

Interactive Chemistry Complete Series, Hybrid CD

16 award-winning titles for introductory and advanced placement chemistry.

Product Features

Each CD Follows the Same Easy-to-Use Format	A Narrated Program Covers Each Subject in a Thorough Manner
Randomly Generated Multiple-Choice Tests Before and After Completing the Tutorials	Includes a Password to Download Detailed Teacher's Resource Materials from the Internet
Glossary of Key Chemical Terms	Tutorials Provide Hands-on-Problem-Solving and Learning Experiences
Online Help	Jump Presentation Outlines All the Topics in a Tutorial

Grade Level

Middle School • High School

Detailed Product Information:

Complete 16-title Chemistry Courseware presents complete, accurate, and up-to-date chemistry concepts and theories in an interesting and motivational manner that is sure to meet your high educational standards. This impressive 16-titled series of engaging chemistry programs will help your students quickly learn complex chemistry concepts using the power of 3D animations and audio-narration.

Topics range from the basic states of matter to the more challenging concepts of balancing chemical equations.

Programs are available for purchase individually or you can save money by choosing either the pre-bundled topics or the entire series!

Individual Topics Covered:

Introductory Chemistry Series:

Introduction to Chemistry (#1114)

This multimedia teaching tool uses three dimensional atoms, molecules, and compounds along with everyday examples of elements, compounds, and reactions to aid comprehension of this subject. Fundamental chemical concepts, essential chemical terminology, and a review of arithmetic skills are covered in the program. Historical perspectives as well as academic and industrial applications are reinforced throughout, providing a personal and exciting introduction to the world of chemistry.

Topics covered in this program: The Atom, Ions, Matter and Mass, Mass and Weight, Properties of Matter, Elements and the Periodic Table, Compounds and Mixtures, States of Matter, Measurements, Density, The Metric System, SI Units, Conversion Problems, Significant Figures, Scientific Notation, Avogadro's Number, Percents and Percent Error.

Atomic Structure (#1111)

Atomic Structure is a valuable teaching tool loaded with 3D animations and diagrams. Animations reveal the structure and organization of the atom. Atomically correct models demonstrate orbital patterns, particle and wave behavior of electrons, and the role of proton, neutrons, and electrons in the atom. How to determine atomic mass from samples with relative isotopic abundance is visually explained. Virtually experience the three common forms of radioactive decay. Nuclear chemistry, including fission, fusion, and radioactive bombardment complete the lesson. Topics covered on this program: Historical Perspectives; Dalton's Atomic Theory; Early Investigations and the Planetary Theory; The Bohr Model; Quantum Theory; The Schrodinger Model; Particle Properties; Atomic Number and Atomic Weight; Isotopes; and Radioactive Decay including Fission, Fusion, and Bombardment.

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Electronic Structure (#1112)

This program will greatly aid the student in understanding electronic structure. For example, this comprehensive program uses a periodic table that is created, atom by atom, using the Aufbau Principle, dynamic 2D and 3D atom representations, and carefully constructed relative energy diagrams.

Topics covered in this program: Chemical Properties, The Role of Electrons, Arranging the Elements, Atomic Structure, Electron Energy Levels, Energy Diagrams, Quantum Theory, Quantum Mechanics, Electron Orbitals, Building Electron Shells, The Pauli Principle, The Aufbau Principle, Hund's Rule, The Closed Shell Concept, and Building the Periodic Table

Periodic Table and Trends (#1118)

This program will explore the origins of the periodic table while learning the importance of arranging elements by atomic number. Vividly colored graphics and insightful narration illustrate how the shape of the periodic table relates to elemental properties. The description of electron configurations shows the systematic organization of elements into groups, periods, and blocks. Discussions of trends in properties such as atomic radii and electronegativity remove the complexities of periodicity, while revealing the organization of the periodic table.

Topics covered in this program: Origin of the Periodic Table; The Modern Periodic Table; Terminology; Element Information in the Periodic Table; Electron Configurations and Blocks of Elements; Valence Shells and the Octet; Properties of Metals, Nonmetals, and Semimetals; Trends in Atomic and Ionic Radii, Ionization Energy, Electron Affinity, and Electronegativity.

