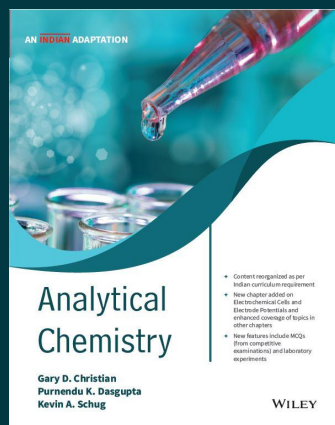




Analytical Chemistry, An Indian Adaptation

By Gary D. Christian, Purnendu K. Dasgupta, Kevin A. Schug

Paperback

9789388991094

₹1,259.00

Pages: 960

Description

This Indian adapted edition is restructured, offering new and updated material and focuses on more in-depth coverage of the principles and techniques of instrumental analysis. It includes two new chapters dedicated to Mass Spectroscopy and Thermal Methods of Analysis. Chapters on Extraction Methods, Spectrochemical, Atomic Spectrometric Methods, and Liquid Chromatography and Electrophoresis have been completely updated with current developments. The content has also been reorganized to align it better with the curriculum requirements. New pedagogical features introduced are Spreadsheet Problems,

About the Author

Gary D. Christian, Purnendu K. Dasgupta, Kevin A. Schug

Gary Christian began his career at Walter Reed Army Institute of Research, where he developed an interest in clinical and bioanalytical chemistry. He joined the University of Kentucky in 1967, and in 1972 moved to the University of Washington, where he is Emeritus Professor

Table of Contents

Chapter 1 Analytical Objectives, or: What Analytical Chemists Do

- 1.1 What Is Analytical Science?,
- 1.2 Qualitative and Quantitative Analysis: What Does Each Tell Us?,
- 1.3 Getting Started: The Analytical Process
- 1.4 Validation of a Method—You Have to Prove It Works!
- 1.5 Analyze Versus Determine—They Are Different
- 1.6 Some Useful Websites

Chapter 2 Analytical Chemistry: Basic Tools and Operations

- 2.1 Laboratory Materials and Reagents
- 2.2 The Analytical Balance—The Indispensable Tool
- 2.3 Volumetric Glassware—Also Indispensable
- 2.4 Preparation of Standard Base Solutions
- 2.5 Preparation of Standard Acid Solutions
- 2.6 Other Apparatus—Handling and Treating Samples
- 2.7 Igniting Precipitates—Gravimetric Analysis

- 2.8 Obtaining the Sample—Is It Solid, Liquid, or Gas?
- 2.9 Operations of Drying and Preparing a Solution of the Analyte
- 2.10 Laboratory Safety

Chapter 3 Analytical Chemistry: Statistics and Data Handling

- 3.1 Accuracy and Precision: There Is a Difference
- 3.2 Determinate Errors—They Are Systematic
- 3.3 Indeterminate Errors—They Are Random
- 3.4 Significant Figures: How Many Numbers Do You Need?
- 3.5 Rounding Off
- 3.6 Ways of Expressing Accuracy
- 3.7 Standard Deviation—The Most Important Statistic
- 3.8 Propagation of Errors—Not Just Additive
- 3.9 Significant Figures and Propagation of Error
- 3.10 Control Charts
- 3.11 The Confidence Limit—How Sure Are You?
- 3.12 Tests of Significance—Is There a Difference?
- 3.13 Rejection of a Result: The Q Test
- 3.14 Statistics for Small Data Sets
- 3.15 Linear Least Squares—How to Plot the Right Straight Line
- 3.16 Correlation Coefficient and Coefficient of Determination
- 3.17 Detection Limits—There is No Such Thing as Zero
- 3.18 Statistics of Sampling—How Many Samples, How Large?
- 3.19 Powering a Study: Power Analysis
- 3.20 Use of Spreadsheets in Analytical Chemistry
- 3.21 Using Spreadsheets for Plotting Calibration Curves
- 3.22 Slope, Intercept, and Coefficient of Determination
- 3.23 LINEST for Additional Statistics
- 3.24 Statistics Software Packages

Chapter 4

Stoichiometric Calculations: The Workhorse of the Analyst

- 4.1 Review of the Fundamentals
- 4.2 How Do We Express Concentrations of Solutions?
- 4.3 Expressions of Analytical Results—So Many Ways
- 4.4 Volumetric Analysis: How Do We Make Stoichiometric Calculations?
- 4.5 Volumetric Calculations—Let's Use Molarity
- 4.6 Titer—How to Make Rapid Routine Calculations,
- 4.7 Weight Relationships—You Need These for Gravimetric Calculations

Chapter 5 General Concepts of Chemical Equilibrium

- 5.1 Chemical Reactions: The Rate Concept
- 5.2 Types of Equilibria
- 5.3 Gibbs Free Energy and the Equilibrium Constant
- 5.4 Le Châtelier's Principle
- 5.5 Temperature Effects on Equilibrium Constants
- 5.6 Pressure Effects on Equilibria
- 5.7 Concentration Effects on Equilibria
- 5.8 Catalysts
- 5.9 Completeness of Reactions
- 5.10 Equilibrium Constants for Dissociating or Combining Species—Weak Electrolytes and Precipitates
- 5.11 Calculations Using Equilibrium Constants—Composition at Equilibrium
- 5.12 The Common Ion Effect—Shifting the Equilibrium
- 5.13 Systematic Approach to Equilibrium Calculations—How to Solve Any Equilibrium Problem
- 5.14 Some Hints for Applying the Systematic Approach for Equilibrium Calculations
- 5.15 Heterogeneous Equilibria—Solids Don't Count
- 5.16 Activity and Activity Coefficients—Concentration Is Not the Whole Story
- 5.17 The Diverse Ion Effect: The Thermodynamic Equilibrium Constant and Activity Coefficients
- Chapter 6 Acid-Base Equilibria
- 6.1 The Early History of Acid-Base Concepts
- 6.2 Acid-Base Theories—Not All Are Created Equal
- 6.3 Acid-Base Equilibria in Water
- 6.4 The pH Scale
- 6.5 pH at Elevated Temperatures: Blood pH
- 6.6 Weak Acids and Bases—What is the pH?
- 6.7 Salts of Weak Acids and Bases—They Aren't Neutral
- 6.8 Buffers—Keeping the pH Constant (or Nearly So)
- 6.9 Polyprotic Acids and Their Salts
- 6.10 Ladder Diagrams
- 6.11 Fractions of Dissociating Species at a Given pH:

To purchase this product, please visit:

<https://www.wileyindia.com/analytical-chemistry-an-indian-adaptation.html>



Scan to buy