



## ***Chemistry: The Universal Connection***

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30, 30-minute videos

Produced by Palomar College

**Awards: 2006 26<sup>th</sup> Annual Telly Bronze Award  
2006 Aegis Finalist  
2007 27<sup>th</sup> Annual Telly Bronze Award**

Introductory study of the principles and laboratory techniques of general chemistry.

**Module #1: Introduction to Chemistry**

An introduction to the science of chemistry.

**Module #2: Measurement, Part 1**

The scientific method of data collection

**Module #3: Measurement, Part 2**

Types of measurements, dimensions, and dimensional analysis.

**Module #4: Matter, Part 1**

Matter explained in terms of classifications and categories.

**Module #5: Matter, Part 2**

The properties and dynamics of matter.

**Module #6: Matter, Part 2 (continued)**

The properties and dynamics of matter (continued).

**Module #7: Atomic Theory, Part 1**

The concept of atoms as particles of matter.

**Module #8: Atomic Theory, Part 2**

Digging into the atom – the atom as divisible.

**Module #9: Symbols and Formulas, Part 1**

The language of chemistry – early and modern representations of chemical identities.

**Module #10: Symbols and Formulas, Part 2**

The meaning and logic of chemical formulas, and the significance of charged and neutral species.

**Module #11: Periodic Table, Part 1**

Discovery of the elements and the periodic law, early observations and attempts at classification.

**Module #12: Periodic Table, Part 2**

The modern periodic table of the elements, a source for a wealth of information.

**Module #13: Bonding, Part 1**

Why, when, and how atoms bond.

**Module #14: Bonding, Part 2**

The anatomy of the chemical bond and its variations.

**Module #15: Chemical Equations, Part 1**

The short-hand description of chemical changes.

**Module #16: Chemical Equations, Part 2**

The types of chemical reactions and how to predict the outcome of a chemical change.

**Module #17: Atomic Theory, Part 3**

Spectroscopy leading into the modern atomic theory.

**Module #18: Atomic Theory, Part 4**

Quantized energy levels and the modern atomic theory.

**Module #19: Atomic Theory, Part 4 (continued)**

Quantized energy levels and the modern atomic theory (continued).

**Module #20: Naming, Part 1**

The path from common to systematic nomenclature.

**Module #21: Naming, Part 2**

Names of inorganic compounds – rules and classifications.

**Module #22: The Mole Concept**

The concept of the mole as the fundamental unit and quantity in chemistry.

**Module #23: Calculations**

The quantitative perspective of chemicals and their reactions.

**Module #24: Solutions**

Water as the ideal solvent and types of aqueous solutions.

**Module #25: Gases, Part 1**

The kinetic molecular theory and state functions.

**Module #26: Gases, Part 2**

Relationship of state functions and the physical conditions of a gas; early observations formulated as gas laws.

**Module #27: Gases, Part 3**

Ideal and real gases, and the significance of intermolecular forces.

**Module #28: Gases, Part 4**

The dynamics of gas particles – effusion and diffusion.

**Module #29: Thermochemistry, Heat and Energy, Part 1**

The chemical substance and its relationship to thermal energy.

**Module #30: Thermochemistry, Heat and Energy, Part 2**

The conservation of energy in relation to heat exchanges during chemical reactions.