Naming Chemical Compounds (#1117)

Naming Chemical Compounds will aid students with straightforward explanations in learning this essential chemistry topic. Students are taught the origin of several element's names, the classification of the elements, and the two naming conventions for ions. Methods of naming compounds and formulas are clearly explained using examples and terminology with which students are familiar. Rules, guidelines, and examples are provided for naming ions, molecular compounds, ionic compounds, and compounds containing polyatomic ions, including a brief discussion of acids. Topics covered in this program: Element Names and Origins, Atomic and Molecular Elements, Classifying Elements, The Periodic Table, Atomic Structure, Naming Cations, Naming Anions, Chemical Formulas, Inorganic and Organic Compounds, Ionic and Molecular Compounds, Polyatomic Compounds, and Acids.

Properties of Acids Bases and Salts (#1119)

Properties of Acids, Bases, and Salts will explore the chemistry of water using 3D graphics and several animations to illustrate the processes of dissociation and ion formation. Acids and bases are defined according to the Arrhenius, Bronsted-Lowry, and Lewis definitions. Also featured is the pH scale and how it relates to K_a and K_b values. The program also explores the properties of salts and how they are formed. Additionally, the chemical formation of acid rain, along with its biological and physical effects, are examined.

Topics covered in this program: Physical Properties of Acids & Bases, Arrhenius, Bronsted-Lowry, and Lewis definitions, The Water Dissociation Constant (K_w), The Hydronium Ion, The Concept of pH, Calculating pH, The Acid Dissociation Constant (K_a), The Base Dissociation Constant (K_b), Conjugate Acids and Bases, Salt Formation, Properties of Salts, Acid Rain Formation and the Environmental Impacts of Acid Rain.

Molecular Bonding I: Ionic, Metallic, and Covalent Bonding (#1115)

Bonding I comprehensively introduces the three types of chemical bonds: ionic, metallic, and covalent. Review topics such as electron configurations and valence shells provide the foundation for learning about the various kinds of bonds. The use of colorful artwork clarifies the processes of bonding; showing the transferring and sharing of electrons between atoms. Engaging animations illustrate properties bonding electrons confer on each type of bond. The use of common compounds and molecules lends familiarity to this essential subject.

Topics covered on this program: A Review of Orbital Diagrams, Electron Configurations, and Valence Shells; The Octet Rule; Ionic Bonds; Lewis Dot Diagrams; Types of Ions; Naming Ions; Binary Ionic Compounds; Empirical Formulas; Properties of Ionic Compounds; Metallic Bonds; Properties of Metals; Covalent Bonds; Molecular Formulas; Lewis Structures; Multiple Bonds; Resonance Structures; and Properties of Covalent Bonds.

Molecular Bonding II: Shape, and Intermolecular Forces (#1116)

Bonding II reviews electron orbitals and lewis structures, then heads into VSEPR theory. 3-D examples help you visualize, understand, and eventually predict molecular shapes. Hybridization of orbitals and the formation of sigma and pi bonds are also covered. 3-D animations help you visualize actions such as polarity and electronegativity. Intermolecular forces, explaining the states of matter, and boiling and melting points are also covered.

Topics covered on this program: Electronic Orbitals; Orbital Diagrams; The Valence Shell; Lewis Structures; The Octet Rule' Common Molecular Shapes and Bond Angles; VSEPR Theory and Lone Pairs; Hybrid Orbitals; Sigma and Pi Bonds; Polarity; Electronegativity; Intermolecular forces: London Dispersion, Dipole Interactions, and Hydrogen Bonding; and How Intermolecular Forces Affect the Three States of Matter.

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States of Matter (#1127)

In this exciting and informative program, videos and animations show the properties of each of the three states of matter and the transitions between the states. Developing an understanding of chemical bonding and intermolecular forces allows students to understand what keeps the particles in the condensed states of matter close to each others. A section on energy explains why particles separate from each other and form liquids and gases. Videos show the properties of liquids, such as viscosity and surface tension, while students use their understanding of intermolecular forces to visualize what occurs at the particle level. Insightful artwork and narration illustrate the characteristics of crystalline and amorphous solids. Vapor pressure, boiling point, melting point, and phase diagrams allow students to comprehend the reasons substances change states.

