how energy released by reacting molecules influences other molecules, and leads to a clearer understanding of exothermic and endothermic reactions.

104. Reaction Tendencies
Science: CH.3, CH.5
This program introduces Le Chatelier's principle: if a system in equilibrium is subject to stress, the system tends to react in such a way as to oppose the effect of the stress. It examines this principle by observing the effects of two types of stress: change in temperature and change in pressure/volume.

105. The Equilibrium Constant
Science: CH.3, CH.5
A dance analogy is applied to the hydrogen iodide system to illustrate how shifts in equilibrium occur. The program restates that qualitative predictions are not enough, and then examines how chemists are able to ascertain the equilibrium constant by using a simple mathematical model.

106. The Haber Process
Science: CH.3, CH.5
This program presents a study of the development of the process invented by Fritz Haber for producing ammonia from atmospheric nitrogen, with a review of the concepts presented in the first five programs. The program recounts the major events of Haber's life, explaining how his discoveries prolonged the First World War.