

台灣大學 96 學年第二學期

開課系所： Department of Chemistry
課程名稱： General Chemistry 甲(下)
課程編號： 203 34140
授課教師： 林英智教授
上課時間： Wednesday and Friday 18:30-20:20
上課地點： CHEM 217 六六講堂

Textbook:

Steven S. Zumdahl, "Chemical Principles" 5th Ed., Houghton Mifflin (歐亞書局)

授課大綱:

Chapter 9 Energy, Enthalpy, and Thermochemistry

--The Nature of Energy; Enthalpy; Thermodynamics of Ideal Gases; Calorimetry; Hess's Law; Standard Enthalpies of Formation; Present Sources of Energy; New Energy Sources.

Chapter 10 Spontaneity, Entropy, and Free Energy

--Spontaneous Processes; The Isothermal Expansion and Compression of an Ideal Gas; The definition of Entropy; Entropy and Physical Changes; Entropy and the Second Law of Thermodynamics; The Effect of Temperature on Spontaneity; Free Energy; Entropy Changes in Chemical Reactions; Free Energy and Chemical Reactions; The Dependence of Free Energy on Pressure; Free Energy and Equilibrium; Free Energy and Work; Reversible and Irreversible Processes: A Summary; Adiabatic Processes

Chapter 11 Electrochemistry

--Galvanic Cells; Standard Reduction Potentials; Cell Potential, Electrical Work, and Free Energy; Dependence of the Cell Potential on Concentration; Batteries; Corrosion; Electrolysis; Commercial Electrolytic Processes.

Chapter 15 Chemical Kinetics

--Reaction Rates; Rate Laws: An Introduction; Determining the Form of the Rate Law; The Integrated Rate Law; Rate Laws: A Summary; Reaction Mechanisms; The Steady-State Approximation; A Model for Chemical Kinetics; Catalysis

Chapter 16 Liquids and Solids

--Intermolecular Forces; The Liquid State; An Introduction to Structures and Types of Solids; Structure and Bonding in Metals; Carbon and Silicon: Network Atomic Solids; Molecular Solids; Ionic Solids; Structure of Actual Ionic Solids; Lattice Defects; Vapor Pressure and Changes of State; Phase Diagrams.

Chapter 17 Properties of Solutions

--Solution Composition; The Thermodynamics of Solution Formation; Factors Affecting Solubility; The Vapor Pressure of Solutions; Boiling -Point Elevation and Freezing -Point Depression; Osmotic Pressure; Colligative Properties of Electrolyte Solutions; Colloids

Chapter20 Transition Metals and Coordination Chemistry

--The Transition Metals: A Survey; The First-Row Transition Metals; Coordination Compounds; Isomerism; Bonding in Complex Ions: The Localized Electron Model; The Crystal Field Model; The Molecular Orbital Model; The Biological Importance of Coordination Complexes

Chapter21 The Nucleus: A Chemist's View

--Nuclear Stability and Radioactive Decay; The Kinetics of Radioactive Decay; Nuclear Transformations; Detection and Uses of Radioactive; Thermodynamic Stability of the Nucleus; Nuclear Fission and Nuclear Fusion; Effects of Radiation.

Chapter22 Organic and Biochemical Molecules

--Alkanes: Saturated Hydrocarbons; Alkenes and Alkynes; Aromatic Hydrocarbons; Hydrocarbon Derivatives; Polymers; Natural Polymers.

課程進度：

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2	2/27, 2/29	Chapter 9	9.4-9.6, p.362~378
3	3/5, 3/7	Chapter 9 and Chapter10	9.7-10.3, p.379~416
4	3/12, 3/14	Chapter 10	10.4-10.11, p.416~442
5	3/19, 3/21	Chapter 10 and Chapter 11	10.12-11.2, p.442~471
6	3/26, 3/28	Chapter 11	11.3-11.5, p.471~486
7	4/2, 4/4	Chapter 11 and holiday	11.6-11.8, p.486~500
8	4/9, 4/11	First Mid Term and Chapter 15	15.1-15.3, p.703~715
9	4/16, 4/18	Chapter 15	15.4-15.7, p.715~735
10	4/23, 4/25	Chapter 15 and Chapter 16	15.8-16.3, p.735~776
11	4/30, 5/2	Chapter 16	16.4-16.11, p.776~817
12	5/7, 5/9	Chapter 17	17.1-17.8, p.827~856
13	5/14, 5/16	Second Mid term and Chapter 20	20.1-20.4, p.931~955
14	5/21, 5/23	Chapter 20	20.5-20.6, p.955~964
15	5/28, 5/30	Chapter 20 and Chapter 21	20.7-21.3, p.964~989
16	6/4, 6/6	Chapter 21 and Chapter 22	21.4-22.2, p.990~1024
17	6/11, 6/13	Chapter 22	22.3-22.6, p.1024~1059
18	6/18, 6/20	Final exam	