Topics covered in this program: Chemical bonding: ionic, metallic and covalent bonding; intermolecular forces; London dispersion, dipole interactions, and hydrogen bonding; kinetic energy; heat and temperature; potential energy; kinetic molecular theory; liquids; surface tension; capillary action; viscosity; solids; unit cells; ionic solids; metallic solids; molecular solids; network solids; amorphous solids; vapor pressure; equilibrium; normal boiling point; altitude and boiling point; phase diagrams; and heating curves.

Gases and Their Properties (#1125)

This program introduces students to the physical properties that make gases a unique state of matter. Video demonstrations reveal that gases occupy volume and have mass. Animations simulating the movement of gases demonstrate how they behave under changing factors, such as temperature and pressure. These animations help students visualize the relationship between the factors that influence gas behavior and help students understand the gas laws. The history and contributions scientists made to gas law behaviors are discussed as students walk through a sample problem of each law. Finally, the kinetic molecular theory is discussed, and its hypotheses are used to explain the ideal gas law.

Topics covered in this program: The Physical Properties of Gases; Variables used to Describe Gases: Moles, Volume, Temperature, and Pressure; The Kelvin and Celsius Temperature Scales; Pressure Units and Conversions; Gas Laws: Boyles Law, Charles' Law, Combined Gas Law, Avogadro's Law, The Ideal Gas Law, Dalton's Law of Partial Pressure, and Graham's Law of Effusion; The Kinetic Molecular Theory; and Real Gases.

Solutions (#1123)

Solutions explains the components of a solution before showing the steps involved in solution formation. Students learn terms describing concentrations before analyzing the various ways in which solution concentrations are calculated and how concentrated solutions are diluted. Interactive tutorials and vivid graphics introduce each sample problem, starting with the units of concentration and ending with the final answer. Concepts such as colligative properties make sense with animated scenes showing approaches to solving sample problems pertaining to select concepts.

Topics covered on this program: Homogeneous and Heterogeneous Mixtures; Types of Solutions: Liquid, Aqueous, Gas, and Solid; Solution Formation; Factors Affecting Dissolving Rate: Temperature, Stirring, and Surface Area; Solution Concentrations: Molarity, Molality, Mole Fraction, Percent Solution; Solution Dilution; and Colligative Properties: Vapor Pressure Reduction, Boiling Point Elevation, Freezing Point Depression, and Osmotic Pressure.

Chemical Transformation Series:

Chemical Reactions (#1121)

Chemical Reactions begins by reviewing compounds and solutions. Interactive lessons teach students step-by-step how to balance equations. Five classifications of chemical reactions are explained: combination, decomposition, single-replacement, double-replacement, and combustion. Amazing video examples of each type of reaction are given, reinforcing results found in standard lab experiments. Students also learn to predict the outcome of reactions by using the activity series and the solubility chart.

Topics covered on this program: A Review of Molecules and Ions; Solutions; Balancing Chemical Equations; Combination Reactions; Decomposition Reactions; Single-Replacement Reactions; The Activity Series; Double-Replacement Reactions; The Solubility Chart; Complete Ionic Equations; Net Ionic Equations; Combustion Reactions; Metabolism; and Corrosion.

Chemical Equilibrium (#1120)

Concrete analogies and step-by-step examples help students understand chemical equilibrium. The concept of dynamic equilibrium is clarified with interactive tutorials. Students quickly learn to calculate and understand the meaning of equilibrium constants and reaction quotients with engaging narrations and graphics. Examples using Le Chatelier's principle allow students to predict how changes in such factors as concentration, temperature, and pressure affect equilibrium.

Topics covered on this program: A Review of Chemical Reactions and Balanced Equations; Equilibrium and Reversible Reactions; the Law of Mass Action; Homogeneous and Heterogeneous Equilibria; Equilibrium Constant Expressions; Calculating Equilibrium Constants; Reaction Quotients; Le Chatelier's Principle; How Changes in Concentration, Pressure, and Temperature Affect Equilibrium.

