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Topics
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Lessons



Scientist-In-Action Videos

#### **Core Learning Objectives**

Analyze errors and apply significance tests in analytical chemistry.

Master acid-base titration techniques and buffer principles.

Apply complexometric and precipitation titration techniques.

Understand chemical equilibria and pH effects.

Master separation techniques and interpret chromatographic data.

Develop spectroscopic analysis skills for molecular identification.





#### JoVE Core: Chemistry

#### **List of Chapters**

- 1.1 Introduction: Matter And Measurement
- 1.2 Atoms And Flements
- 1.3 Molecules, Compounds, And Chemical Equations
- 1.4 Chemical Quantities And Aqueous Reactions
- 1.5 Gases
- 1.6 Thermochemistry
- 1.7 Electronic Structure Of Atoms
- **1.8 Periodic Properties Of The Elements**
- 1.9 Chemical Bonding: Basic Concepts
- 1.10 Chemical Bonding: Molecular Geometry And **Bonding Theories**
- 1.11 Liquids, Solids And Intermolecular Forces
- 1.12 Solutions And Colloids
- 1.13 Chemical Kinetics
- 1.14 Chemical Equilibrium
- 1.15 Acids And Bases
- 1.16 Acid-Base And Solubility Equilibria
- 1.17 Thermodynamics
- 1.18 Electrochemistry
- 1.19 Radioactivity And Nuclear Chemistry
- 1.20 Transition Metals And Coordination Complexes
- 1.21 Biochemistry

### JoVE Core: Analytical Chemistry **U2**

#### List of Chapters

- 2.1 Chemical Applications of Statistical Analyses
- 2.2 Chemical Equilibria
- 2.3 Acid-Base Titration
- 2.4 Introduction to Separation Methods
- 2.5 Complexometric Titration, Precipitation Titration, and Gravimetry
- 2.6 Principles of Mass Spectrometry
- 2.7 Principles of Nuclear Magnetic Resonance
- 2.8 Interpreting Nuclear Magnetic Resonance Spectra

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2.9 Method Development and Sampling Techniques

- 2.10 Electrochemical Analyses and Redox Titration
- 2.11 Principles of Chromatography
- 2.12 Introduction to Molecular Spectroscopy
- 2.13 Molecular Vibrational Spectroscopy
- 2.14 Atomic Spectroscopy
- 2.15 Mass Spectrometry Fragmentation Methods

2.16 Advanced Nuclear Magnetic Resonance Spectroscopy

#### JoVE Lab Manual: Chemistry 03

#### **List of Videos**

- 3.1 Lab Techniques Concept
- 3.2 Lab Techniques Prep
- 3.3 Lab Techniques Procedure
- 3.4 Scientific Measurement And Lab Skills Concept
- 3.5 Scientific Measurement And Lab Skills Prep
- 3.6 Scientific Measurement And Lab Skills Procedure
- 3.7 Stoichiometry, Product Yield, And Limiting **Reactants - Concept**
- 3.8 Stoichiometry, Product Yield, And Limiting Reactants - Prep
- 3.9 Stoichiometry, Product Yield, And Limiting Reactants - Procedure
- 3.10 Redox Reactions Concept
- 3.11 Redox Reactions Prep
- 3.12 Redox Reactions Procedure
- 3.13 Ideal Gas Law Concept
- 3.14 Ideal Gas Law Prep
- 3.15 Ideal Gas Law Procedure
- 3.16 Acid And Base Concentrations Concept
- 3.17 Acid And Base Concentrations Prep
- 3.18 Acid And Base Concentrations Procedure
- 3.19 Buffers Concept
- 3.20 Buffers Prep
- 3.21 Buffers Procedure
- 3.22 Enthalpy Of Reaction Concept
- 3.23 Enthalpy Of Reaction Prep
- 3.24 Enthalpy Of Reaction Procedure
- 3.25 Solubility Concept

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#### **Basic Biology**

#### **List of Topics**

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#### <u>Chemistry</u>

5.1 Analytical Chemistry