

IB2 HL Chemistry

2. Equilibrium

Read: Chapter 8 pp. 246-256, 264-270

Concepts to be mastered:

To master a concept, you must be able to do three things:

1. define the concept
 2. explain the concept, and
 3. give an example of the concept.
- Homogeneous equilibrium, heterogeneous equilibrium, dynamic equilibrium, radioactive labeling, Le Chatlier's Principle, closed system, open system, isolated system
 - Position of equilibrium, equilibrium constant, reaction quotient
 - phase diagram, line of boiling/condensation points, line of freezing/melting points, line of sublimation/deposition points, triple point(s), (critical point), (critical temperature), (critical pressure)
 - equilibrium vapor pressure, surface tension, evaporation, boiling, boiling point

Skills to be mastered:

To master a skill, you must be able to

1. recognize when the skill is needed,
2. recognize what information is needed to execute the skill,
3. execute the skill, and
4. assess whether the skill has been executed correctly.

	Further problems
• State the characteristics of a system in a state of equilibrium	1
• Write the equilibrium constant expression (K_c) for a homogeneous reaction in terms of concentration	
• Predict qualitative effects of the changes of temperature, pressure, and concentration on a system at equilibrium using LeChatelier's principle	3, 5
• Predict, qualitatively, the effect of a change in temperature on the equilibrium constant	5
• State and explain effect of catalyst on equilibrium	3
• Describe and explain the equilibrium established between a liquid and its own vapor	
• Describe and explain the qualitative relationship between vapor pressure and temperature	
• Explain the relationship between enthalpy of vaporization, boiling point and molecular forces	6, 7
• Compare the extent of reaction at equilibrium for different values of K_c	4
• Given all equilibrium concentrations for a homogeneous equilibrium determine K_c (neither K_p nor K_{sp} is required)	8, 9
• Given K_c and all but one of the equilibrium concentrations determine the missing one (use of quadratic equation not required)	10
• Given equilibrium constant, initial concentrations and one or more equilibrium concentrations determine equilibrium concentrations for the rest of the chemical species involved	