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Formulas, Equations, and Stoichiometry (#1113)

Instead of presenting stoichiometry as an isolated subject, Formulas, Equations & Stoichiometry reviews and reinforces fundamental topics before the student is immersed in the subject. The review progresses into a descriptive discussion of chemical equations. Once chemical equations are well understood, students are taught the mathematics that chemists use to describe such equations. This program incorporates common terms, compounds, and reactions with which most students are already familiar, in an effort to reduce the complexity of the subject matter. Interesting analogies, real life examples, and captivating artwork bring the subject to life!

Topics covered in this program: Chemical formulas; atomic mass; isotopes; molecular weight; molar mass; percent composition; empirical and chemical formulas; chemical equations; the mole; Avogadro's number; mole to gram conversions; stoichiometry; limiting reactants; and percent yield.

Solubility and Precipitation (#1122)

Solubility and Precipitation begins with a review of solution chemistry and takes students through topics such as dissolution and precipitation of ionic compounds, determining solubility product constant (K_{sp}) and ion concentrations for reactions at equilibrium, to explain how mixtures within substances are separated. Dynamic animations and interactive tutorials make these difficult concepts easy for students to understand.

Topics covered in this program: Relative Concentration, Solution Formation, Factors that Affect the Solubility of Compounds; Equilibrium and Balanced Equations; The Equilibrium Expression; The Solubility Product Constant (K_{sp}), Additional Factors Affecting the Solubility of Ionic Compounds; The Common Ion Effect; Le Chatelier's Principle; Solubility Rules; Complete and Net Ionic Equations; The Ion Product (Q); Methods of Separating Mixtures: Filtration, Distillation, Crystallization, and Chromatography.

Reaction Rates (#1126)

The general concept of rate is introduced with numerical examples and sets the stage for an understanding of reaction rates. Factors that affect reaction rates, such as temperature and concentration, are explained through the concepts of collision theory and activation energy. A step-by-step approach teaches rate laws and is reinforced with interactive lessons covering both rate constants and reaction order. The program also covers reaction mechanisms, including the rate-determining step. Throughout the program, videos and animations help students visualize what happens at the particle level and illustrate the incisive analogies.

Topics covered in this program: The Concept of Rate, with Definitions and Examples; Reaction Rates; Stoichiometry and Reaction Rates; Instantaneous vs. Average Rates; Factors Affecting Reaction Rates; Collision Theory; Kinetic Energy; Activation Energy; The Activated Complex; Catalysts; Rate Laws; Rate Constants; Reaction Order; Reaction Mechanisms; Elementary Processes; and The Rate-Determining Step.

System Requirements:

Windows:

Pentium class processor
S-VGA graphics card with 640x480 color monitor
Windows XP, Me, or 2000
16 MB of available memory (RAM)
2 MB hard disk space
mouse
sound card
CD-ROM drive.

Macintosh:

Power Mac, iMac, or PowerPC
OS 9.x, OS 10.x
16 MB of available memory (RAM)
2 MB hard disk space
mouse
sound card
CD-ROM drive.

List Price:

Interactive Chemistry: Complete 16 Title Series, Hybrid CD's, Single Set
Item: 99113001 Price: \$1359.95

Interactive Chemistry: Complete 16 Title Series, Hybrid CD's, Network 10
Item: 98113010 Price: \$3,264.00

Interactive Chemistry: Complete 16 Title Series, Hybrid CD's, 5 Pak
Item: 99113005 Price: \$3,264.00

Also available for purchase individual titles (16 to choose from):
Single: 99.95
5 Pak: 240.00
Network 10: 240.00

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About Tangent

Ordering Information

Tangent Scientific accepts official purchase orders from recognized institutions. We require prepayment for individuals, home-schoolers, and businesses. You may place a purchase order with Tangent by e-mail, mail, fax, or telephone.

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At your request software can be previewed and evaluated before you commit to the purchase – just by calling 1-800-363-2908. Previews are full, complete versions of the program that are made available to interested educators for a trial period of 15 days without the need for an official purchase order. Call for further details!

Request a Quote

For competitive product pricing on larger network, building, site or district licenses and custom software packages, please contact customer service by telephone or e-mail. Please be sure to include which product(s) you are interested in, and the number of users you wish to purchase.

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